EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

1 **ID: 1121252** **Points: 1.00**

A reactor startup is in progress with the following conditions:

- All IRMs on range 3.
- All SRMs are partially withdrawn.
- IRMs and SRMs indicate as follows:

IRMs			
A - 42	B - 39	C- 35	D - 49
E - 25	F - 45	G - 52	H - 55

SRMs (cps)			
A - 82	B - 110	C - 112	D - 121

Depressing the DOWN button on IRM 'F' will cause which of the following annunciators?

A. RPS CH IRM UPSC TRIP/INOP ONLY

B. SRM DETECTOR RETRACT NOT PERMITTED ONLY

C. RPS CH IRM UPSC TRIP/INOP and IRM UPSC ONLY

D. SRM DETECTOR RETRACT NOT PERMITTED and IRM UPSC ONLY

Answer: C

Answer Explanation

C is correct - per CPS 5005-2H RPS CH B IRM UPSC TRIP OR INOP annunciator, and 5005-3H IRM UPSC, IRM F will initiate an upscale alarm and rod block at 108/125 scale, and an RPS trip annunciator and RPS trip input at 120/125 full scale.

Depressing the DOWN button on IRM 'F' will cause the indication to increase by a factor of 3.16 (square root of 10), resulting in a reading of 45 * 3.16 = 142/125 which exceeds both setpoints listed above.

A is incorrect but plausible if the examinee incorrectly recalls the setpoint or the function of the IRM UPSC Alarm (108/125) which is used to alert the operator that IRMs have exceeded a rod block setpoint and is approaching the RPS trip setpoint.

B & D are incorrect but plausible if the examinee incorrectly recalls the signals that must be present to receive the SRM Detector Retract NOT Permitted Alarm. This alarm should come in with the SRM count rate < 100 cps with IRMs < Range 3. Since the only IRM that is on range 2 (IRM 'F') is associated with an SRM (SRM 'B') that is reading above 100 cps, the SRM Detector Retract NOT Permitted Alarm will NOT be received.

KA justification - this question meets the KA because the examinee has to determine how down ranging IRM 'F' will affect the RPS system.

Cog Level justification - this is a high cog question written at the analysis and comprehension level. The examinee has to calculate the change in IRM readings from down ranging the IRM and then predict how the change impacts the RPS system.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 1 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1121252
User-Defined ID:	CL-ILT-1121252
Cross Reference Number:	
Topic:	A reactor startup is in progress with the following conditions: All IRMs on range 3. All SRMs are
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5005.01 (1L) Rev. 29e • CPS 5005.02 (2h) Rev. 29d • CPS 5005.03 (3h) Rev. 31b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT 09-1 NRC Exam
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-9920
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data Table. Added distracter plausibility statements. Added KA justification statement.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO)
KA Data	

KA Number / System Name: 215003 Intermediate Range Monitor System
Category / KA Statement: K1. Knowledge of the physical connections and/or cause-effect relationships between INTERMEDIATE RANGE MONITOR (IRM) SYSTEM and the following: K1.01 RPS (CFR: 41.2 to 41.9 / 45.7 to 45.8)

RO Value: 3.9
SRO Value: 3.9

Tier: 2
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.2 to 41.9
10CFR55-43 (SRO) Data: NA

Associated objective(s):

RO Q1 215003 K1.07

2 **ID: 1098617** **Points: 1.00**

With the plant operating at 90% power, the following annunciator and status light illuminates:

- HPCS OUT OF SERVICE - ANNUNCIATOR
- HPCS LINE BREAK DETECTED - STATUS LIGHT

Which ONE of the following conditions is indicated?

A HPCS line break has occurred.....

A. on the HPCS suction line.

B. inside the Reactor vessel shroud.

C. between the HPCS pump and injection valve.

D. inside the Reactor vessel, but outside the shroud.

Answer: D

Answer Explanation

D is correct: Per CPS 3315.02 LEAK DETECTION (LD) and N-CL-OPS-209002 HIGH PRESSURE CORE SPRAY SYSTEM (HPCS), the HPCS line break leak detection system continuously monitors the d/p between the HPCS injection line and the area above the reactor core bottom plate to ensure that the integrity of the HPCS injection line is maintained. The HPCS line break leak d/p cell compares HPCS injection line pressure and above core plate pressure. Since both lines are normally exposed to the pressure inside the core shroud, normal d/p is zero.

When the HPCS injection line is broken outside shroud, a d/p (across the shroud) is developed. If the break is of sufficient magnitude (-3.4 psid), the 'HPCS OUT OF SERVICE' annunciator is actuated and the amber 'HPCS Line Break Detected' status light is illuminated.

A is incorrect but plausible if the candidate incorrectly believes that the 'HPCS Line Break Detected' status light refers to the HPCS suction line.

B is incorrect but plausible if the candidate incorrectly believes that a line break within the core shroud would produce a d/p.

C is incorrect but plausible if the candidate incorrectly believes that the 'HPCS Line Break Detected' status light refers to the HPCS discharge line outside the reactor vessel.

KA Justification - this question meets the KA because it requires the candidate to recall the physical connections of the leak detection system within the reactor vessel with respect to the HPCS system and the malfunction of the HPCS system required to cause a leak detection system 'HPCS Line Break Detected' status light.

Cog Level Justification - this is a high cog question written at the comprehension level. The piece of knowledge that is required to answer the question is not provided in the stem. The examinee has to demonstrate comprehension of the input parameters (change in dP) required to cause the indications in the stem to answer the question..

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 2 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1098617
User-Defined ID:	CL-ILT-1098617
Cross Reference Number:	
Topic:	With the plant operating at 90% power, the following annunciator and status light illuminates: - HPC
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3315.02 Rev. 14d CPS 5062.08 Rev. 26a N-CL-OPS-209002 Rev. 2
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	582337 (CL-EO-1226)
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3315.02 CPS 5062.08 N-CL-OPS-209002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 209002 High Pressure Core Spray System **Category / KA Statement:** K1.09 Knowledge of the physical connections and/or causeeffect relationships between HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) and the following: Leak detection: BWR-5,6 **RO Value:** 2.5 **SRO Value:** 2.5 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.2 to 41.9 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q2 209002 K1.09

3 **ID: 1097372** **Points: 1.00**

A startup is in progress and power is 65% of rated power.

An electrical fault in Division 2 NSPS Power Dist Panel (C71-P001B) has caused the Distribution Panel to de-energize.

Which ONE of the following will generate a reactor scram input signal as a result of this loss of power?

A. APRM Channel 'B'

B. Reactor Mode Switch

C. Loss of power to the EHC 125V DC Trip Bus

D. Outboard Main Steam Isolation Valve (MSIV) 1B21-F028A - D position sensors

Answer: A

Answer Explanation

A is correct - per CPS 3509.01C002 DIVISION 2 NSPS BUS (1C71-P001B) OUTAGE, APRM B is powered from 'B' NSPS Distribution Panel (Circuit 15) and will generate an APRM Inop scram signal on loss of power.

B is incorrect but plausible if the examinee incorrectly believes that a loss of Div 2 NSPS will cause a Reactor Mode Switch dependent RPS signal (IRM Neutron Flux high, APRM Setdown Flux high, RPV High Level 8 and MSIV Closure) to generate a reactor scram signal. Per CPS 3509.01C002 Appendix A, a loss of Div 2 NSPS will cause a loss of function (i.e. fail to bypass, fails as if Mode Switch is not in RUN) but will NOT generate a reactor scram signal.

C is incorrect but plausible if the examinee incorrectly recalls the power supply to the EHC 125VDC trip bus. The EHC 125VDC trip bus is powered from the Main Turbine Permanent Magnet Generator (PMG) and the 1B Computer UPS Bus. A loss of UPS Bus 1B will cause a turbine trip and reactor scram if UPS 1B is lost with the Main Turbine operating at < 75% of rated speed.

D is incorrect but plausible if the examinee incorrectly believes that a loss of Div 2 NSPS will cause the Outboard MSIV position sensors to generate a reactor scram signal when in fact a loss of Div 1 NSPS will cause the Outboard MSIV position indications on 1H13-P601 to de-energize affecting valves 1B21-F022A-D. Transient test input on valve position is also disabled.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the power supply to the 'B' APRM channel to answer the question.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the power supply to the 'B' APRM.

Question 3 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	3.00
System ID:	1097372
User-Defined ID:	CL-ILT-6927
Cross Reference Number:	
Topic:	A startup is in progress and power is 65% of rated power. An electrical fault in Division 2 NSPS
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3509.01C001 Rev. 10b CPS 3509.01C002 Rev. 13a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved Answer/Explaination.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3509.01C001 Rev. 10b CPS 3509.01C002 Rev. 13a
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)
KA Data	
KA Number / System Name: 215005 Average Power Range Monitor/Local Power Range Monitor System **Category / KA Statement:** K2. Knowledge of electrical power supplies to the following: K2.02 APRM channels **RO Value:** 2.6 **SRO Value:** 2.8 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q3 215005 K2.02

4 **ID: 1097381** **Points: 1.00**

The plant was operating at rated thermal power when a transient occurred. The sequence of events that followed are as follows:

Time	Event
0100	Multiple High DW Pressure alarms were received on 1H13-P601 AND 1H13-P680.
0115	RHR 'A' was placed in Containment Spray Mode.
0120	All Off-Site Power was lost (LOOP)
0121	4160V Bus 1A1 was re-energized by the Div 1 DG.

Based on these conditions, RHR Pump 'A' _____(1)_____ automatically restart **when 4160V bus 1A1 re-energizes.**

(2) What actions are required to initiate RHR 'A' in the **Low Pressure Coolant Injection Mode**?

A. (1) will
(2) Depress the CNMT SPRAY 'A' SEAL-IN RESET pushbutton.

B. (1) will
(2) Simultaneously depress the CNMT SPRAY 'A' DELAY TIMER RESET pushbutton and the CNMT SPRAY 'A' SEAL-IN RESET pushbutton, then arm and depress the LPCS/LPCI FM RHR A MANUAL INITIATION pushbutton.

C. (1) will NOT
(2) Manually start RHR 'A' Pump and then arm and depress the LPCS/LPCI FM RHR A MANUAL INITIATION pushbutton.

D. (1) will NOT
(2) Simultaneously depress the CNMT SPRAY 'A' DELAY TIMER RESET pushbutton and the CNMT SPRAY 'A' SEAL-IN RESET pushbutton, and then manually start RHR Pump 'A'.

Answer: D

Answer Explanation

D is correct:

Based on the conditions listed in the stem, RHR Pump 'A' was running with a CS signal locked in when 4160V Bus 1A1 was deenergized by the loss of off-site power. Per CPS 5064.03 (3F) RHR Pump 'A' Auto Trip annunciator will come in due to 4160V Bus 1A1 undervoltage.

Per CPS 3312.01 Residual Heat Removal (RHR) section 8.1.2 LPCI Automatic Initiation, a caution before step 8.1.2.1 states that following a RHR Pump A(B) trip with a CNMT spray initiation signal present, the RHR pump breaker will not re-close on any further pump re-starts. RHR Pump Bkr is reset by simultaneously depressing the CNMT SPRAY A(B) DELAY TIMER RESET and CNMT SPRAY A(B) SEAL-IN RESET.

A is incorrect but plausible if the examinee fails to determine that RHR 'A' Pump breaker has tripped on undervoltage with a Containment Spray initiation signal present and will not re-start until the CS initiation signal is reset. Also plausible because this is the method used to transfer RHR from CS to LPCI per section 8.1.7 of 3312.01. This method will not work in this case because of the undervoltage trip of RHR Pump 'A'.

B is incorrect but plausible if the examinee fails to determine that RHR 'A' Pump breaker has tripped on undervoltage with a Containment Spray initiation signal present and will not re-start until the CS initiation signal is reset.

C is incorrect but plausible if the examinee fails to determine that RHR 'A' cannot be restarted due to actuation of the RHR Pump 'A' breaker anti-pump logic. The anti-pump logic is reset by depressing the CS Seal In Reset and CS Delay Timer Reset pushbuttons.

KA Justification - this question meets the KA because the examinee has to determine how loss of electrical power impacts the LPCI Mode of RHR.

Cog Level Justification - this is a high cog question written at the analysis & comprehension level. The examinee has to analyze the conditions in the stem and then determine the impact on the LPCI mode of RHR.

Question 4 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1097381
User-Defined ID:	CL-ILT-1097381
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when a transient occurred. The sequence of events
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3312.01 Rev. 45b • CPS 5064.03 (3F) Rev. 32
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-LC-0087
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Revised the question stem. Added distracter plausibility statements. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 203000 Residual Heat Removal /Low Pressure Coolant Injection: Injection Mode (Plant Specific) **Category / KA Statement:** K2. Knowledge of electrical power supplies to the following: K2.03 Initiation logic **RO Value:** 2.7 **SRO Value:** 2.9 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q4 203000 K2.03

5 **ID: 1097374** **Points: 1.00**

The unit was operating at 70% power with TDRFP "A" and MDRFP running in parallel.

THEN, DC MCC 1E de-energized.

The following IMMEDIATE OPERATOR ACTIONS have been completed:

- Manual reactor scram
- Manual Main Turbine trip
- Manually opened GCBs 4506 and 4510.

Currently, RPV Water Level is at + 58 inches Narrow Range and rising.

All Feedwater system responses have occurred as expected.

In response to this transient, which of the following actions must be performed?

A. Locally trip ONLY the TDRFP Pump "A".

B. Trip ONLY the TDRFP "A" using the 1H13-P680 pushbutton.

C. Trip both the TDRFP "A" and MDRFP using the 1H13-P680 pushbuttons.

D. Trip the MDRFP using the 1H13-P680 pushbutton AND locally trip the TDRFP "A".

Answer: A

Answer Explanation

A is correct: Per CPS 4201.01 LOSS OF DC POWER, TDRFPs A & B tripping power is lost. Trip TDRFPs locally, if required OR place TDRFP control on SLIM controller at minimum speed.

B is incorrect but plausible if the candidate recognizes that TDRFP A is affected but fails to realize that since tripping power is lost, the TDRFP cannot be tripped using the 1H13-P680 pushbutton.

C is incorrect but plausible if the candidate recognizes that TDRFP A is affected but fails to realize that since tripping power is lost, the TDRFP cannot be tripped using the 1H13-P680 pushbutton. Additionally, the candidate also failed to recognize that the MDRFP is currently tripped on RPV Water Level 8 (+52 inches) but otherwise is not affected by the loss of DC MCC 1E and is available to control level.

D is incorrect but plausible if the candidate fails to recognize that the MDRFP is currently tripped on RPV Water Level 8 (+52 inches) but otherwise is not affected by the loss of DC MCC 1E and is available to control level while correctly recognizing that TDRFP A tripping power is lost and it must be tripped locally.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the effect a loss of the DC MCC 1E will have on the DC fed Feedwater System components (i.e. feed pumps).

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to recognize the interaction between DC Electrical Distribution system and Feedwater system, demonstrate an understanding of consequences due to a loss of DC MCC and correctly mitigate those effects.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 5 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097374
User-Defined ID:	CL-LC-1097374
Cross Reference Number:	
Topic:	The unit was operating at 70% power with TDRFP "A" and MDRFP running in parallel. THEN, DC MCC 1E
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4201.01 Rev. 8a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank CL-LC-0035
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved Answer Explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4201.01 Rev. 8a
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 263000 DC Electrical Distribution **Category / KA Statement:** K3. Knowledge of the effect that a loss or malfunction of the DC ELECTRICAL DISTRIBUTION SYSTEM will have on following: K3.03 Systems with D.C. components (i.e. valves, motors, solenoids, etc.) **RO Value:** 3.4 **SRO Value:** 3.8 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q5 263000 K3.03

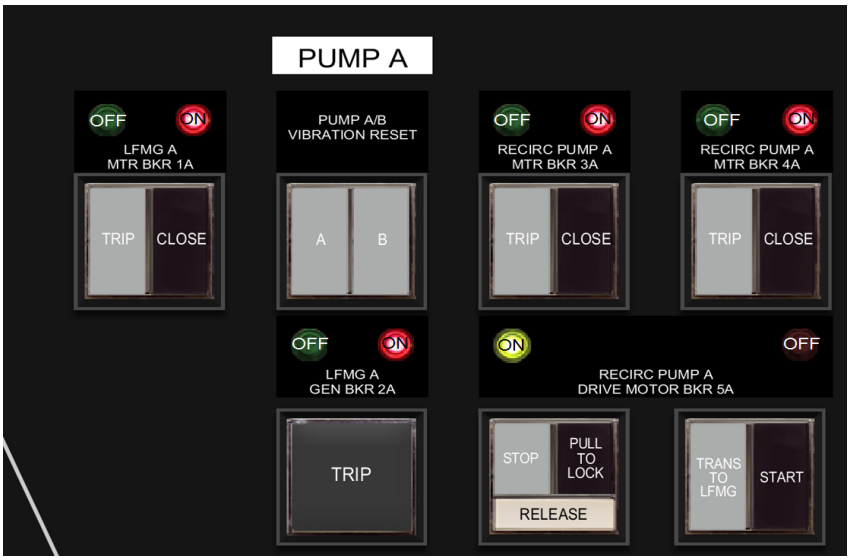
6 **ID: 1103811** **Points: 1.00**

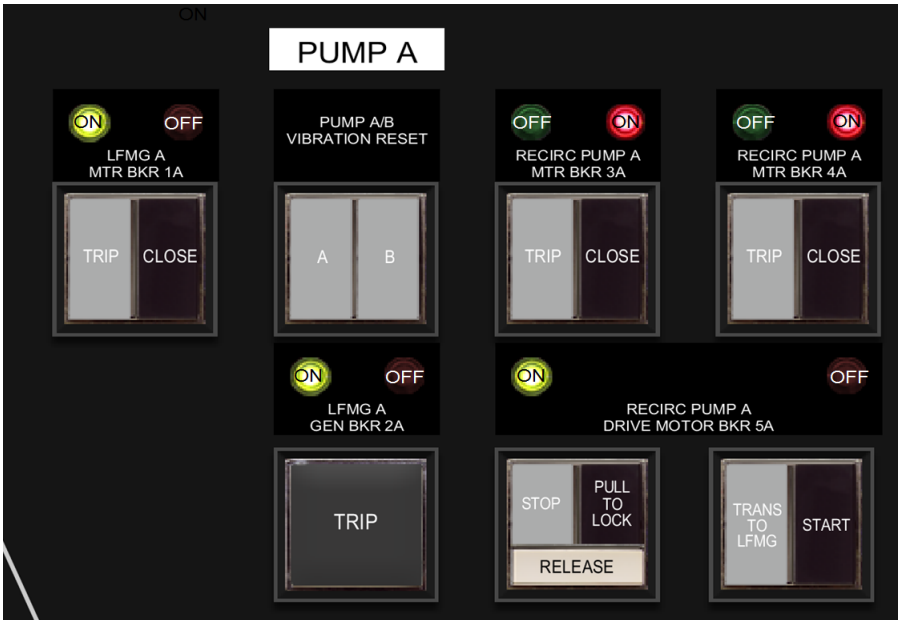
The plant is operating at rated thermal power with CPS 9534.01 ATWS Reactor Vessel Water Level B21-N400A Channel Functional in progress.

IMD reports that the Master Trip Unit for ATWS RPV Level Transmitter B21-N400A is failed and will NOT provide a trip signal to the Alternate Rod Insertion / Recirc Pump Trip (ARI/RPT) System 1 (shown in the graphic below).

(1) Given these conditions, which of the following signals will cause a trip of the Alternate Rod Insertion (ARI) logic?

(2) If the signals identified in (1) are received, which of the following graphics show the expected indications for the RR 'A' Pump Breakers?

Graphic 1	

Graphic 2	

A. (1) RPV LVL LOW CH 'E' AND RPV LVL LOW CH 'F'
(2) Graphic 1

B. (1) RPV LVL LOW CH 'E' AND RPV LVL LOW CH 'F'
(2) Graphic 2

C. (1) RPV PRESS HI CH 'A' AND RPV PRESS HI CH 'E'
(2) Graphic 1

D. (1) RPV PRESS HI CH 'A' AND RPV PRESS HI CH 'E'
(2) Graphic 2

Answer: D

Answer Explanation

D is correct - per 5008-1K ARI System 1 Initiated, ARI system 1 is initiated when either of the following conditions exist:

1B21-N701A & 1B21-N701E both tripped (1127 psig)
1B21-N700A & 1B21-N700E both tripped (-45.5")

If either condition 1 or 2 above exists, RR LFMG breakers 1A and 2A trip open, and RR Pump breaker 5A trips open, causing RR Pump 'A' to trip off which is depicted in graphic #2.

A is incorrect but plausible if the examinee incorrectly recalls the signals that will result in an ARI logic trip (2 out of 2 on high pressure or low level per system) and believes that the logic is actuated on a trip of a level channel in ATWS System 1 and 2 (channels E and F respectively), and also incorrectly believes that RR Pump 'A' will transfer to slow speed (LFMG breakers 1A and 2A closed). The examinee may select this response if he/she confuses an ARI trip of the RR Pumps with an End of Cycle Recirc Pump Trip (EOC/RPT) of the RR Pumps which does cause the RR Pumps to downshift to slow in the event of a Turbine Trip.

B is incorrect but plausible if the examinee incorrectly recalls the signals that will result in an ARI logic trip (2 out of 2 on high pressure or low level per system) and believes that the logic is actuated on a trip of a level channel in ATWS System 1 and 2 (channels E and F respectively).

C is incorrect but plausible if the examinee correctly recalls that ARI logic is 2 out of 2 on high pressure or low level (per system), but believes that RR Pump 'A' will transfer to slow speed (LFMG breakers 1A and 2A closed). The examinee may select this response if he/she confuses an ARI trip of the RR Pumps with an End of Cycle Recirc Pump Trip (EOC/RPT) of the RR Pumps which does cause the RR Pumps to downshift to slow in the event of a Turbine Trip.

KA Justification - this question meets the KA because the examinee has to evaluate how the failure of an ATWS/ARI transmitter in the RPS system will affect the Reactor Recirculation system to answer the question.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to evaluate the indications provided in the stem, and then determine the expected impact on RR Pump breakers with a failed trip system.

Question 6 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1103811
User-Defined ID:	CL-ILT-992401
Cross Reference Number:	
Topic:	The plant is operating at rated thermal power with CPS 9534.01 ATWS Reactor Vessel Water Level B21
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	5008.01 (1K) Rev. 27
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO)
KA Data	
KA Number / System Name: 212000 Reactor Protection System **Category / KA Statement:** K3. Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on following: K3.11 Recirculation system **RO Value:** 3.0 **SRO Value:** 3.3 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q6 212000 K3.11

7 **ID: 1097893** **Points: 1.00**

If initial reactor coolant temperature is 234°F and the coolant heatup rate is 7° per minute, how long will it take to reach the RHR Shutdown Cooling high pressure isolation interlock setpoint?

The high pressure isolation will occur within _____ minutes.

A. 9 to 11

B. 14 to 16

C. 17 to 19

D. 32 to 34

Answer: B

Answer Explanation

B is correct - Per CPS 4001.02C001 Automatic Isolation Checklist, the Group 3 RHR S/D Cooling isolation occurs at 104 psig (Condition X). Per CPS 4003.01F003 Saturated Temperature/Pressure Correlation, the saturation temperature for 105 psig is 341°F. At a heatup rate of 7° per minute, the high pressure isolation will occur in ~15 minutes. (341 - 234) / 7 = 15.28 minutes.

A is incorrect but plausible if the examinee uses 60 psig as the Group 3 isolation setpoint. Per CPS 5063-1A, 60 psig is the low pressure isolation setpoint for RCIC. If the examinee uses 60 psig (307°F), it will take ~ 10 minutes to reach 60 psig. (307 - 234) / 7 = 10.43 minutes.

C is incorrect but plausible if the examinee uses 125 psig as the Group 3 isolation setpoint. Per CPS 5067-4A, 125 psig is the RHR 'A' Discharge Pressure Permissive for ADS. If the examinee uses 125 psig (353°F), it will take ~ 17 minutes to reach 125 psig. (353 - 234) / 7 = 17.0 minutes.

D is incorrect but plausible if the examinee uses 472 psig as the Group 3 isolation setpoint. Per CPS 3312.01 step 8.1.2.4, 472 psig is the RHR LPCI Injection Valve Open Permissive. If the examinee uses 472 psig (465°F), it will take ~ 33 minutes to reach 472 psig. (465 - 234) / 7 = 33.0 minutes.

KA Justification - this question meets the KA because the examinee has to demonstrate knowledge of the RHR SDC Cut-In Permissive Pressure / Isolation - High setpoint to answer this question. Specifically, the examinee has to determine the saturation temperature corresponding to the high pressure isolation setpoint, and then determine how long it will take to reach this value given an initial reactor coolant temperature and the heatup rate.

Cog Level Justification - this is a high cog question written at the application level. The examinee has to calculate the time that it takes to reach a high pressure isolation setpoint given reactor coolant temperature and the heatup rate.

Question 7 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097893
User-Defined ID:	CL-ILT-1097893
Cross Reference Number:	
Topic:	If initial reactor coolant temperature is 234?F and the coolant heatup rate is 7? per minute, how
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4001.02C001 Rev. 15e • CPS 4003.01F003 Rev. 0 • CPS 5063.01 (1A) Rev. 29a • CPS 5067.04 (4A) Rev. 31 • CPS 3312.01 Rev. 45b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 4003.01F003
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4001.02C001
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK / SPR)
KA Data	
KA Number / System Name: 205000 Shutdown Cooling System (RHR Shutdown Cooling Mode) **Category / KA Statement:** K4. Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: K4.02 High pressure isolation: Plant-Specific **RO Value:** 3.7 **SRO Value:** 3.8 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q7 205000 K4.02

8 **ID: 1097375** **Points: 1.00**

- The plant is S/D with ALL Main Steam Line Inboard and Outboard MSIVs OPEN.
- Division 3 is in Sensor Bypass for IMD maintenance.
- During the performance of the maintenance the IMD technician asks you to arm and depress the Division 3 CRVICS pushbutton in accordance with the work order job steps.

What will be the effect of this action?

It will deenergize ____(1)_____ solenoid(s) on the _____(2)_____ MSIV(s).

A. (1) ONLY the B
(2) inboard

B. (1) the A AND B
(2) inboard

C. (1) ONLY the B
(2) inboard AND outboard

D. (1) neither
(2) inboard OR outboard

Answer: A

Answer Explanation

A is correct: Per CPS 4001.02 AUTOMATIC ISOLATION and N-CL-OPS-223002 CONTAINMENT AND REACTOR VESSEL ISOLATION CONTROL SYSTEM (CRVICS), Division 3 containment isolation pushbutton actuates the Division 3 Group 1 logic, which de-energizes the inboard MSIV B solenoids.

B is incorrect but plausible if the candidate fails to recall that the Division 2 containment isolation pushbutton de-energizes the inboard MSIV A solenoids, not Division 3.

C is incorrect but plausible if the candidate fails to recall that the Division 4 containment isolation pushbutton de-energizes the outboard MSIV B solenoids, not Division 3.

D is incorrect but plausible if the candidate incorrectly believes that the CRVICS pushbutton will not perform its function with the division in Sensor Bypass. The inboard MSIV B solenoids will still de-energize.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of PCIS/Nuclear Steam Supply Shutoff design feature(s) and/or interlocks which provide for redundancy (2 solenoids per MSIV, both of which must be deenergized to close the MSIV). In particular, the candidate must recall the four divisions of Group 1 (Main Steam Lines & Drains) isolation logic and the interrelationship to MSIV solenoids.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the four divisions of Group 1 (Main Steam Lines & Drains) isolation logic and how the MSIVs are affected.

Question 8 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097375
User-Defined ID:	CL-ILT-1097375
Cross Reference Number:	
Topic:	The plant is S/D with ALL Main Steam Line Inboard and Outboard MSIVs OPEN. Division 3 is in Sensor
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4001.02 Rev. 17a N-CL-OPS-223002 Rev. 03
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank CL-LC-0842
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Improved stem, distracters and answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4001.02 N-CL-OPS-223002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-I)
KA Data	
KA Number / System Name: 223002 Primary Containment Isolation System / Nuclear Steam Supply Shut-Off **Category / KA Statement:** K4. Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: K4.01 Redundancy **RO Value:** 3.0 **SRO Value:** 3.2 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q8 223002 K4.01

9 **ID: 1103768** **Points: 1.00**

Plant conditions occurred as follows:

- A plant heatup and pressurization is in progress.
- Service Air Compressor #0 (0SA01C) is in service.
- Service Air Compressor #1 (1SA01C) is in standby.
- Service Air Dryers #0 (0SA01D) and #1 (1SA01D) are in service.

Annunciator 5041-3B, TROUBLE INSTRUMENT AIR DRYER 0SA02J, has just alarmed. An Equipment Operator (EO) is dispatched to investigate.

- The EO reports that the only alarm light lit on 0SA02J is an After Filter Hi dP alarm.
- NO additional operator actions have yet been taken.

Which ONE of the following identifies the response of the #0 SA Dryer Bypass Valve? What actions are required?

A. #0 Dryer bypass OPENS; Place the #2 Dryer in service and isolate the #0 Dryer ONLY.

B. #0 Dryer bypass remains SHUT; Place the #2 Dryer in service and isolate the #0 Dryer ONLY.

C. #0 Dryer bypass OPENS; Place the #2 Compressor and #2 Dryer in service and secure/isolate the #0 Compressor and #0 Dryer.

D. #0 Dryer bypass remains SHUT; Place the #2 Compressor and #2 Dryer in service and secure/isolate the #0 Compressor and #0 Dryer.

Answer: B

Answer Explanation

B is correct: Per CPS 5041.03 ALARM PANEL 5041 ANNUNCIATORS - ROW 3, MCR annunciator 5041-3B TROUBLE INSTRUMENT AIR DRYER 0SA02J is brought in by multiple devices alarming the local panel 0SA02J. They are:

- Dryer Chamber A & B Press (55 psig)
- Dryer Outlet Low Press (70 psig)
- Pre-Filter Hi d/p (10 psig)
- After Filter Hi d/p (10 psig)
- Humidity Sensor - relative (3%)

The ONLY Automatic Action that occurs in conjunction with this annunciator is that the Dryer Bypass valve OPENS if Dryer outlet pressure falls to 70 psig. Based on the conditions presented in the stem, this condition is NOT met and the Dryer Bypass valve does NOT reposition.

The applicable Operator Actions directed by the annunciator procedure are as follows:

If the SA Dryer has trouble due to switching failure, low outlet pressure, high prefilter/after filter d/p, then:
a) Place the spare SA dryer in service.
b) Isolate the affected SA dryer

A is incorrect but plausible if the candidate fails to understand that the 5041-3B Trouble annunciator can alarm from multiple devices and incorrectly believes that any time the annunciator alarms (i.e. for After Filter Hi d/p), the #0 Dryer bypass valve OPENS (instead of on Dryer outlet low pressure ONLY) while recognizing that the correct operator actions are to place the #2 Dryer in service and then isolate the #0 Dryer.

C is incorrect but plausible if the candidate fails to understand that the 5041-3B Trouble annunciator can alarm from multiple devices and incorrectly believes that any time the annunciator alarms (i.e. for After Filter Hi d/p), the #0 Dryer bypass valve OPENS (instead of on Dryer outlet low pressure ONLY). Additionally, the candidate would incorrectly believe that each service air dryer is connected in series to its respective service air compressor and therefore they would be placed into service or removed from service as a pair (i.e.#0 Compressor/#0 Dryer, #1 Compressor/#1 Dryer, etc.).

D is incorrect but plausible if the candidate understands that based on plant conditions, the #0 Dryer bypass remains SHUT but incorrectly believes that each service air dryer is connected in series to its respective service air compressor and therefore they would be placed into service or removed form service as a pair (i.e. #0 Compressor/#0 Dryer, #1 Compressor/#1 Dryer, etc.).

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the operational implications of air filter hi differential pressure conditions as they apply to Instrument Air. In this case, an applicable malfunction is presented and the candidate must recognize the necessary operator actions to mitigate the malfunction.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the automatic response of the Service Air Dryers to an alarm.

Question 9 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103768
User-Defined ID:	CL-ILT-1103768
Cross Reference Number:	
Topic:	Plant conditions occurred as follows: A plant heatup and pressurization is in progress. Service
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5041.03 Rev. 26 N-CL-OPS-300000 Rev. 002
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5041.03 Rev. 26 N-CL-OPS-300000 Rev. 002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Lower (1-l)
KA Data	
KA Number / System Name: 300000 Instrument Air System **Category / KA Statement:** K5. Knowledge of the operational implications of the following concepts as they apply to the INSTRUMENT AIR SYSTEM: K5.13 Filters **RO Value:** 2.9 **SRO Value:** 2.9 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q9 300000 K5.13

10 **ID: 1103686** **Points: 1.00**

A Station Blackout (SBO) has occurred.

Plant conditions are as follows:

- DC Load Shedding is complete.
- Reactor Core Isolation Cooling (RCIC) was manually started and is injecting to the RPV with suction from the Suppression Pool.
- RCIC Gland Seal Air Compressor failed to start.

Five (5) minutes later:

- Annunciator 5063-7C, RCIC EQUIP AREA TEMP HIGH is in alarm.
- RCIC room temperature is 198°F and rising slowly.

Which ONE of the following describes RCIC valve response?

A. No valves reposition.

B. RCIC Steam Line Inboard Isol Valve (1E51-F063) closes.

C. RCIC Pump Suc From Supp Pool Valve (1E51-F031) closes.

D. RCIC Exh Vac BKR Outboard Isol Valve (1E51-F077) closes.

Answer: C

Answer Explanation

C is correct: Per CPS 4001.02C001 AUTOMATIC ISOLATION CHECKLIST and based on conditions presented in the stem, a valid Group 5 & 6 automatic isolation signal on RCIC Room Ambient Temp has been received. Per CPS 3310.01E001 REACTOR CORE ISOLATION COOLING ELECTRICAL LINEUP

- 1E51-F031 is energized from DC MCC 1A
- 1E51-F063 is powered from AB MCC 1B3
- 1E51-F077 is powered from AB MCC 1A3

Therefore, RCIC Pump Suc From Supp Pool Valve (1E51-F031) will close on a valid Group 6 isolation signal.

A is incorrect but plausible if the candidate incorrectly believes that 1E51-F031, F063 and F077 were all energized from AC sources or that DC Load Shedding would cause power for the 1E51-F031 to be interrupted. Therefore, even with a valid automatic isolation signal none of the listed valves would reposition.

B is incorrect but plausible if the candidate incorrectly believes that the RCIC Steam Line Inboard Isol Valve (1E51-F063) is energized from a DC source and therefore the 1E51-F063 could close on a valid Group 5 isolation signal.

D is incorrect but plausible if the candidate incorrectly believes that the RCIC Exh Vac BKR Outboard Isol Valve (1E51-F077) is energized from a DC source and therefore the 1E51-F077 could close on a valid Group 5 isolation signal.

KA Justification - this question meets the KA because the candidate must apply knowledge of electrical power supplies to the specific RCIC Motor Operated Valves (MOVs) listed in the stem to determine the correct response.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to recognize the interaction between the Containment and Reactor Vessel Isolation Control System (CRVICS) and Reactor Core Isolating Cooling (RCIC) System including consequences and implications. Specifically, the candidate must recognize an automatic isolation setpoint has been exceeded causing a valid Group 5 & 6 isolation signal to be generated and which RCIC system valves are affected. Additionally, the candidate must recognize that system response is not normal due to the Loss of AC.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 10 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	4.00
System ID:	1103686
User-Defined ID:	CL-ILT-1103686
Cross Reference Number:	
Topic:	A Station Blackout (SBO) has occurred. Plant conditions are as follows: DC Load Shedding is comp
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

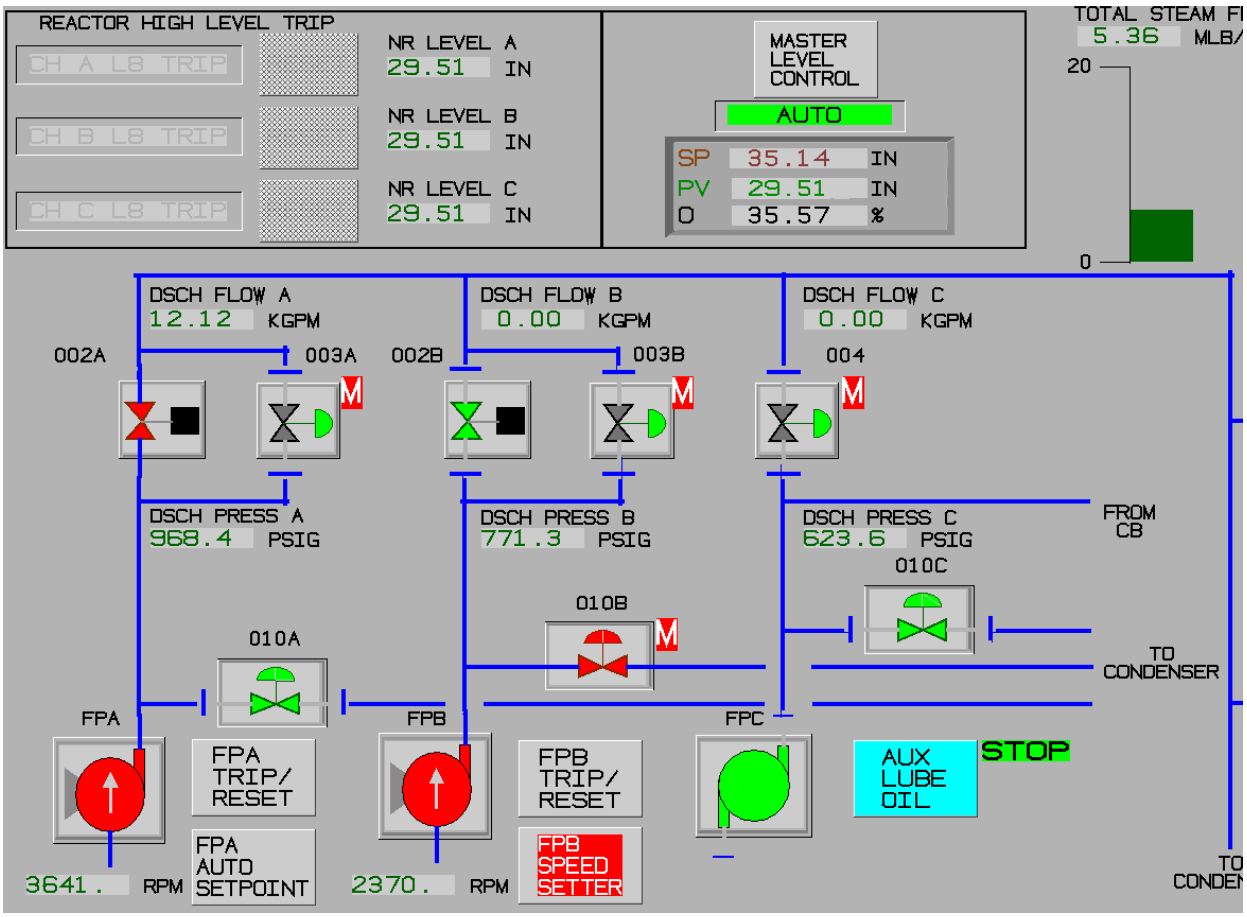
General Data	
Technical Reference with Revision Number:	CPS 3310.01 Rev. 29 CPS 4001.02C001 Rev. 15e
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank CL-BILT-0016
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Replaced one distractor. Improved distracter explanations.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3310.01 Rev. 29 CPS 4001.02C001 Rev. 15e
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 217000 Reactor Core Isolation Cooling System (RCIC) **Category / KA Statement:** K2. Knowledge of electrical power supplies to the following: K2.01 Motor operated valves **RO Value:** 2.8 **SRO Value:** 2.8 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q10 217000 K2.01

11 **ID: 1097894** **Points: 1.00**

The plant was operating at power with the Digital Feedwater System (DFW) in the configuration shown below.



If a manual scram is required, which of the following DFW components is controlling RPV water level post SCRAM?

A. 'A' TDRFP via 1FW002A

B. 'A' TDRFP via 1FW003A

C. 'B' TDRFP via 1FW002B

D. 'B' TDRFP via 1FW003B

Answer: B

Answer Explanation

B is correct: The graphic in the question stem is showing the DFW system with the:

- 'A' TDRFP in automatic on the Master Level Controller automatically maintaining RPV water level
- 'B' TDRFP in rolling standby at 2370 RPM

- MDRFP in Stop Lock per CPS 3103.01 section 8.1.8 MDRFP Shutdown

With this configuration, the DFW logic will respond to a scram signal per CPS 3103.01 Feedwater (FW) Appendix G DFW Automatic Scram Sequencing #4 (DFW Auto Scram Actions with 1TDRFP feeding and MDRFP unavailable). Per Appendix G, the running TDRFP will recover level and once level reaches 0 inches WR and rising, the feeding TDRFP A(B) will go to zero speed temporarily, 1FW002A(B) will close, 1FW010A(B) will fully open and 1FW003A(B) will reject to AUTO controlling reactor water level at 20 inches NR setpoint. TDRFP A(B) speeds back up to 2600 RPM.

A is incorrect but plausible if the examinee fails to recall that following the scram, 1FW003A will reject to auto to control RPV water level and incorrectly determines that RPV level will be maintained by varying TDRFP speed through 1FW002A which is the normal configuration.

C is incorrect but plausible if the examinee incorrectly interprets the indications on the DFW graphic and/or incorrectly recalls the DFW system logic and then determines that the final configuration will be TDRFP 'B' controlling RPV level in automatic on the MLC via 1FW002B.

D is incorrect but plausible if the examinee incorrectly inteprets the indications on the DFW graphic then determines that the final configuration will be the TDRFP 'B' controlling RPV level via 1FW003B in automatic on the MLC.

KA Justification - this question meets the KA because the examinee has to demonstrate the ability to monitor automatic operations of the DFW system to answer the question.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the DFW system graphic indicators provided in the stem, and then determine how DFW will respond to a scram based on the analysis.

Question 11 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097894
User-Defined ID:	CL-ILT-1097894
Cross Reference Number:	
Topic:	The plant was operating at power with the Digital Feedwater System (DFW) in the configuration show
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3103.01 Rev. 29d
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3103.01 Appendix G
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 259002 Reactor Water Level Control System **Category / KA Statement:** A4. Ability to manually operate and/or monitor in the control room: A4.02 All individual component controllers in the automatic mode **RO Value:** 3.7 **SRO Value:** 3.6 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q11 259002 A4.02

12 **ID: 1103745** **Points: 1.00**

The plant is operating at rated thermal power with the following conditions:

- Component Cooling Water (CCW) Header Pressure is operating at the low end of the normal pressure range in accordance with CPS 3203.01 Component Cooling Water (CC).
- Plant Service Water (WS) Header Pressure is being maintained at the high end of the normal pressure range in accordance with CPS 3212.01 Plant Service Water (WS).
- A 100 gpm tube leak occurs in the in-service Component Cooling Water (CCW) heat exchanger.
- The leaking heat exchanger CANNOT be isolated.

Which of the following is an operational consequence of this situation?

A. Cavitation of the CCW pumps.

B. Plant Service Water pump runout.

C. Potential radioactive discharge to the environment.

D. Increased Control Building Equipment Drain Sump Pump run times.

Answer: D

Answer Explanation

D is correct: The CCW system is cooled by the WS system. WS flows through the tubes of the CCW system heat exchangers.

- CPS 3212.01 PLANT SERVICE WATER (WS) section 8.1.1, system Startup requires WS header pressure to be maintained between 100 - 130 psig during normal system operation.
- CPS 3203.01 COMPONENT COOLING WATER (CC) section 8.1.10, adjusting CCW Header Pressure requires CCW header pressure to be maintained above 90 psig.

With WS system pressure (130 psig) higher than CCW system pressure (90 psig), WS will flow into the CCW system if a tube leak develops in the associated heat exchanger. Per CPS 5040-2B, WS will leak into CCW should a CCW HX tube leak occur. This will cause CCW Expansion Tank level to rise eventually causing the CCW Expansion Tank relief to lift which relieves to the Turb Rad Control & Diesel Gen Bldg Equip Drain (TE) system.

A is incorrect but plausible if the candidate incorrectly believes that with WS system pressure lower than CCW system pressure CCW will flow into the WS system and CCW expansion tank level will lower when in fact the CCW expansion tank level will rise as WS leaks into CCW, thus creating more NPSH for the CCW pumps.

B is incorrect but plausible if the candidate recognizes that WS system pressure is higher than CCW system pressure but fails to recognize the relatively small magnitude of the leak. Per N-CL-OPS-400005 PLANT SERVICE WATER, each WS pump has a capacity of 22,000 gpm. Two of three pumps are required for normal operation. This assures the running WS pumps will not operate at runout condition.

C is incorrect but plausible if the candidate incorrectly believes that with WS system pressure lower than CCW system pressure CCW will flow into the WS system resulting in a potential rad discharge to the environment and therefore CCW becomes a potential source of contamination to the WS system when in fact WS leaks into CCW thereby alleviating the threat of CCW contaminating WS.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the effect a loss or malfunction of a CCW heat exchanger has on the CCW system. Specifically, the candidate must identify the correct operational consequence of a CCW heat exchanger tube leak.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to recognize the interaction between the CCW and WS systems and demonstrate an understanding of the consequences/implications of the scenario presented in the stem.

Question 12 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103745
User-Defined ID:	CL-ILT-1103745
Cross Reference Number:	
Topic:	The plant is operating at rated thermal power with the following conditions: Component Cooling Wa
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5040.02 Rev. 26c CPS 3203.01 Rev. 34a CPS 3212.01 Rev. 31b N-CL-OPS-400005 Rev. 004
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank CL-LC-1094
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Improved stem, replaced one distractor, improved answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5040.02 Rev. 26c CPS 3203.01 Rev. 34a CPS 3212.01 Rev. 31b N-CL-OPS-400005 Rev. 004
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	

KA Number / System Name: 400000 Component Cooling Water System (CCWS)
Category / KA Statement: K6. Knowledge of the effect that a loss or malfunction of the following will have on the CCWS: K6.06 Heat exchangers and condensers

RO Value: 2.9
SRO Value: 2.9

Tier: 2
RO Group: 1
SRO Group: 1

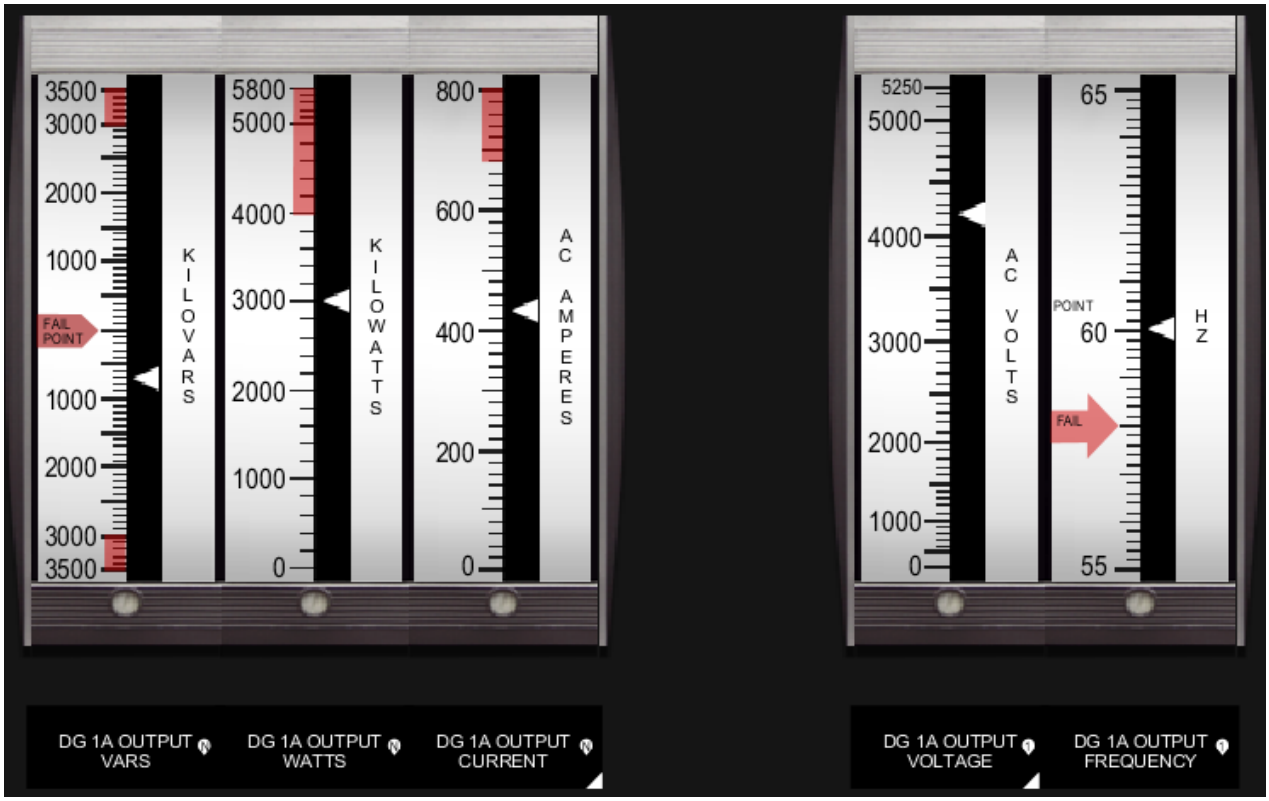
10CFR55-41 (RO) Data: 41.7
10CFR55-43 (SRO) Data: N/A

Associated objective(s):

RO Q12 400000 K6.06

13 **ID: 1103804** **Points: 1.00**

The 1A DG is running in parallel with RAT B.



As the 1A DG Governor switch is momentarily taken to the "Lower" position, which direction will the needle on each meter INITIALLY move?

	WATTS	CURRENT
A.	↓	↔
B.	↓	↓
C.	↔	↓
D.	↔	↔

Answer: B

Answer Explanation

B is correct. Per CPS 3506.01P001 DIVISION 1 DIESEL GENERATOR OPERATIONS, as the DG 1A governor switch is momentarily taken to the "Lower" position, LESS real load is assumed by the DG, causing real load (WATTS) to go down. Amperes consumed by the load (CURRENT) are proportional to WATTS and go down as well.

A is incorrect but plausible if the candidate recognizes that momentarily taking the DG 1A governor switch to the "Lower" position will cause real load (WATTS) to go down but incorrectly believes that since VARS are unaffected and since CURRENT is proportional to VARS ONLY and therefore CURRENT will remain unchanged.

C is incorrect but plausible if the candidate incorrectly believes that momentarily taking the DG 1A governor switch to the "Lower" position will cause reactive load (VARS) to be affected in the same manner as lowering on the DG 1A voltage regulator switch. Since DG 1A is currently operating with a LEADING power factor (pf) represented by negative VARS, the candidate would incorrectly believe that taking the DG 1A governor switch to the "Lower" position would cause VARS to go up (move closer to zero). Incorrectly believing that CURRENT is proportional to VARS would lead the candidate to believe that CURRENT would go down.

D is incorrect but plausible if the candidate incorrectly believes that momentarily taking the DG 1A governor switch to the "Lower" position will cause reactive load (VARS) to be affected in the same manner as lowering on the DG 1A voltage regulator switch, but that current is unaffected.

KA Justification - this question meets the KA because the candidate must demonstrate the ability to predict changes in parameters (current and watts) associated with operating the EDG controls. In particular, the candidate must correctly predict primary EDG parameters based on manipulation of the DG governor switch in the lower direction from the MCR. Temperature response was excluded from the question because it is unaffected by the evolution and is not monitored in the MCR.

Cog Level Justification - this is a high cog question written at the application/analysis level. The examinee has to analyze plant conditions presented in the stem, determine EDG status from meter indications and predict an outcome based on the candidate applying knowledge of AC sources operating in parallel.

Question 13 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103804
User-Defined ID:	CL-ILT-1103804
Cross Reference Number:	
Topic:	The 1A DG is running in parallel with RAT B. As the 1A DG Governor switch is momentarily taken
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3506.01P001 Rev. 5 GFES Motors & Generators Rev. 4
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3506.01P001 Rev. 5 GFES Motors & Generators Rev. 4
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO)
KA Data	
KA Number / System Name: 264000 Emergency Generators (Diesel/Jet) **Category / KA Statement:** A1. Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: A1.03 Operating voltages, currents, and temperatures **RO Value:** 2.8 **SRO Value:** 2.9 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q13 264000 A1.03

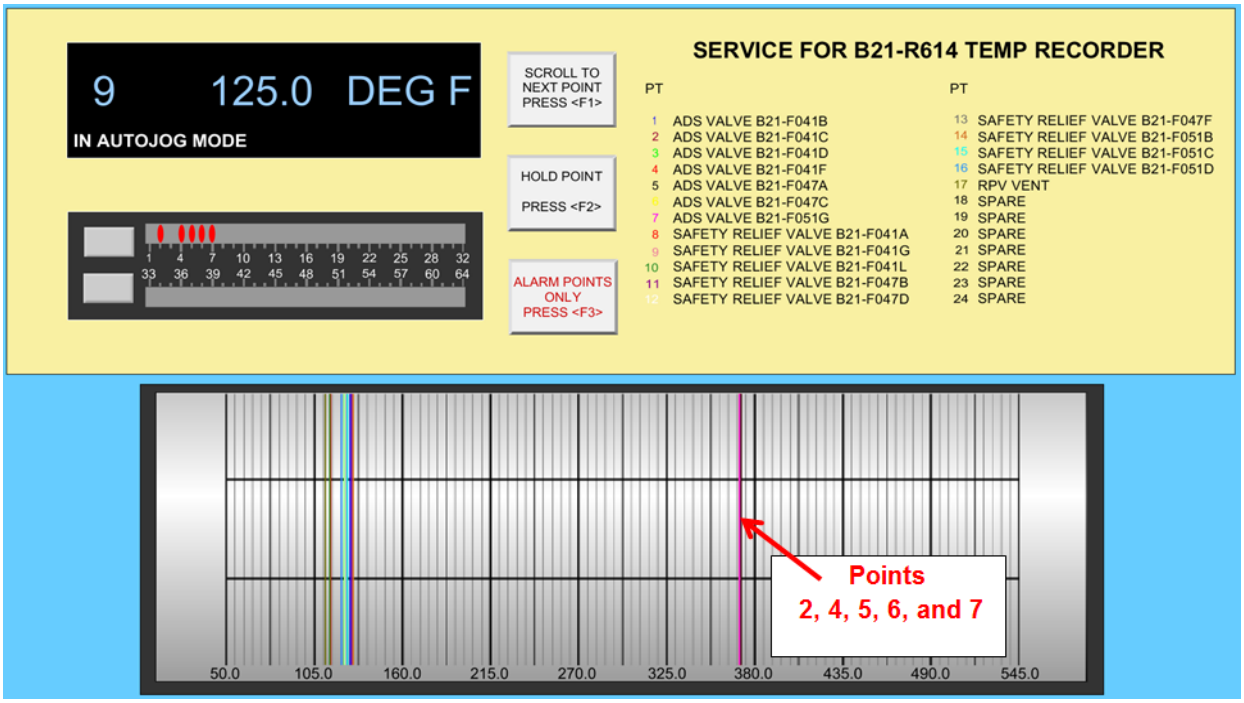
14 **ID: 1098046** **Points: 1.00**

A transient occurred requiring a manual scram to be inserted.

The immediate operator actions for the scram are complete. Shutdown criteria has been verified.

Due to current plant conditions, the CRS has directed you to manually initiate the Automatic Depressurization System (ADS) per EOP-3 Emergency RPV Depressurization.

When verifying SRV tailpipe temperatures on recorder B21-R614, you observe the following:



Per the EOP Technical Bases and given these indications, the number of open SRVs is _____(1)_____ the "Minimum Number of SRVs Required for Emergency Depressurization".

A. 2 less than

B. equal to

C. 3 more than

D. 4 more than

Answer: B

Answer Explanation

B is correct:

Per the EOP Technical Bases page 7-2, if 5 SRVs can be opened (the Minimum Number of SRVs Required for Emergency Depressurization) no further action is required in EOP-3 until the shutdown cooling interlocks clear.

The recorder indications in the question stem show points 2, 4, 5, 6, and 7 for ADS Valves B21-F041C, 41F, 47A, 47C, and 51G at ~ 369°F. Per CPS 4009.01 Inadvertent Opening Safety/Relief Valve, symptom 1.1 states that an SRV actuation is typically > 375°F and a leaking SRV is typically 230°F to 270°F.

Recorder B21-R614 indicates 5 SRVs are open, which is equal to the "Minimum Number of SRVs Required for Emergency Depressurization".

A is incorrect but plausible if the examinee incorrectly recalls that all 7 ADS valves are required to be open to meet the EOP-TB definition of the "Minimum Number of SRVs Required for Emergency Depressurization".

C is incorrect but plausible if the examinee confuses the EOP-2 RPV Flooding requirement for the "Minimum Number of SRVs Required for Decay Heat Removal" (2 SRVs minimum) with the EOP-3 Emergency RPV Depressurization requirement for the "Minimum Number of SRVs Required for Emergency Depressurization" (5 SRVs minimum).

D is incorrect but plausible if the examinee confuses the EOP-2 RPV Flooding Table J requirement for a single SRV to be open with RPV pressure above 1049 psig to ensure core cooling by steam cooling during ATWS conditions with the EOP-3 Emergency RPV Depressurization requirement for the "Minimum Number of SRVs Required for Emergency Depressurization".

KA Justification - this question meets the KA because the examinee has to demonstrate the ability to monitor and evaluate the SRV tail pipe temperature indications on 1B21-R614 to answer the question.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the indications provided on the graphic in the question stem, and then determine if those indications meet the "Minimum Number of SRVs Required for Emergency Depressurization" criteria listed in the EOP Technical Bases document.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 14 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1098046
User-Defined ID:	CL-ILT-1098046
Cross Reference Number:	
Topic:	A transient occurred requiring a manual scram to be inserted. The immediate operator actions fo
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

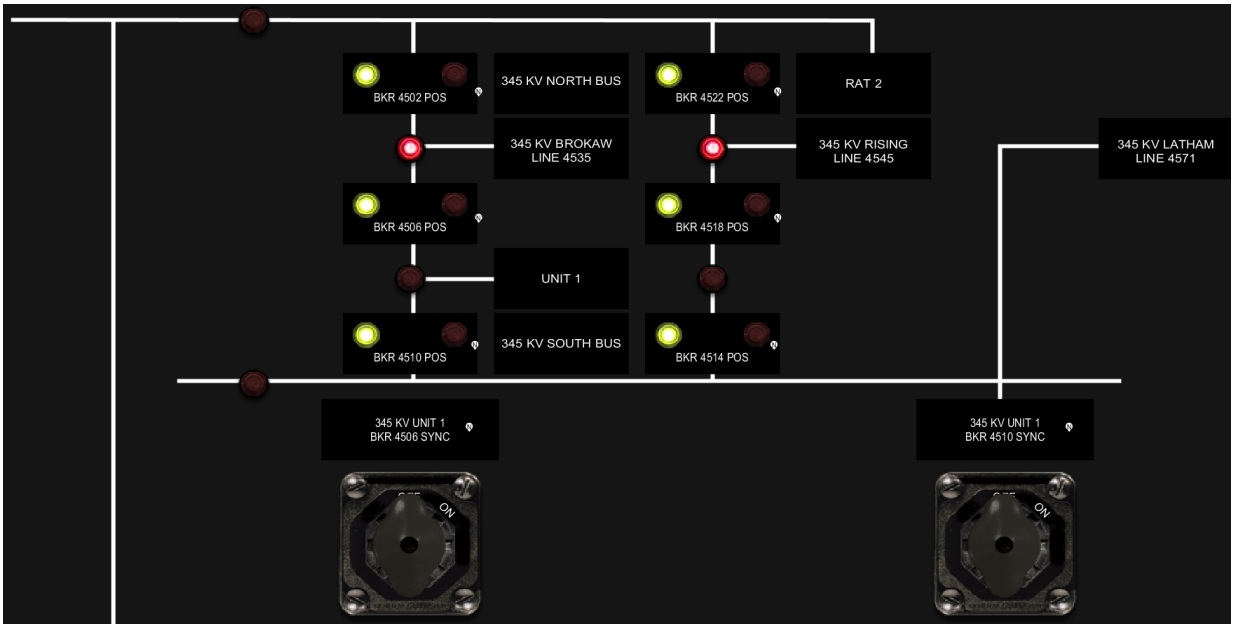
General Data	
Technical Reference with Revision Number:	• EOP-TB Rev. 6 • CPS 4009.01 Rev. 12d
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• EOP-TB • CPS 4009.01
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 218000 Automatic Depressurization System **Category / KA Statement:** A1. Ability to predict and/or monitor changes in parameters associated with operating the AUTOMATIC DEPRESSURIZATION SYSTEM controls including: A1.01 ADS valve tail pipe temperatures **RO Value:** 3.4 **SRO Value:** 3.6 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q14 218000 A1.01

15 **ID: 1097389** **Points: 1.00**

The unit was operating at rated thermal power when multiple annunciators were received in the MCR and the following indications were observed:



Based on these indications, what is the expected status of the Div 1 and Div 2 Diesel Generators? What are the expected power sources to 4160V Bus 1A1 and 1B1?

Div 1 and 2 DGs are _____(1)_____.

4160V Bus 1A1 and 1B1 are energized from _____(2)_____.

A. 1) in standby
2) RAT 'B'

B. 1) in standby
2) the ERAT

C. 1) running unloaded
2) the ERAT

D. 1) running loaded
2) their respective Diesel Generator

Answer: B

Answer Explanation

B is correct:

The graphic in the question stem indicates that 345KV Switchyard North and South Buses have deenergized, resulting in a loss of power to the 3 Reserve Auxiliary Transformers (RAT 'A', 'B', and 'C').

RAT 'B' supplies power to 4160V Bus 1A1, 1B1, and 1C1 via the respective bus normal feed breakers. Per CPS 5060-3C & 5061-3C, if bus voltage reaches a nominal 2870 volts (Level 1 UV - Loss of Voltage), the bus Main Feed Breakers will trip and the bus Reserve Feed Breakers will automatically close if the ERAT source is available.

A is incorrect but plausible if the examinee fails to recall that the power source to RAT 'B' comes from the 345KV Switchyard North Bus and determines that 4160V Bus 1A1 and 1B1 is unaffected by the loss of power.

C is incorrect but plausible if the examinee determines that the Div 1 and Div 2 DGs get a start signal when power to the 4160V Bus 1A1 and 1B1 main feed source is lost. The Div 1 and Div 2 DGs do start on a degraded voltage signal (nominal 4072V for 15 seconds (5060-3D and 5061-3D), but correctly recognizes that 4160V Buses 1A1 and 1B1 should transfer to the ERAT.

D is incorrect but plausible if the examinee incorrectly believes that the conditions in the stem will cause the Div 1 and 2 DGs to auto start and tie onto their respective busses. This would be the expected response for a degraded voltage condition as described above. A loss of voltage will cause 4160V Bus 1A1 and 1B1 to transfer to the ERAT.

KA Justification - this question meets the KA because the examinee has to determine how (or if) the loss of 345KV Switchyard power to the AC Electrical Distribution System affects the Emergency Diesel Generators to answer the question.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the indications in a graphic, and then predict the impact to the Emergency Diesel Generators.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 15 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1097389
User-Defined ID:	CL-ILT-1097389
Cross Reference Number:	
Topic:	The unit was operating at rated thermal power when multiple annunciators were received in the MCR
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5061.03 (3C & 3D) Rev. 30a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank - modelled from CL-LC-9504
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data Table. Added distracter plausibility statements. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO)
KA Data	
KA Number / System Name: 262001 A.C. Electrical Distribution **Category / KA Statement:** K1. Knowledge of the physical connections and/or causeeffect relationships between A.C. ELECTRICAL DISTRIBUTION and the following: K1.01 Emergency generators (diesel/jet) **RO Value:** 3.8 **SRO Value:** 4.3 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.2 to 41.9 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q15 262001 K1.01

16 **ID: 1103885** **Points: 1.00**

Plant conditions are as follows:

- A Loss of Coolant Accident has occurred.
- Drywell pressure is 4.0 psig and rising at 0.1 psig / 10 min.
- Containment pressure is 2.4 psid and rising at 0.05 psid / 20 min.

(1) Based on the conditions above, what SHOULD be the status of the "HI CNMT PRESS" lights below:

(2) What follow up action would be an appropriate mitigating strategy?

A. (1) Lit
(2) Startup Continuous Containment Purge (CCP) in filtered mode.

B. (1) NOT Lit
(2) Startup Continuous Containment Purge (CCP) in filtered mode.

C. (1) Lit
(2) Purge Primary Containment using Standby Gas Treatment (VG).

D. (1) NOT Lit
(2) Purge Primary Containment using Standby Gas Treatment (VG).

Answer: D

Answer Explanation

D is correct: Per EOP-6 PRIMARY CONTAINMENT CONTROL, entered on Drywell pressure above 1.68 psig, states "Hold drywell and containment pressure below 1.68 psig...". This implies that a containment pressure at or above 1.68 psig is "High".

Per N-CL-OPS-261000 STANDBY GAS TREATMENT SYSTEM (SGTS), the High Containment (CNMT) Pressure Interlock WHITE lights are located above the SGTS Train A and Train B DW Purge Isolation Damper 1VG01YA and B handswitches on P801, between the red and green lights for the damper position indication. There are two lights, one on each train mimic. If the lights are OFF it indicates Primary Containment to Secondary Containment differential pressure is less than 2.56 psid.

Per CPS 3319.01 STANDBY GAS TREATMENT (VG), CNMT purge is not available if CNMT pressure is ≥ 2.6 psid. Based on conditions presented in the stem, the SGTS IS available to be used to purge the primary containment.

Per CPS 4001.02 C001 AUTOMATIC ISOLATION CHECKLIST, Group 10 and Group 16 are isolated on a Hi Drywell Signal (1.68 psig). Per CPS 3408.01 CONTAINMENT BUILDING/DRYWELL HVAC (VR, VQ), in order to restart CCP, the Group 10 and Group 16 isolations must be reset. This cannot be done until drywell pressure is < 1.68 psig. Therefore, VR/VQ (and CCP) is not available.

A is incorrect but plausible if the candidate mistakenly believes that the containment pressure (at the current 2.4 psid) is high enough to activate the High Containment (CNMT) Pressure Interlock WHITE lights and thereby preventing the SGTS from being placed in the CNMT Purge mode.

B is incorrect but plausible if the candidate recognizes that the current containment pressure is NOT high enough to activate the High Containment (CNMT) Pressure Interlock WHITE lights but fails to recognize that the due to the locked in high drywell signal and subsequent Group 10 and Group 16 isolations, CCP is unavailable.

C is incorrect but plausible if the candidate mistakenly believes that the containment pressure (at the current 2.4 psid) is high enough to activate the High Containment (CNMT) Pressure Interlock WHITE lights and thereby preventing the SBGT system from being placed in the CNMT Purge mode while failing to recognize that due to the locked in high drywell signal and subsequent Group 10 and Group 16 isolations, CCP is unavailable.

KA Justification - this question meets the KA because the candidate must predict the impact to the SGTS caused by the high containment pressure and based on that prediction use procedures to mitigate the consequences.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to decipher the indications and lights in the stem and then determine mitigating actions based on that analysis.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 16 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103885
User-Defined ID:	CL-ILT-1103885
Cross Reference Number:	
Topic:	Plant conditions are as follows: A Loss of Coolant Accident has occurred. Drywell pressure is 4.0
Num Field 1:	
Num Field 2:	
Text Field:	

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3319.01 Rev. 17 CPS 3408.01 Rev. 18b CPS 4001.02C001 Rev. 15e N-CL-OPS-261000 Rev. 003
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3319.01 Rev. 17 CPS 3408.01 Rev. 18b CPS 4001.02C001 Rev. 15e N-CL-OPS-261000 Rev. 003
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO)

KA Data

KA Number / System Name: 261000 Standby Gas Treatment System
Category / KA Statement: A2. Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM ; and (b) based on those predictions, use procedures to correct, control,
or mitigate the consequences of those abnormal conditions or operations: A2.11 High containment pressure

RO Value: 3.2
SRO Value: 3.3

Tier: 2
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: N/A

Associated objective(s):

RO Q16 261000 A2.11

17 **ID: 1097384** **Points: 1.00**

Which combination of the following parameters verifies Standby Liquid Control (SLC) Injection flow into the Reactor?

1) SLC Squib 'A' and 'B' Continuity Lights lit
2) SLC Storage Tank Level lowering
3) Reactor Power lowering
4) SLC Pump Discharge Pressure slightly ABOVE Reactor Pressure
5) SLC Pump Discharge Pressure > 1400 psig

A. 1, 2, and 3 ONLY.

B. 1, 3, and 5 ONLY.

C. 2, 3, and 5 ONLY.

D. 2, 3, and 4 ONLY.

Answer: D

Answer Explanation

D is correct - per CPS 4411.10 SLC Operations, step 2.1.4, the following indications are used to verify SLC solution is injecting into the RPV:

- SLC Pump Disch Header Press 1C41-R600 is:
- Slightly > RPV pressure. [If not, SLC is not injecting.)
- Is < 1400 psig. [If > 1400 psig, pump relief may be lifting.]
- SLC Strg Tank Level 1C41-R601 lowering
- Reactor power lowering.

A is incorrect but plausible if the examinee incorrectly recalls the function of the SLC Squib Continuity Lights. The Squib Continuity Lights normally extinguish when SLC is initiated. The possibility exists of the Squib Valve indicating continuity after successful firing. Therefore, it is required that the operator verifies proper system operation using CPS No. 4411.10 SLC Operations.

B is incorrect but plausible if the examinee incorrectly recalls the function of the SLC Squib Continuity Lights as discussed above, and also incorrectly recalls that SLC Pump discharge pressure > 1400 psig indicates that SLC is not injecting.

C is incorrect but plausible if the examinee incorrectly recalls that SLC Pump discharge pressure > 1400 psig indicates that SLC is not injecting.

KA Justification - this question meets the KA because the examinee has to identify the SLC parameters in the stem that are used to verify SLC flow into the reactor to answer the question.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall facts from a procedure to answer the question.

Question 17 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097384
User-Defined ID:	CL-ILT-1097384
Cross Reference Number:	
Topic:	Which combination of the following parameters verifies Standby Liquid Control (SLC) Injection flow
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4411.10 Rev. 6a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-6262
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data Table. Added distracter plausibility statements. Added KA and Cog Level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4411.10
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 211000 Standby Liquid Control System **Category / KA Statement:** A3. Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: A3.05 Flow indication: Plant-Specific **RO Value:** 4.1 **SRO Value:** 4.2 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

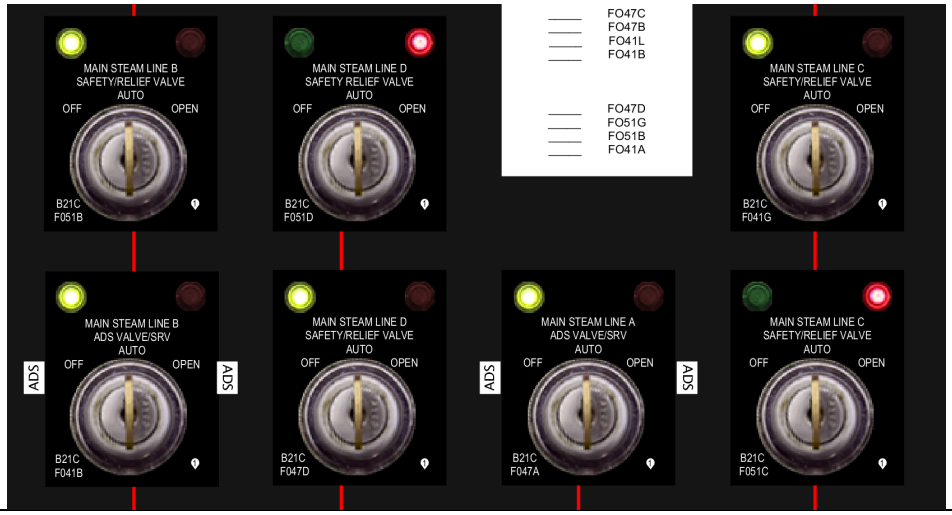
RO Q17 211000 A3.05

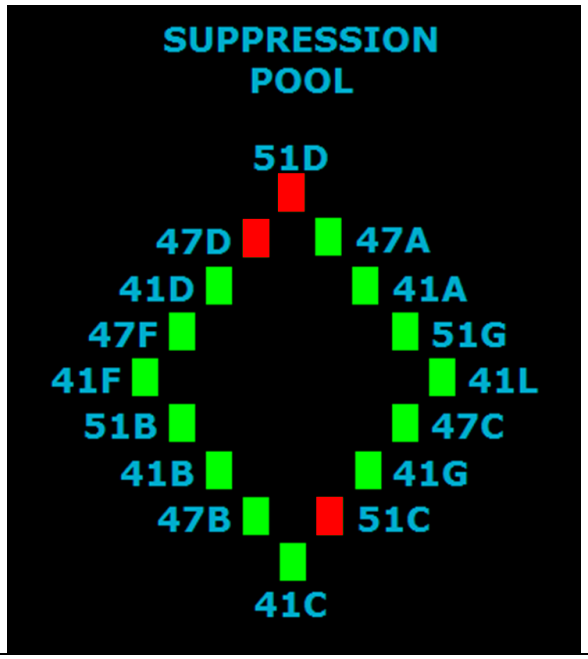
18 **ID: 1103886** **Points: 1.00**

If RPV Pressure is PEAKED at the values shown in the 4 tables below, which scenario would indicate proper operation of the Main Steam Safety Relief Valves?

Scenario 1

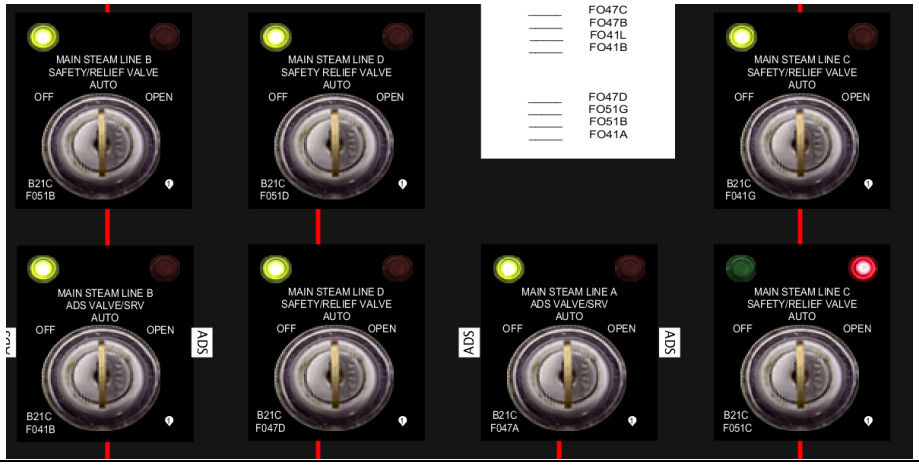
Parameter	Value
RPV Pressure	1110 psig

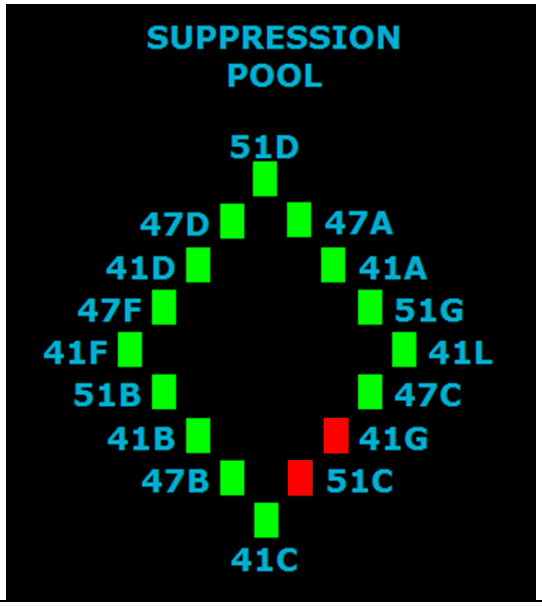




	Parameter	Value
	RPV Pressure	1110 psig

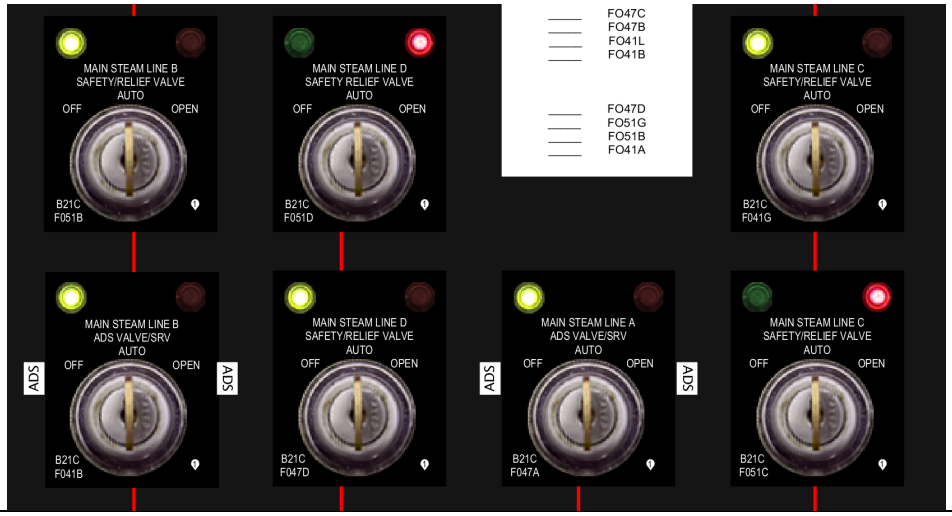
Scenario 2

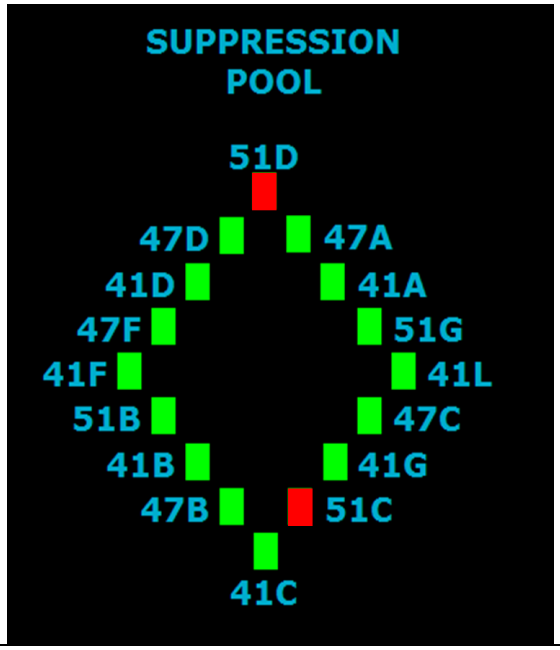




Scenario 3

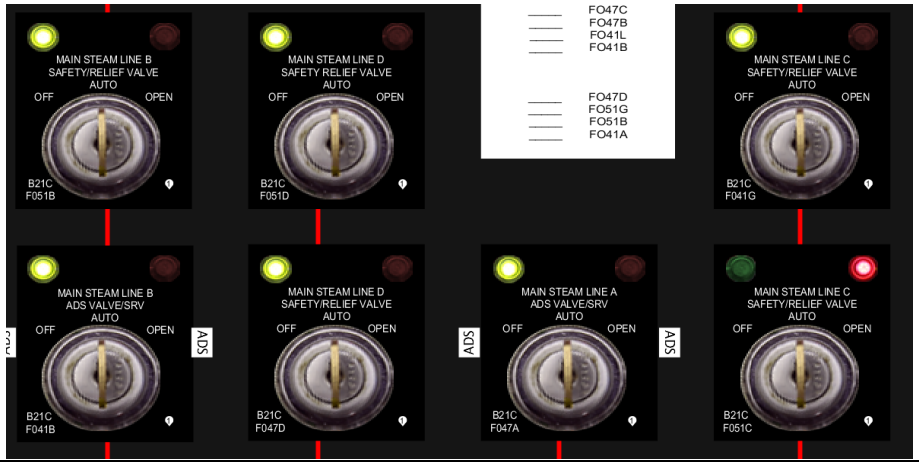
Parameter	Value
RPV Pressure	1090 psig

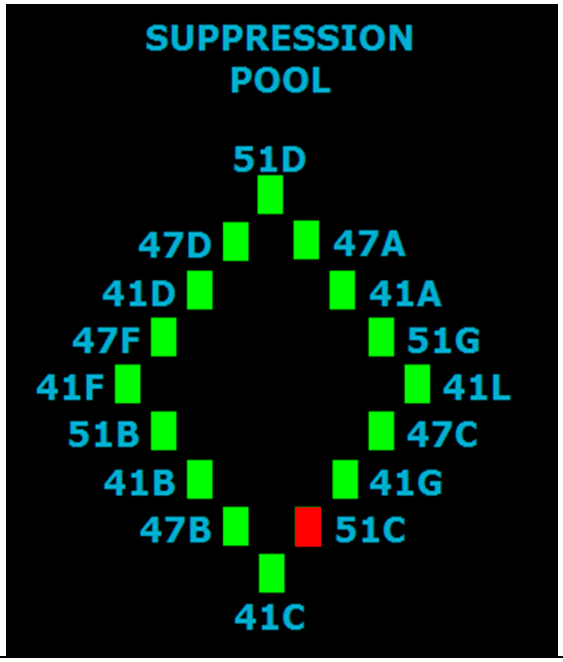




Scenario 4

Parameter	Value
RPV Pressure	1090 psig





A. Scenario 1

B. Scenario 2

C. Scenario 3

D. Scenario 4

Answer: A

Answer Explanation

A is correct - Per CPS 5067.06 (6C) Low-Low Setpt Div 1 Sealed In, the opening setpoints for 1B21-F051D and 1B21-F051C are reset to 1033 and 1073 respectively when reactor pressure reaches 1103 psig. With reactor pressure at 1110 psig (in scenarios 1 and 2), SRV 51D and 51C should be open due to actuation of the low-low set logic.

Per CPS 3101.01 step 2.2.3, the SRV acoustic monitor system is susceptible to "cross talk", whereby an open SRV's flow noise can be picked up by another SRV's acoustic monitor. This could cause the indication to look as if multiple SRV's are open where there is really only the one open.

B is incorrect but plausible if the examinee fails to recall the opening setpoints for the low-low set SRVs and determines that only 1 SRV should be open at 1110 psig, but correctly recognizes acoustic monitors may exhibit cross-talk.

C is incorrect but plausible if the examinee fails to recall the opening setpoints for the low-low set SRVs, and that all SRVs should be closed at 1090 psig (the lowest opening setpoint is 1103 psig). An examinee may select this choice if they incorrectly believe the correct number of SRVs are open, and that the acoustic monitor indications must match SRV solenoid indications to verify proper operation of the SRVs.

D is incorrect but plausible if the examinee fails to recall the opening setpoints for the low-low set SRVs, and that all SRVs should be closed at 1090 psig (the lowest opening setpoint is 1103 psig). An examinee may select this choice if they incorrectly believe the correct number of SRVs are open, and that the acoustic monitor indications must match SRV solenoid indications to verify proper operation of the SRVs.

KA Justification - this question meets the KA because the examinee has to determine the scenario containing the acoustic monitor indications that represents proper operation of the automatic Low-Low Setpoint function of the Main Steam Safety Relief Valves to answer the question.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to analyze 4 scenarios, which include graphic indications, and then determine which graphic represents a condition showing proper operation of a system.

Question 18 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1103886
User-Defined ID:	CL-ILT-1103886
Cross Reference Number:	
Topic:	If RPV Pressure is PEAKED at the values shown in the 4 tables below, which scenario would indicate
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5067.06 (6C) Rev. 30e • CPS 5066.06 (6C) Rev. 25d • CPS 3101.01 Rev. 23b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	5067-6C and 5066 - 6C
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 239002 Safety Relief Valves **Category / KA Statement:** A3. Ability to monitor automatic operations of the RELIEF/SAFETY VALVES including: A3.04 Acoustical monitor noise: Plant-Specific **RO Value:** 3.6 **SRO Value:** 3.7 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

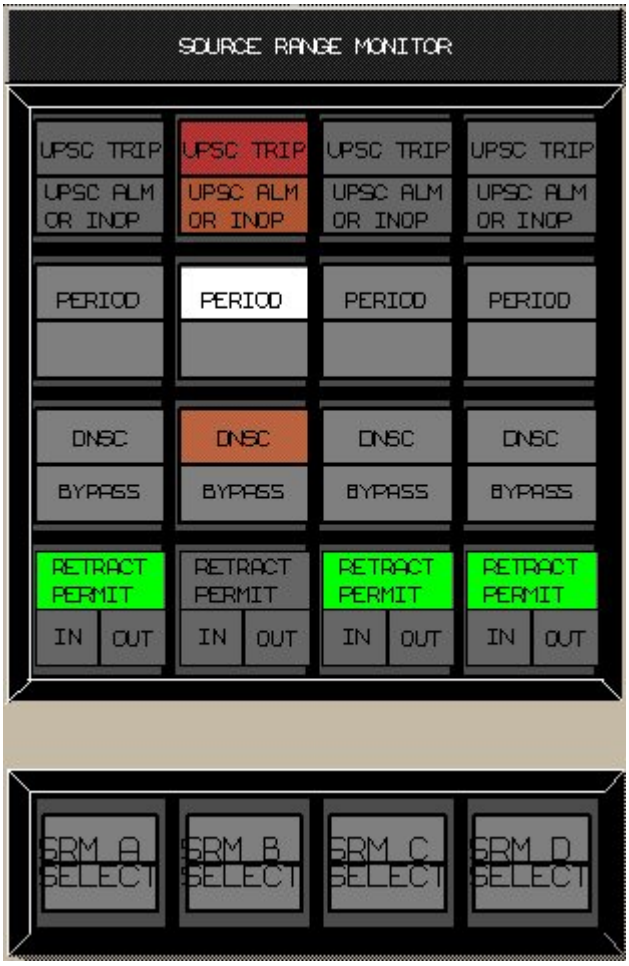
RO Q18 239002 A3.04

19 **ID: 1103766** **Points: 1.00**

A reactor startup is in progress.

Multiple annunciators are received in the Main Control Room (MCR).

As the 'A' Reactor Operator (RO), you note the following indications:



A loss of which of the following would cause these indications?

A. DC MCC 1B Bus (1DC14E).

B. AB MCC 1B1 Bus (1AP75E).

C. Div 2 NSPS Bus (1C71-P001B).

D. 'B' RPS Solenoid Bus (1C71-P011B).

Answer: C

Answer Explanation

C is correct - Per CPS 3509.01C002 Division 2 NSPS Bus (1C71-P001B) Outage, a loss of the Div 2 NSPS Bus will cause SRM 'B' to deenergize and fail in a tripped condition.

A is incorrect but plausible. The candidate may select this response if he/she fails to recognize that even though the Div 2 NSPS Inverter is normally powered from DC MCC 1B, the inverter's static switch will transfer the loads without interruption to the alternate AC supply (CB MCC F2).

B is incorrect but plausible. The candidate may select this response if he/she fails to recognize that AB MCC 1B1 is the alternate AC supply to the Div 4 NSPS Inverter and therefore would have no effect on the Div 2 NSPS Inverter or SRM 'B'.

D is incorrect but plausible. The candidate may select this response if he/she fails to recognize that the 'B' RPS Solenoid Bus powers the Div 2 MSIV and RPS solenoids and therefore would have no effect on the Div 2 NSPS Inverter or SRM 'B'.

KA Justification - this question meets the KA because has to diagnose a failed power source based on the light indications provided in the question stem.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze indications provided in a graphic, and then use knowledge of SRM system power sources to diagnose which power source was lost.

Question 19 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103766
User-Defined ID:	CL-ILT-N11024
Cross Reference Number:	
Topic:	A reactor startup is in progress. Multiple annunciators are received in the Main Control Room (MC
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

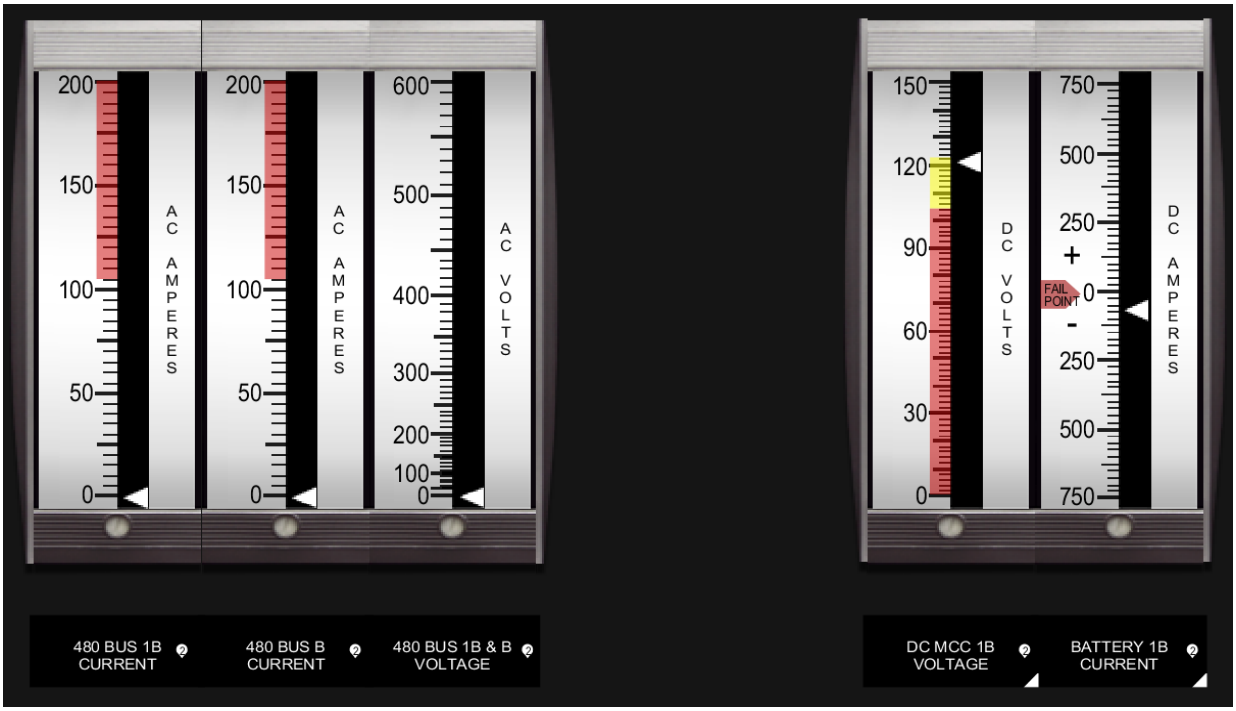
General Data	
Technical Reference with Revision Number:	CPS 3509.01C002 Appendix A Rev. 13a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT 10-1 NRC Exam
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-N11024
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Added KA and Cog Level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3509.01C002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 215004 Source Range Monitor System **Category / KA Statement:** A4. Ability to manually operate and/or monitor in the control room: A4.06 Alarms and lights **RO Value:** 3.2 **SRO Value:** 3.1 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q19 215004 A4.06

20 **ID: 1103919** **Points: 1.00**

Annunciator 5061-1B AUTO TRIP BREAKER (4160V Feeder Breaker) is received in the control room. You note the following indications:



The Div 2 Analog Trip System remains energized because:

A. NSPS Solenoid (RPS) Inverter B continues to receive power from its NORMAL supply.

B. Div 2 NSPS UPS Static Switch (SS) continues to receive power from its NORMAL supply.

C. NSPS Solenoid (RPS) Inverter B has AUTOMATICALLY transferred to and is receiving power from its BACKUP supply.

D. Div 2 NSPS UPS Static Switch (SS) has AUTOMATICALLY transferred to and is receiving power from its ALTERNATE supply.

Answer: B

Answer Explanation

B is correct. The NSPS cabinets located in the Main Control Room (MCR) receive 120 VAC from NSPS UPS Power and 120VAC NSPS Solenoid (RPS) Power. Each NSPS cabinet contains two redundant power supply modules energized by NSPS UPS Power which in turn provide power to the Analog Trip System. The NORMAL supply to the Division 2 NSPS UPS is the Division 2 DC Bus (1DC14E). The ALTERNATE supply to the Division 2 NSPS UPS is the CB MCC F2 (0AP55EB) which is in turn supplied by the 480 V Bus B. The Static Switch (SS) will remain selected to and continue to receive power from its NORMAL supply.

A is incorrect but plausible if the candidate recognizes that neither NSPS Solenoid (RPS) UPS is affected by the malfunction but incorrectly believes that the Analog Trip System is energized via a NSPS Solenoid (RPS) UPS.

C is incorrect but plausible if the candidate incorrectly believes that that either NSPS Solenoid (RPS) UPS is affected by the malfunction and also believes that the Analog Trip System is energized via a NSPS Solenoid (RPS) UPS.

D is incorrect but plausible if the candidate recognizes that the Analog Trip System is energized via the Division 2 NSPS UPS but incorrectly believes that the NORMAL supply is the CB MCC F2 (0AP55EB) while the ALTERNATE supply is the Division 2 DC Bus (1DC14E).

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the effect that a loss or malfunction of AC electrical power will have on an uninterruptable power supply.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to recognize the interaction between the AC distribution and Instrument Power systems. In particular, the candidate must recognize the condition of the AC distribution system based on the graphic presented in the stem, and how it affects the Division 2 NSPS UPS Power Supply.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 20 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103919
User-Defined ID:	CL-ILT-1103919
Cross Reference Number:	
Topic:	Annunciator 5061-1B AUTO TRIP BREAKER (4160V Feeder Breaker) is received in the control room. You
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5002.04 Rev. 35 CPS 5061.01 Rev. 28c E02-1AP03 Sh 001 Rev. AB E02-1RP99 Sh 102 Rev. U
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT NRC 10-1 exam
Question Source: (i.e. New, Bank, Modified)	Bank 815878
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Updated references and answer/explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5002.04 Rev. 35 CPS 5061.01 Rev. 28c E02-1AP03 Sh 001 Rev. AB E02-1RP99 Sh 102 Rev. U
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 262002 Uninterruptable Power Supply (A.C./D.C.) **Category / KA Statement:** K6. Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): K6.01 A.C. electrical power **RO Value:** 2.7 **SRO Value:** 2.9 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q20 262002 K6.01

21 **ID: 1103711** **Points: 1.00**

The plant is in Mode 1 at rated thermal power.

IMD is scheduled to perform CPS 9433.37 ECCS LPCS Minimum Flow E21-N051 Channel Calibration.

The prerequisites section of CPS 9433.37 requires:

- 1E21-F011 LPCS Pump Min Flow Recirc Valve to remain energized but closed during the surveillance.
- AUTO start of the LPCS Pump disabled.

With these compensatory actions taken, ITS LCO 3.5.1 ECCS - Operating _____(1)_____ met, and ITS LCO 3.6.1.3 Primary Containment Isolation Valves (PCIVs) _____(2)_____ met.

A. (1) is
(2) is

B. (1) is NOT
(2) is

C. (1) is
(2) is NOT

D. (1) is NOT
(2) is NOT

Answer: B

Answer Explanation

B is correct - per CPS 9433.37 ECCS LPCS Minimum Flow E21-N051 Channel Calibration, step 5.5 and 5.6 requires 1E21-F011 to be disabled in the closed position, and the auto start capability of the associated ECCS Pump disabled (normally by pulling control power fuses for the LPCS Pump breaker, but can also be satisfied by racking the pump breaker out). Per CPS 3313.01 Low Pressure Core Spray (LPCS) limitation step 6.3, if 1E21-F011 LPCS Pump Min Flow Recirc Valve is not capable of opening (may be due to failed Minimum Flow Instrument, 1E21-N651), the AUTO start capability of the associated ECCS pump should be disabled and the pump declared INOP. The CNMT isolation function is still satisfied.

- The LCO for LPCS ECCS function is ITS 3.5.1 - NOT met.
- The LCO for CNMT isolation function is ITS 3.6.1.3 - met.

A is incorrect but plausible if the examinee incorrectly believes that the ECCS function for LPCS is maintained throughout the performance of 9433.37. The examinee may select this response based on the belief that the ECCS function is maintained because the LPCS Pump minimum flow valve is maintained closed but fails to recall that the LPCS Pump control power fuses must be removed for pump protection, disabling the auto start capability of the LPCS Pump and rendering the ECCS function of LPCS inoperable.

C is incorrect but plausible if the examinee:

- incorrectly believes that the ECCS function for LPCS is maintained throughout the performance of 9433.37. The examinee may select this response based on the belief that the ECCS function is maintained because the LPCS Pump minimum flow valve is maintained closed but fails to recall that the LPCS Pump control power fuses must be removed for pump protection, disabling the auto start capability of the LPCS Pump and rendering the ECCS function of LPCS inoperable, AND

- incorrectly believes that the compensatory actions required by the surveillance disable the containment isolation function for 1E21-F011. Since 1E21-F011 is only closed, the containment isolation function is maintained.

D is incorrect but plausible if the examinee incorrectly believes that the compensatory actions required by the surveillance disable the containment isolation function for 1E21-F011. Since 1E21-F011 is only closed, the containment isolation function is maintained.

KA Justification - this question meets the KA because the examinee has to determine how performance of a instrument maintenance surveillance affects LCOs for ITS 3.5.1 ECCS - Operating and ITS 3.6.1.3 Primary Containment Isolation Valves (PCIVs) to answer the question

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to apply system knowledge to the lineup to determine the impact to Tech Spec LCO requirements.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 21 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1103711
User-Defined ID:	CL-ILT-SYSTEM ID #
Cross Reference Number:	
Topic:	The plant is in Mode 1 at rated thermal power. IMD is scheduled to perform CPS 9433.37 ECCS LPC
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 9433.37 Rev. 33e • CPS 3313.01 Rev. 16d
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3313.01 section 6.0 Limitations
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 209001 Low Pressure Core Spray System **Category / KA Statement:** 2.2.36 Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. **RO Value:** 3.1 **SRO Value:** 4.2 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.2	

Associated objective(s):

RO Q21 209001 2.2.36

22 **ID: 1103793** **Points: 1.00**

The High Pressure Core Spray (HPCS) System automatically initiated and injected to the Reactor Pressure Vessel (RPV).

The HPCS System responded as expected when RPV water level reached Level 8.

Five minutes later, annunciator 5062-4A AUTO TRIP 480V TRANSFORMER BKR alarmed. The Amber light is ON at the handswitch for 480V TRANSFORMER 1C BKR. Attempts to correct the cause have been unsuccessful.

RPV water level subsequently lowered below -50 inches.

Under these conditions, 1E22-F004 HPCS TO CNMT OUTBD ISLN VALVE is expected to _____(1)_____, and 1E22-F012 HPCS MIN FLOW TO SUPPR POOL is expected to _____(2)_____.

A. (1) remain shut
(2) remain open

B. (1) remain shut
(2) reposition FROM open TO shut

C. (1) reposition FROM shut TO open
(2) reposition FROM open TO shut

D. (1) reposition FROM shut TO open
(2) remain open

Answer: A

Answer Explanation

A is correct. Annunciator 5062-4A is indicative of a complete loss of Division III 480 VAC power including the HPCS MCC 1C (1E22-S002). The HPCS Injection Valve (1E22-F004) and HPCS Min Flow Valve (1E22-F012) are powered from the HPCS MCC 1C. Therefore, even though -45.5 inches RPV Level (Level 2) is a valid signal to OPEN the HPCS Injection Valve, it remains in the current SHUT position and concurrently, the HPCS Min Flow Valve remains in the current OPEN position.

B is plausible but incorrect. The candidate may select this response if he/she recognizes the loss of power will affect the HPCS Injection Valve (1E22-F004) but incorrectly believes that the HPCS Min Flow Valve (1E22-F012) will respond normally.

C is plausible but incorrect. The candidate may select this response if he/she incorrectly believes that HPCS Injection Valve (1E22-F004) and HPCS Min Flow Valve (1E22-F012) are not impacted by the loss of power and the system will operate as intended.

D is plausible but incorrect. The candidate may select this response if he/she recognizes the loss of power will affect the HPCS Min Flow Valve (1E22-F012) but incorrectly believes that the HPCS Injection Valve (1E22-F004) will respond normally.

KA Justification - this question meets the KA because the examinee has to determine how a loss of power impacts the function of HPCS with various HPCS logic signals locked in. The function of HPCS is to automatically initiate on a LOCA signal (low RPV water level or High DW pressure) and stop injecting when RPV water level reaches Level 8. This question tests these concepts.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the conditions in the stem and determine the expected impact to two HPCS system valves.

Question 22 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103793
User-Defined ID:	CL-ILT-1103793
Cross Reference Number:	
Topic:	The High Pressure Core Spray (HPCS) System automatically initiated and injected to the Reactor Pre
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5062.04 (4A) Rev. 27b • CPS 3309.01E001 (page 3) Rev. 8
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT 10-1 NRC Exam
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-N11003
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data Table. Made editorial changes to the question stem. Added KA and Cog Level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 5062.04 • CPS 3309.01E001
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 209002 High Pressure Core Spray System **Category / KA Statement:** 2.1.27 Knowledge of system purpose and/or function. **RO Value:** 3.9 **SRO Value:** 4.0 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q22 209002 2.1.27

23 **ID: 1103812** **Points: 1.00**

The plant is operating at rated thermal power.

- Div 1 DG is operating in parallel with off-site power IAW surveillance CPS 9080.13 DIESEL GENERATOR 1A (1B) 24 HOUR RUN AND HOT RESTART - OPERABILITY.
- Currently you are one hour into the two hour portion of the 24 hour operability run, requiring Div 1 DG to be loaded to 105-110% of the continuous operation rating.

Following an electrical transient, you note the following Div 1 DG parameters:

- 4200 KW
- 3000 KVAR

The Div 1 DG is operating...

A. outside allowed parameters; reduce KW loading by 800 KW.

B. outside allowed parameters; reduce KVAR loading by 800 KVARs.

C. within allowed parameters; KVARS can be raised as long as power factor is maintained between 0.7 lagging and 1.0.

D. within allowed parameters; KW can be raised as long as 110% of the continuous load rating is NOT exceeded.

Answer: B

Answer Explanation

B is correct:

Per CPS 3506.01 Limitation 6.1.5 and specific to DG 1A:

- Except for short periods of time, or as directed by approved surveillance or testing procedures, DG load **should not** be allowed to exceed the continuous rating of **3869 KW**. Note: Surveillance CPS 9080.13 DIESEL GENERATOR 1A (1B) 24 HOUR RUN AND HOT RESTART - OPERABILITY is in progress and directs loading DG 1A to 105-110% for at least 2 hours.
- The DG shall also be operated within the limits of Appendix A, DG 1A(1B) Reactive Load Capability Curve.
- The DG should be operated at a power factor between 0.8 lagging and 1.0 to observe machine design ratings and minimize circulating currents.

Per CPS 9080.13 DIESEL GENERATOR 1A (1B) 24 HOUR RUN AND HOT RESTART - OPERABILITY, gradually load DG 1A to 4100-4200 KW and 2200-2300KVAR.

Based on current conditions, KVAR must be reduced by 800 KVAR to return DG 1A loading to within parameters allowed by CPS 3506.01 Appendix A, DG 1A(1B) Reactive Load Capability Curve and CPS 9080.13 DIESEL GENERATOR 1A (1B) 24 HOUR RUN AND HOT RESTART - OPERABILITY.

A is incorrect but plausible if the candidate recognizes that the current DG 1A loading is outside allowed parameters but fails to understand that reducing KW loading by 800 KW will place load back within the Capability Curve (bold black line) but be outside the power factor band (between 0.8 lagging and 1.0).

C is incorrect but plausible if the candidate fails to understand that the current DG 1A loading is outside allowed parameters (in this case, the Capability Curve) and also incorrectly believes that the allowable power factor band is between 0.7 and 1.0 because 0.7 power factor is indicated on the Capability Curve.

D is incorrect but plausible if the candidate fails to understand that the current DG 1A loading is outside allowed parameters (in this case, the Capability Curve) and also incorrectly believes that since the DG 1A allowable KW loading for this portion of the test is 110% (~ 4256KW) there is some margin to further raise KW loading, moving further away from the Capability Curve.

KA justification - this question meets the KA because the candidate must demonstrate the ability to predict the impacts on a highly loaded EDG and based on those predictions, use procedures to correct, control or mitigate the consequences. Specifically, the examinee must predict the impacts that the abnormal conditions presented in the stem (placing a highly loaded DG outside the limits of its estimated capability curve) and then determine the mitigating actions to correct.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the abnormal conditions presented in the stem, predict the impacts of those conditions using the supplied reference (CPS 3506.01 Appendix A, DG 1A(1B) Reactive Load Capability Curve) and determine the correct outcome that will mitigating those consequences.

Question 23 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1103812
User-Defined ID:	CL-ILT-1103812
Cross Reference Number:	
Topic:	The plant is operating at rated thermal power. Div 1 DG is operating in parallel with off-site po
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3506.01 Rev. 37a CPS 9080.13 Rev. 42a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 3506.01 Appendix A
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3506.01 Rev. 37a CPS 9080.13 Rev. 42a
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO, 3-SPR)
KA Data	

KA Number / System Name: 264000 Emergency Generators (Diesel/Jet)
Category / KA Statement: A2. Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.03 Operating unloaded, lightly loaded, and highly loaded

RO Value: 3.4
SRO Value: 3.4

Tier: 2
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: N/A

Associated objective(s):

RO Q23 264000 A2.03

24 **ID: 1103688** **Points: 1.00**

Local Power Range Monitor (LPRM) detector aging is compensated for by adjusting the impacted . . .

A. flux amplifier gain.

B. range 6 and range 7 amplifiers.

C. Transversing Incore Probe (TIP) gains.

D. detector core position to the peak neutron flux location.

Answer: A

Answer Explanation

A is correct: Per N-CL-OPS-215005 AVERAGE & LOCAL POWER RANGE MONITORING (APRM/LPRM) SYSTEM, the sensitivity of the LPRM detectors will decrease with time during power operations and, as a result, the DC output signal from the detector will weaken. To increase the signal strength the flux amplifier circuit (in each LPRM card) is provided with a means of adjusting the signal gain. The LPRM Gain Selector Switch S2, located on the LPRM card, is used to increase the gain in three discrete increments (LOW- 1, MEDIUM - 3.4, HIGH - 12) while a gain adjust potentiometer is used to provide fine adjustment of the gain. Adjusting the gain of the flux amplifier will compensate for the decrease in detector sensitivity caused by detector aging.

B is incorrect but plausible if the candidate fails to recall that the range 6 and 7 amplifiers apply to the IRM's not the LPRMs.

C is incorrect but plausible if the candidate fails to recall that the TIP gains are adjusted to normalize the TIP readings to the 'B' level LPRM in the common channel, which will allow the TIP traces to be properly interpreted.

D is incorrect but plausible if the candidate fails to recall that the LPRM positions are fixed. Detector A in each string is located approximately 18 inches above the bottom of the active fuel. Adjacent detectors are 36 inches apart, with detector D located 18 inches below the top of the active fuel.

KA Justification - this question meets the KA because the candidate must recall knowledge of the APRM/LPRM system design feature which compensate for the effects of detector aging on LPRM/APRM readings. Specifically, the candidate must recall that adjusting the gain of the flux amplifier will compensate for the decrease in detector sensitivity caused by detector aging.
.
Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall that adjusting the gain of the flux amplifier will compensate for the decrease in detector sensitivity caused by detector aging.

Question 24 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103688
User-Defined ID:	CL-ILT-1103688
Cross Reference Number:	
Topic:	Local Power Range Monitor (LPRM) detector aging is compensated for by adjusting the impacted . . .
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	N-CL-OPS-215005 Rev. 002 CPS 2204.01 Rev. 8b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank CL-ILT-2381
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved Answer/Explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	N-CL-OPS-215005 Rev. 002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)
KA Data	
KA Number / System Name: 215005 Average Power Range Monitor/Local Power Range Monitor System **Category / KA Statement:** K4. Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: K4.06 Effects of detector aging on LPRM/APRM readings **RO Value:** 2.6 **SRO Value:** 2.8 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

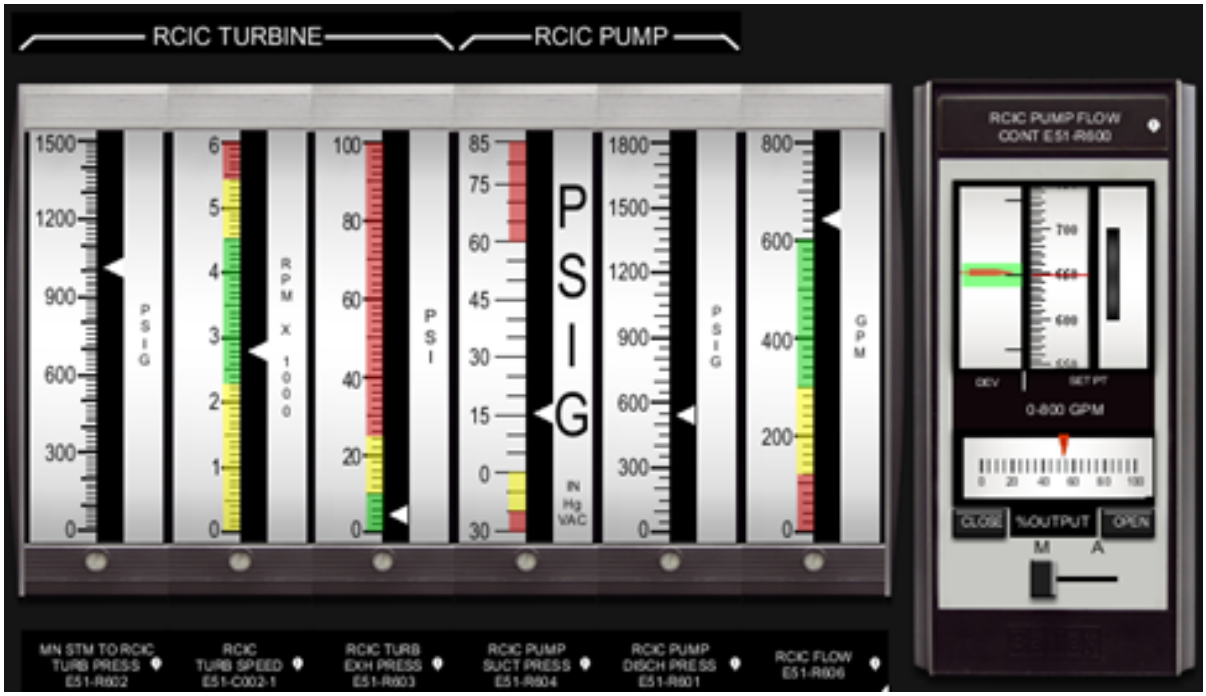
Associated objective(s):

RO Q24 215005 K4.06

25 **ID: 1103687** **Points: 1.00**

RCIC is running in a Tank to Tank lineup.

A problem with the RCIC Pump Flow Controller has occurred resulting in the system parameters shown in the figure below.



If the First Test Valve to the Storage Tank (E51A-F022) is throttled in the CLOSE direction for 3 seconds, what will be the change in:

(1) RCIC Turbine Speed and
(2) RCIC Flow

after the system has stabilized (1 minute later)?

A. (1) Lower
(2) Lower

B. (1) Rise
(2) Lower

C. (1) Stay the same
(2) Lower

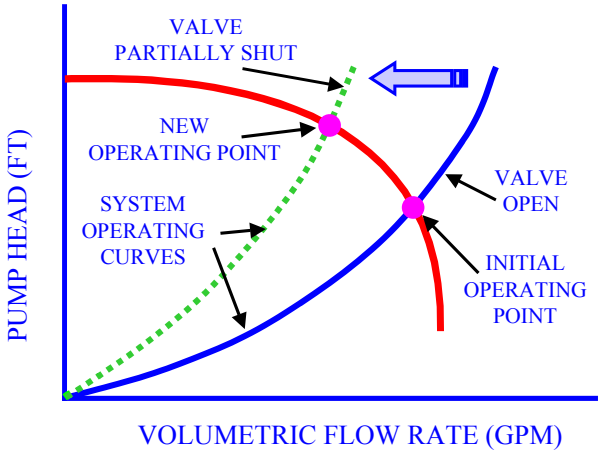
D. (1) Rise
(2) Stay the same

Answer: C

Answer Explanation

C is correct: Per CPS 3310.01 REACTOR CORE ISOLATION COOLING (RI) Section 8.1.5 Manual Startup - Flow from Tank to Tank, the RCIC Pump Flow Controller (1E51-R600) is in MANUAL. The candidate can determine this from the graphic in the stem. In MANUAL mode, the output is ONLY operator adjustable and controls turbine speed. Therefore, since the stem does not address any operation of the RCIC Pump Flow Controller (1E51-R600), it can be assumed that the RCIC turbine will be maintained at a constant RPM.

The RCIC Pump is a horizontally mounted, four stage, centrifugal pump.



Given the centrifugal pump characteristic curve above, when the RCIC Pump First Test Valve (1E51-F022) is throttled closed (with RPM held constant), flow will lower.

A is incorrect but plausible if the candidate fails to note that the RCIC Pump Flow Controller (1E51-R600) is in MANUAL. Additionally, with the flow controller in AUTOMATIC the candidate would incorrectly believe that as the position of the RCIC Pump First Test Valve (1E51-F022) is throttled closed, the actual flow would go down (LOWER). Since flow rate is proportional to speed, this would cause the RCIC turbine speed (and consequently pump capacity/output) to go down as well (LOWER).

B is incorrect but plausible if the candidate fails to note that the RCIC Pump Flow Controller (1E51-R600) is in MANUAL. With the flow controller in AUTOMATIC and as the position of the RCIC Pump First Test Valve (1E51-F022) is throttled closed, the difference between the actual flow and the controller setpoint would produce an error signal causing the RCIC turbine speed (and consequently pump capacity/output) to increase (RISE). The ACTUAL system response (with system losses) would be for the actual system output to be at a somewhat lower flow rate. (LOWER).

D is incorrect but plausible if the candidate recognizes that RCIC Pump Flow Controller (1E51-R600) is in MANUAL but incorrectly believes that in MANUAL mode, the operator adjustable output is flow and NOT turbine speed. Therefore, the candidate would incorrectly believe that RCIC pump flow remains constant (STAY THE SAME). Consequently, as the RCIC Pump First Test Valve (1E51-F022) is throttled closed the turbine speed must go up to maintain flow (RISE).

KA Justification - this question meets the KA because the candidate must display knowledge of how the RCIC system flow indication is impacted as the system is manipulated.

Cog Level Justification - this is a high cog question written at the analysis and application level. The examinee has to solve a problem using knowledge and references. Specifically the examinee must analyze the system configuration, recognize the significance of the flow controller being in MANUAL and use system knowledge to identify the correct system response.

Question 25 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103687
User-Defined ID:	CL-ILT-6989
Cross Reference Number:	
Topic:	RCIC is running in a Tank to Tank lineup. A problem with the RCIC Pump Flow Controller has occurr
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3310.01 Rev. 29 N-CL-OPS-217000 Rev. 004
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank CL-ILT-6989
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved graphic. Replaced one distractor. Improved distracter explanations.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3310.01 Rev. 29 N-CL-OPS-217000 Rev. 004
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK, 3-SPR)

KA Data

KA Number / System Name: 217000 Reactor Core Isolation Cooling System (RCIC)
Category / KA Statement: K5. Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): K5.02 Flow indication

RO Value: 3.1
SRO Value: 3.1

Tier: 2
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: N/A

Associated objective(s):

RO Q25 217000 K5.02

26 **ID: 1103864** **Points: 1.00**

A degraded grid condition exists. Attempts to raise the grid voltage by raising VAR load have resulted in the following conditions:

- Generator MVA load is 1200 MVA
- Generator Terminal Voltage is 20,460 Volts

The CRS has directed you to lower MVA load IAW CPS 3105.05 Generator (TG) Section 8.5.2 Abnormal Voltage.

A potential impact due to the degraded voltage conditions described above is an automatic transfer of the _____(1)_____ to an alternate source.

Under these conditions, the APPROPRIATE method to reduce MVA load is to _____(2)_____.

A. (1) SAFETY RELATED buses ONLY
(2) lower Reactor Recirc flow

B. (1) SAFETY RELATED buses ONLY
(2) lower Generator excitation

C. (1) SAFETY and NON-SAFETY RELATED buses
(2) lower Reactor Recirc flow

D. (1) SAFETY and NON-SAFETY RELATED buses
(2) lower Generator excitation

Answer: A

Answer Explanation

A is correct: Per CPS 3105.05 GENERATOR (TG) section 8.5.2 Abnormal Voltage, Step 2 states operation below 95% of rated voltage (20,900 V) will require the generator output (MVA) to be reduced to below values by lowering reactor power (only way to lower generator MVA). Lowering Reactor Recirc flow is a reactivity manipulation that will lower reactor power.

Per N-CL-OPS-262001 AUXILIARY POWER, Loss of power (LOP) instrumentation monitors the 4.16KV Class 1E emergency buses (ONLY). The voltage for the Division 1, 2, and 3 buses is monitored by two different undervoltage functions: Loss of Voltage (1st Level) and Degraded Voltage (2nd Level).

Per the Annunciator Response Procedure for 5061-3D AC UNDERVOLTAGE SECOND LEVEL 4160V Bus, a degraded voltage condition on 4.16KV Bus 1B1 (1AP09E) due to low grid voltage from RAT 'B' (345KV) or ERAT (138KV) would result in the Div 2 DG will starting; the Div 2 Reserve (Main) feeder opening & the Div 2 Main (Reserve) feeder locking-out; the 4.16KV Bus 1B1 (1AP09E) being stripped of its loads; and finally, the Div 2 DG will tie onto the bus.

B is incorrect but plausible if the candidate recognizes that Level 1 and Level 2 undervoltage relaying is applicable to SAFETY RELATED Buses ONLY but fails to recall that in this situation the only way to lower generator MVA is to lower reactor power. Lowering generator excitation will lower generator voltage below limits.

C is incorrect but plausible if the candidate fails to recognize that Level 1 and Level 2 undervoltage relaying is applicable to SAFETY RELATED Buses ONLY but correctly recalls that lowering Reactor Recirc flow is a reactivity manipulation that will lower reactor power.

D is incorrect but plausible if the candidate fails to recognize that Level 1 and Level 2 undervoltage relaying is applicable to SAFETY RELATED Buses ONLY while also failing to recall that in this situation the only way to lower generator MVA is to lower reactor power. Lowering generator excitation will lower generator voltage below limits.

KA Justification - this question meets the KA because the candidate must predict the impact of degraded voltage to the electrical system based on the conditions presented in the stem and recall from the ABNORMAL OPERATION section of the GENERATOR procedure actions to mitigate the consequences.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall facts about the electrical distribution system (undervoltage relaying) and CPS 3105.05 procedural steps to mitigate consequences of the abnormal conditions presented in the stem.

Question 26 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103864
User-Defined ID:	CL-ILT-1103864
Cross Reference Number:	
Topic:	A degraded grid condition exists. Attempts to raise the grid voltage by raising VAR load have resu
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3105.05 Rev. 21a CPS 5061.03 Rev. 30a N-CL-OPS-262001 Rev. 009
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3105.05 Rev. 21a CPS 5061.03 Rev. 30a N-CL-OPS-262001 Rev. 009
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F, 1-P)
KA Data	

KA Number / System Name: 262001 A.C. Electrical Distribution
Category / KA Statement: A2. Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.11 Degraded system voltages

RO Value: 3.2
SRO Value: 3.6

Tier: 2
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: N/A

Associated objective(s):

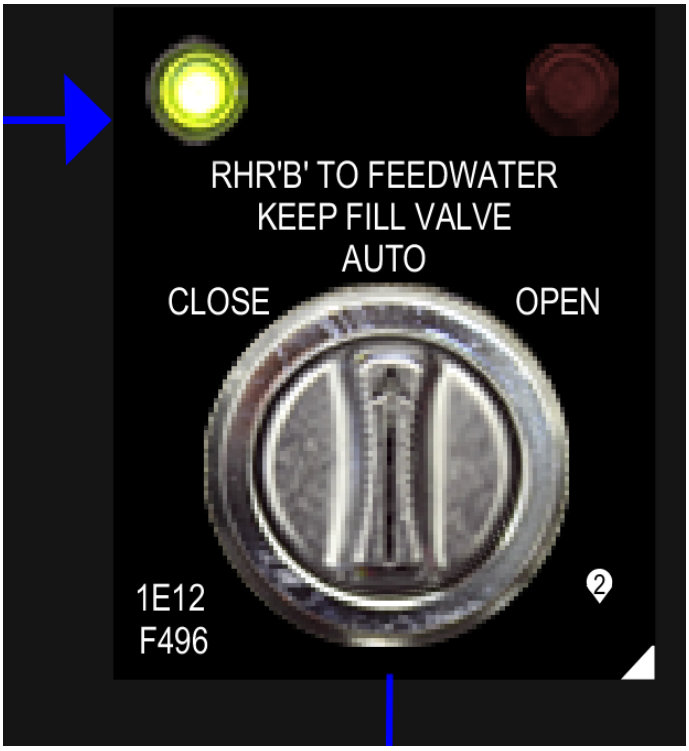
RO Q26 262001 A2.11

27 **ID: 1104104** **Points: 1.00**

A plant transient has occurred when a Design Basis Accident (DBA) Loss Of Coolant Accident (LOCA) signature is identified. You have been directed to START the Feedwater Leakage Control System (FWLCS) per CPS 3312.01 RESIDUAL HEAT REMOVAL (RHR).

The FWLCS provides a water seal to prevent fission product release from bypassing the _____(1)_____ containment(s).

The valve in the graphic below is used to manually initiate RHR flow into the _____(2)_____ during post-LOCA conditions.



A. (1) primary but NOT secondary
(2) 'B' FW line ONLY

B. (1) primary but NOT secondary
(2) 'A' AND 'B' FW lines

C. (1) primary AND secondary
(2) 'B' FW line ONLY

D. (1) primary AND secondary
(2) 'A' AND 'B' FW lines

Answer: D

Answer Explanation

D is correct:

Per CPS 3312.01 Residual Heat Removal (RHR) section 8.3.1 Feedwater Leakage Control System (FWLCS), the FWLCS is required to be placed in service when a DBA LOCA signature is identified and within 20 minutes after FW/CB/CD injection is no longer available.

Per N-CL-OPS-223001 Primary Containment, The Feedwater Leakage Control System (FWLCS) supplements the isolation function of the Feedwater containment isolation valves by providing a water seal to prevent fission products from a LOCA event to bypass the secondary containment.

Per Clinton Power Station (CPS) Operational Requirements Manual (ORM) Attachment 4 Containment Isolation Valves, Feedwater containment isolation valves and their associated containment penetrations are designated as secondary containment bypass paths.

Per N-CL-OPS-259001 Feedwater, The Residual Heat Removal system Feedwater Leakage Control Mode provides a water seal on the feedwater lines between 1B21F065A/B and 1B21F010A/B post LOCA. Valves 1E12-F496/497 are opened to initiate the Feedwater Leakage Control system, opening either valve will provide seal water to both Feedwater lines. Opening 1E12-F496 aligns RHR B to both FW lines between 1B21-F010A/B and 32A/B. Opening 1E12-F497 aligns RHR A to both FW lines between 1B21-F032A/B and 65A/B.

A is incorrect but plausible if the examinee incorrectly believes that Feedwater containment isolation valves DO NOT bypass secondary containment, and fails to recall that either RHR subloop (A or B) inject to both FW lines. The injection point for RHR 'B' is between 1B21-F010A and 32A on FW line 'A' and 1B21-F010B and 32B on FW Line 'B'.

B is incorrect but plausible if the examinee incorrectly believes that Feedwater containment isolation valves DO NOT bypass secondary containment but recognizes that either RHR subloop (A or B) inject to both FW lines.

C is incorrect but plausible if the examinee recognizes that the Feedwater containment isolation valves are designated as secondary containment bypass paths but fails to recall that either RHR subloop (A or B) inject to both FW lines. The injection point for RHR 'B' is between 1B21-F010A and 32A on FW line 'A' and 1B21-F010B and 32B on FW Line 'B'.

KA justification - this question meets the KA because the examinee must have knowledge of the function of the Feedwater Leakage Control System (FWLCS), which is used to supplement the isolation function of primary containment isolation valves in the feedwater lines penetrating the containment. KA 223001 describes systems whose function is to contain fission products after a LOCA, and since FWLCS provides this function, it is appropriate to link it to 223001 Primary Containment System and Auxiliaries.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall facts concerning the purpose of the Feedwater Leakage Control System (FWLCS) and its physical connections.

Question 27 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1104104
User-Defined ID:	CL-ILT-1104104
Cross Reference Number:	
Topic:	A plant transient has occurred when a Design Basis Accident (DBA) Loss Of Coolant Accident (LOCA)
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3312.01 Rev. 45b • CPS 4001.02 Rev. 17a • N-CL-OPS-223001 Rev. 001 • ORM Rev. 75
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Modified 953044
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Modified stem, changed 1/2 of all answers, udpated answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 3312.01 Rev. 45b • CPS 4001.02 Rev. 17a • N-CL-OPS-223001 Rev. 001
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-B, 1-FI)
KA Data	
KA Number / System Name: 223001 Primary Containment System and Auxiliaries **Category / KA Statement:** K1. Knowledge of the physical connections and/or causeeffect relationships between PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES and the following: K1.06 RHR/LPCI **RO Value:** 3.4 **SRO Value:** 3.6 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q27 223001 K1.06

28 **ID: 1104164** **Points: 1.00**

The plant is operating at 90% rated thermal power.

The operating Fuel Pool Cooling and Cleanup Pump tripped on undervoltage.

Assuming all systems operating as designed, which of the following describes a potential consequence of these conditions?

A. Spent fuel pool low level

B. Overflow of the spent fuel pool

C. The filter media on the on-service Fuel Pool Filter Demineralizers will be lost

D. Loss of decay heat removal for spent fuel stored in the upper containment pools

Answer: B

Answer Explanation

B is correct: Per CPS 5040.01 ALARM PANEL 5040 ANNUNCIATORS - ROW 1, AUTO TRIP PUMP/MOTOR DIVISION 1 and N-CL-OPS-233000 FUEL POOL COOLING AND CLEANUP SYSTEM, a trip of the FC pump will result in water no longer being sent to the upper containment pools. This could result in no longer meeting the minimum level requirements in the upper pools. The water in the piping to the upper pools will drain back down to the spent fuel pools and may result in overflow of the pools/FC surge tanks.

A is incorrect but plausible if the candidate fails to recall the correct elevations of major FC equipment and that the upper containment pools will drain back down to the spent fuel pools, allowing the candidate to incorrectly believe that the spent fuel pool will drain down to the FC surge tanks.

C is incorrect but plausible if the candidate fails to recall that the filter media of the FPFDs is maintained by the hold pump when FPFD flow is lost.

D is incorrect but plausible if the candidate fails to recall that fuel is not allowed to be stored in the upper containment pools during power operations.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the effect that a loss or malfunction of AC electrical power will have on Fuel Pool Cooling & Cleanup. Specifically, the candidate must identify the correct effect to the Fuel Pool Cooling & Cleanup system caused by an undervoltage trip of the operating Fuel Pool Cooling pump.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall specific facts about what happens to the Fuel Pool Cooling & Cleanup system based on an undervoltage trip of the operating Fuel Pool Cooling pump.

Question 28 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104164
User-Defined ID:	CL-ILT-4171
Cross Reference Number:	
Topic:	The plant is operating at 90% rated thermal power. The operating Fuel Pool Cooling and Cleanup P
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5040.01 Rev. 28 CPS 3001.01 Rev. 27 CPS 5917 Rev. 26a N-CL-OPS-233000 Rev. 005
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank 595726
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved stem, responses and answer explanation. Added KA and Cog Level justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5040.01 Rev. 28 CPS 3001.01 Rev. 27 CPS 5917 Rev. 26a N-CL-OPS-233000 Rev. 005
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)
KA Data	
KA Number / System Name: 233000 Fuel Pool Cooling and Clean-up **Category / KA Statement:** K6. Knowledge of the effect that a loss or malfunction: K6.01 A.C. electrical power **RO Value:** 2.5 **SRO Value:** 2.7 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q28 233000 K6.01

29 **ID: 1104067** **Points: 1.00**

The plant is operating at 90% Rated Thermal Power when 1B33-F067B Recirculation Pump "B" Discharge Valve, drifts to 80% open. You note the indication below:

Which ONE of the following statements describes the response of the RR System to this event?

The Reactor Recirculation (RR) loop 'B'.....

A. pump trips to off.

B. pump transfers to slow speed.

C. hydraulic power unit (HPU) shuts down.

D. flow control valve (FCV) automatically runs back.

Answer: A

Answer Explanation

A is correct: Per CPS 5003.01 ALARM PANEL 5003 ANNUNCIATORS - ROW 1, RECIRC MTR B LS AUTO XFR CKT NA and N-CL-OPS-202001 REACTOR RECIRCULATION SYSTEM, the Recirculation Pumps will **trip from high speed without transferring to slow speed** if any of the following signals are received by the pump control logic:

- ATWS signal.
- End of Cycle Recirculation Pump Trip (RPT)
- Suction valve less than 90% open.
- **Discharge valve less than 90% open.**
- CB-5 control switch in STOP LOCK or STOP pushbutton depressed.
- Pump motor lockout relay actuated.
- CB-3 open.
- CB-4 open.
- Incomplete sequence relay actuated.
- Loss of control power.

B is incorrect but plausible if the candidate confuses a Reactor Recirculation (RR) discharge valve closure with one of the valid reasons for a RR pump downshift to slow speed such as for inadequate pump NPSH (i.e. Steam Dome/Pump Suction Differential Temperature Interlock or Vessel Low Level Interlock), Flow Control Valve (FCV) cavitation (i.e. Total Feedwater Low Flow Interlock) or the End of Cycle Recirculation Pump Trip.

C is incorrect but plausible if the candidate mistakenly believes that the Hydraulic Power Units (HPUs) interface with the RR Isolation Valves instead of or in addition to the RR Flow Control Valves and confuses a discharge valve closure with one of the valid reasons for a Hydraulic Power Unit (HPU) trip such as:

- Drywell pressure high (1.08 psig).
- Position demand signal out of range.
- Actuator position error.
- Rate of change of FCV position excessively high.
- Actuator oscillating (instability).
- Hydraulic fluid temperature excessively high (150°F).
- Hydraulic reservoir fluid low (70 gal) or excessively low (60 gal).

D is incorrect but plausible if the candidate confuses a RR discharge valve closure with one of the valid reasons for a RR FCV to runback such as if a Turbine Driven Reactor Feed Pump trips and vessel level lowers to Level 4 (the FCV will partially close to ~19% indicated open).

KA Justification - this question meets the KA because the candidate must demonstrate the ability to monitor automatic operation of the Reactor Recirculation (RR) pump trips by analyzing plant conditions and correctly identifying a RR pump trip as the expected outcome.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the interlock (pump trip to off) associated with RR pump control logic when a RR pump discharge valve is less than 90% open..

Question 29 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104067
User-Defined ID:	CL-ILT-1104067
Cross Reference Number:	
Topic:	The plant is operating at 90% Rated Thermal Power when 1B33-F067B Recirculation Pump "B" Discharge
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	N-CL-OPS-202001 Rev. 003 CPS 5003.01 Rev. 34e
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous exam usage
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved answer explanation. Added cog level and KA justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	N-CL-OPS-202001 Rev. 003 CPS 5003.01 Rev. 34e
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-I)
KA Data	
KA Number / System Name: 202001 Recirculation System **Category / KA Statement:** A3. Ability to monitor automatic operations of the RECIRCULATION SYSTEM including: A3.07 Pump trips: Plant-Specific **RO Value:** 2.9 **SRO Value:** 2.9 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q29 202001 A3.07

30 **ID: 1104024** **Points: 1.00**

During core reload, a fuel bundle was dropped while attempting to place it in the core. Bubbles were observed rising from the area of the dropped bundle.

CNMT Bldg Refueling Pool Rad Monitors 1RIX-PR008A & 1RIX-PR008C are reading 120 mR/hr and 125 mR/hr respectively.

Which one of the following identifies the response of the:

(1) Fuel Building Ventilation (VF) AND

(2) Standby Gas Treatment (VG) systems?

A. (1) VF isolates.
(2) BOTH trains of SGTS start.

B. (1) VF isolates.
(2) ONLY one train of SGTS starts.

C. (1) VF continues to run.
(2) BOTH trains of SGTS start.

D. (1) VF continues to run.
(2) ONLY one train of SGTS start.

Answer: A

Answer Explanation

A. is correct. IAW CPS 5050.07 and CPS 5052.07 AUTO ACTIONS, if the CNMT Bldg Refueling Pool Rad Monitors (1RIX-PR008A/B/C/D) are high (100 mR/hr or greater) or INOP in the provided combination of channels A and C then the Fuel Building HVAC system shuts down (isolates) and BOTH Standby Gas Treatment System trains (A & B) start.

B is incorrect but plausible. The candidate may select this response if he/she realizes that the Fuel Building HVAC system shuts down (isolates) but incorrectly believes that only one train Standby Gas Treatment System starts.

C is incorrect but plausible. The candidate may select this response if he/she realizes that BOTH Standby Gas Treatment System trains (A & B) start but incorrectly believes that the Fuel Building HVAC system is unaffected by the high radiation condition in the containment and continues to run.

D is incorrect but plausible. The candidate may select this response if he/she incorrectly believes that the Fuel Building HVAC system is unaffected by the high radiation condition in the containment and continues to run while also incorrectly believing that only one train Standby Gas Treatment System starts.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of Plant Ventilation design feature(s)/interlocks which provide for automatic initiation of the Standby Gas Treatment System (SGTS). Specifically, the candidate must recognize that the high radiation setpoint for the automatic initiation of the SGTS has been exceeded based on plant conditions presented in the stem.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recognize interlock setpoints and recall the affected system response to exceeding that setpoint.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 30 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104024
User-Defined ID:	CL-ILT-1104024
Cross Reference Number:	
Topic:	During core reload, a fuel bundle was dropped while attempting to place it in the core. Bubbles w
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5050.07 Sect. 5050-7F Rev. 33 CPS 5052.07 Sect. 5052-7F Rev. 33e CPS 5140.62 Rev. 0b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT NRC 10-1 exam
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Added K/A and Cog level justification.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5050.07 CPS 5052.07 CPS 5140.62
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-I)
KA Data	
KA Number / System Name: 288000 Plant Ventilation Systems **Category / KA Statement:** K4. Knowledge of PLANT VENTILATION SYSTEMS design feature(s) and/or interlocks which provide for the following: K4.01 Automatic initiation of standby gas treatment system **RO Value:** 3.7 **SRO Value:** 3.9 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q30 288000 K4.01

31 **ID: 1104158** **Points: 1.00**

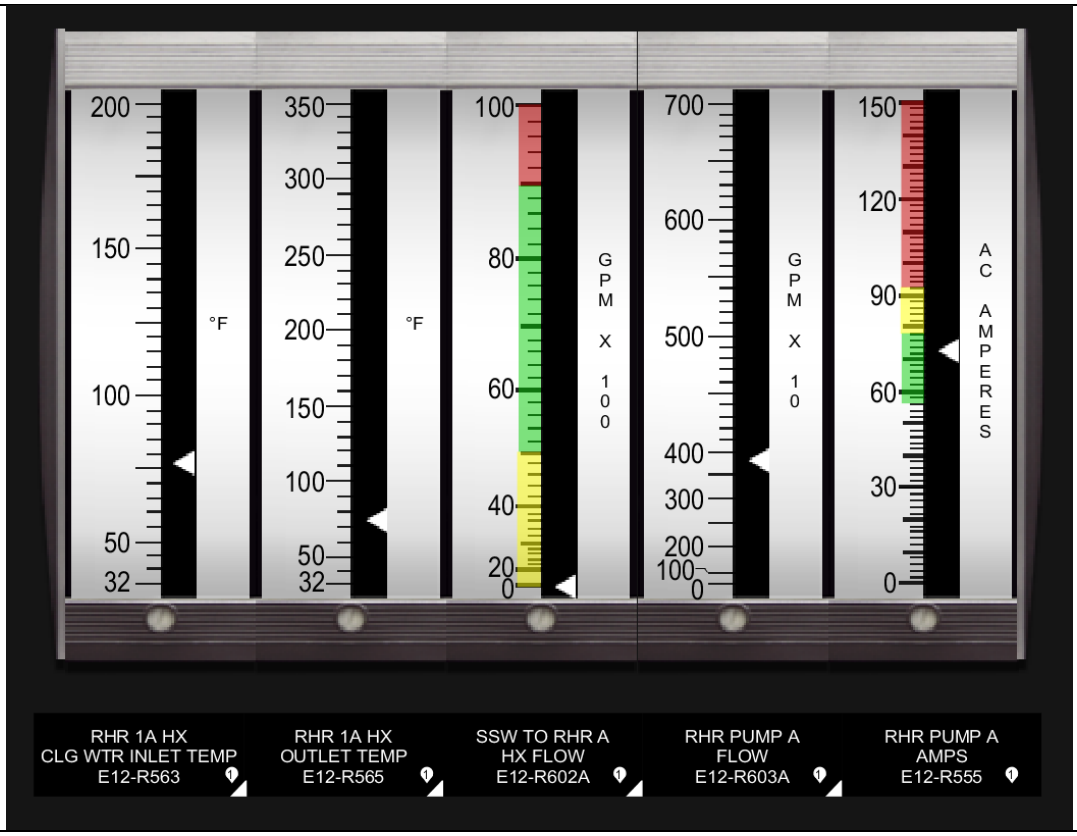
The plant was operating at 90% power when a LOCA occurred causing drywell pressure to rise to 2.21 psig.

15 minutes later, plant conditions are as follows:

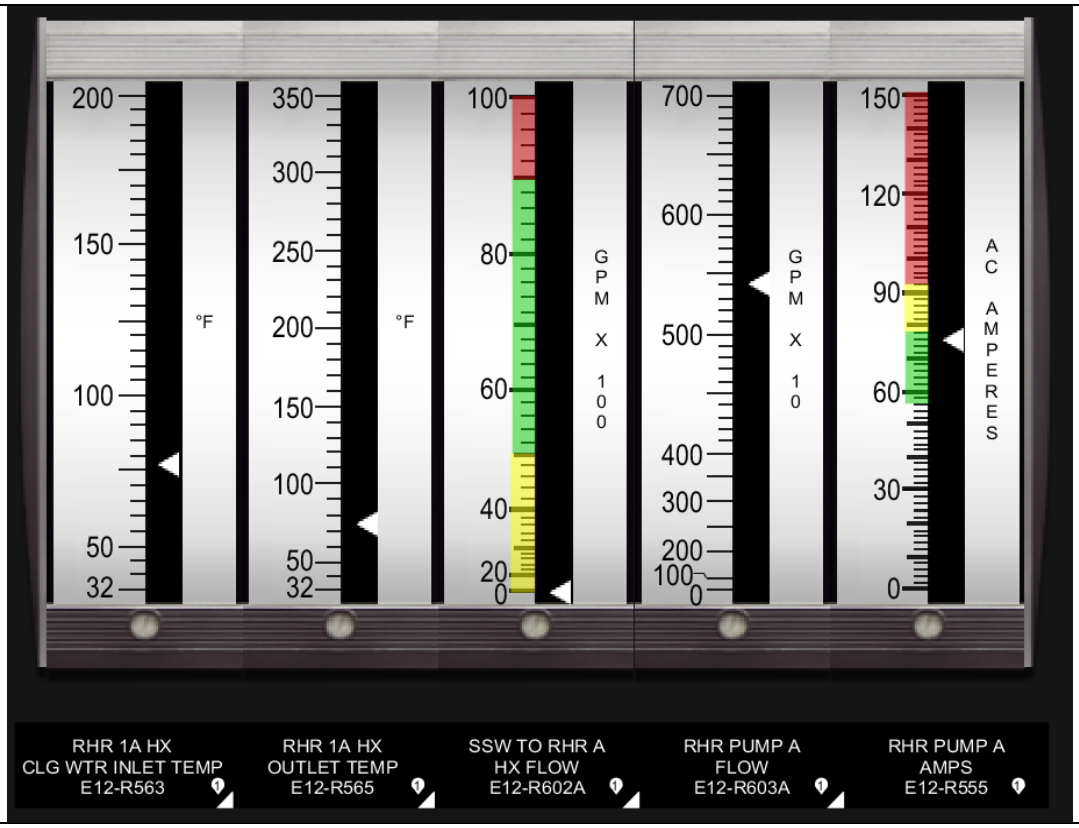
- Reactor pressure is 275 psig.
- Drywell pressure is 9.0 psig.
- Containment pressure is 8.0 psig.

Assuming NO operator actions were taken, which of the following graphics represent the expected RHR 'A' System indications?

Case 1



Case 2


200
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100
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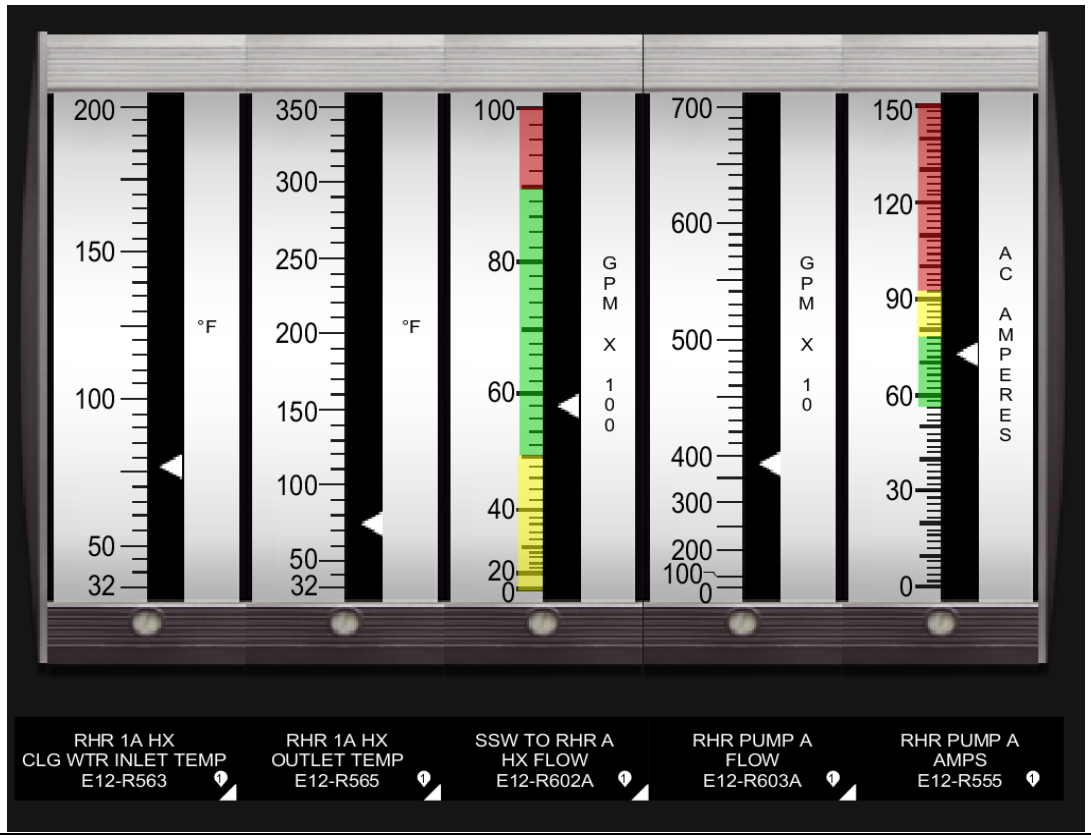
32
°F
RHR 1A HX
CLG WTR INLET TEMP
E12-R563
350
300
250
200
150
100
50
32
°F
RHR 1A HX
OUTLET TEMP
E12-R565
100
80
60
40
20
0
GPM X 100
SSW TO RHR A
HX FLOW
E12-R602A
700
600
500
400
300
200
100
0
GPM X 10
RHR PUMP A
FLOW
E12-R603A
150
120
90
60
30
0
AC AMPERES
RHR PUMP A
AMPS
E12-R555

Case 3


200
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°F
RHR 1A HX
CLG WTR INLET TEMP
E12-R563
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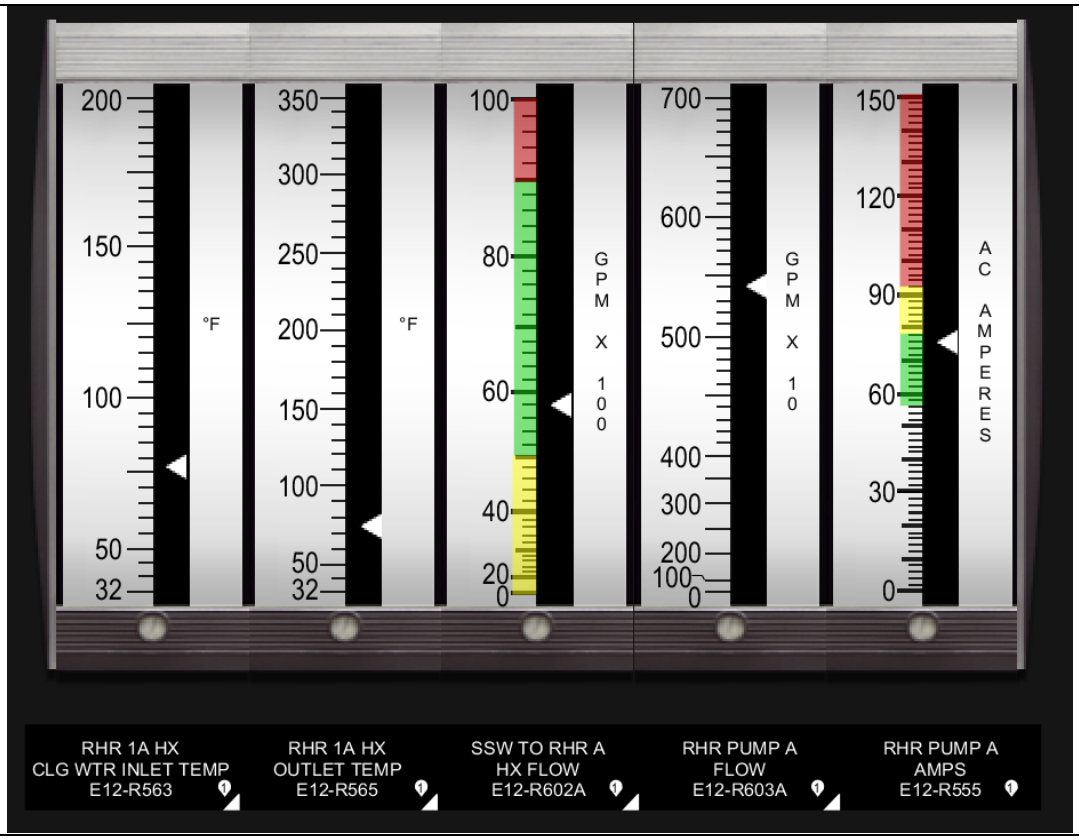
32
°F
RHR 1A HX
OUTLET TEMP
E12-R565
100
80
60
40
20
0
GPM X 100
SSW TO RHR A
HX FLOW
E12-R602A
700
600
500
400
300
200
100
0
GPM X 10
RHR PUMP A
FLOW
E12-R603A
150
120
90
60
30
0
AC AMPERES
RHR PUMP A
AMPS
E12-R555

Case 4



A. Case 1

B. Case 2

C. Case 3

D. Case 4

Answer: C

Answer Explanation

C is correct - per CPS 3312.01 Residual Heat Removal (RHR) section 8.1.6 CNMT Spray Manual / Automatic Initiation, an automatic initiation of containment spray will occur when the following conditions are met:

- A 10 minute resettable time delay exists to prevent auto initiation of CNMT spray until adequate core cooling has been established.
- CNMT spray is initiated by Hi CNMT pressure and either LOCA signal (Hi DW Press/Low RPV Lvl 1).

Since the LPCI signal has been locked in for 15 minutes, the required conditions for an automatic initiation of CS exist. Per 3313.01 step 8.1.6.2, the containment spray alignment will shift from LPCI to CS with 1E12-F028A open to align RHR pump discharge to the 'A' CS sparger in the containment, and SX cooling water flow will align to the 'A' RHR Heat Exchanger.

Per 3312.01, steps 8.1.6.3 and 8.1.6.4, RHR and SX flow is required to be verified by observing flow indicators on P601. In addition, in the note above step 8.1.6.3, rated CNMT spray flow is 3800 gpm.

These indications are present in the Case 3 graphic.

A is incorrect but plausible if the examinee correctly identifies that RHR System flow should be indicating ~ 3800 gpm, but fails to determine that SX is automatically aligned through the RHR 'A' Heat Exchanger in Containment Spray mode and should be indicating ~ 5700 gpm.

B is incorrect but plausible if the examinee correctly identifies that RHR System flow should exist, but incorrectly determines that flow should indicate ~ 5400 gpm. Per CPS 3312.01 step 8.1.9.3.5, RHR flow is verified between 4550 and 5550 gpm when placing the system in Suppression Pool Cooling Mode. Choice B is also incorrect but plausible if the examinee fails to determine that SX is automatically aligned through the RHR 'A' Heat Exchanger in Containment Spray mode and should be indicating ~ 5700 gpm.

D is incorrect but plausible if the examinee correctly identifies that RHR 'A' should be aligned for CS with SX and RHR flow indicated, but incorrectly determines that RHR flow should indicate ~ 5400 gpm. The examinee may select this choice based on knowledge of normal RHR flow when the system is operating in Suppression Pool Cooling Mode. CS design flow is 3800 gpm.

KA Justification - this question meets the KA because the examinee has to demonstrate the ability to monitor RHR System flow during a condition that will cause Containment Spray to automatically initiate to answer the question.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the conditions in the stem, and then determine which graphic represents expected system conditions based on that analysis.

Question 31 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	3.25
System ID:	1104158
User-Defined ID:	CL-ILT-1104158
Cross Reference Number:	
Topic:	The plant was operating at 90% power when a LOCA occurred causing drywell pressure to rise to 2.21
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3312.01 Rev. 45b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 226001 RHR/LPCI: Containment Spray System Mode **Category / KA Statement:** A4. Ability to manually operate and/or monitor in the control room: A4.08 System flow **RO Value:** 3.2 **SRO Value:** 3.1 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q31 226001 A4.08

32 **ID: 1104165** **Points: 1.00**

When terminating and preventing LPCS & LPCI injection per CPS 4411.02, the 'QS' relay is removed to prevent shunt tripping _____(1)_____, which prevents deenergizing the _____(2)_____.

A. (1) TB MCC 1B
(2) Control Rod Drive 1B Auxiliary Oil Pump

B. (1) TB MCC 1M
(2) Control Rod Drive 1B Auxiliary Oil Pump

C. (1) TB MCC 1B
(2) Reactor Feed Pump 1C Auxiliary Oil Pump

D. (1) TB MCC 1M
(2) Reactor Feed Pump 1C Auxiliary Oil Pump

Answer: D

Answer Explanation

D is correct: Per CPS 4411.02 TERMINATING AND PREVENTING INJECTION, removing relay 1UAY-AP567B (QS) PRIOR to depressing LPCI FM RHR B & C MANUAL INITIATION push-button assures hydraulic control for 1FW004, MDRFP Feed Reg Valve and RFP 1C Aux Oil pump are NOT lost due to a TB MCC 1M shunt trip signal. A loss of the RFP 1C Aux Oil pump would make the Motor Driven Reactor Feed Pump (MDRFP) unavailable.

Per CPS 3304.01E002 CRD 120 VAC ELECTRICAL LINEUP, Control Rod Drive 1B Aux Oil Pump is powered from TB MCC 1B.

A is incorrect but plausible if the candidate incorrectly believes that the TB MCC 1B will shunt trip if the 'QS' relay is NOT removed prior to a Div 2 ECCS manual initiation signal (potentially confusing Div 2/1B and 120V supply commonality). A loss of the TB MCC 1B would cause a loss of the Control Rod Drive 1B Aux Oil Pump making the Control Rod Drive Pump 1B unavailable.

B is incorrect but plausible if the candidate recognizes that the TB MCC 1M will shunt trip if the 'QS' relay is NOT removed prior to a Div 2 ECCS manual initiation signal, but incorrectly believe that the Control Rod Drive 1B Aux Oil Pump is powered from TB MCC 1M (potentially confusing 120V supply commonality). A loss of the Control Rod Drive 1B Aux Oil Pump would make the Control Rod Drive Pump 1B unavailable.

C is incorrect but plausible if the candidate incorrectly believes that the TB MCC 1B will shunt trip if the 'QS' relay is NOT removed prior to a Div 2 ECCS manual initiation signal (potentially confusing Div 2/1B commonality), but recalls that NOT removing the 'QS' relay prior to a Div 2 ECCS manual initiation signal will cause a loss of the RFP 1C Aux Oil pump making the Motor Driven Reactor Feed Pump (MDRFP) unavailable.

KA Justification - this question meets the KA because the candidate must demonstrate the knowledge of electrical power supply to the RFP 1C Aux Oil pump to answer the question.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the correct power supply to the RFP 1C Aux Oil pump and the reason for removing the QS relay.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 32 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1104165
User-Defined ID:	CL-ILT-1104165
Cross Reference Number:	
Topic:	When terminating and preventing LPCS & LPCI injection per CPS 4411.02, the 'QS' relay is removed t
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4411.02 Rev. 9a • CPS 3103.01E001 Rev. 13a • CPS 3304.01E002 Rev. 4b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	During an ATWS casualty, high pressure injection sources are terminated and prevented to lower level. If the 'QS' relay is not removed prior to depressing LPCI FM RHR B & C MANUAL INITIATION pushbutton, TB MCC 1M will be deenergized rendering the MDRFP unavailable. This will compound the casualty (ATWS Loss of All High Pressure Injection) requiring an Emergency Depressurization that would have otherwise been avoided.
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 4411.02 Rev. 9a • CPS 3103.01E001 Rev. 13a • CPS 3304.01E002 Rev. 4b
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)
KA Data	
KA Number / System Name: 259001 Reactor Feedwater System **Category / KA Statement:** K2 Knowledge of electrical power supplies to the following: K2.03 RFP auxiliary oil pumps **RO Value:** 2.3 (see justification above) **SRO Value:** 2.4 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q32 259001 K2.03

33 **ID: 1110171** **Points: 1.00**

The plant is operating at rated thermal power with NO LCOs in effect.

The CRS has directed you to perform channel functional testing of ATMs B21-N691A(E,B,F) IAW CPS 9030.01C016, LPCS/RHR Reactor Water Level B21-N691A(E,B,F) Checklist.

During performance of this surveillance, the _____(1)_____ function is affected.

During the time that B21-N691A is in calibration mode and is TRIPPED (trip LEDs illuminated), how will an actual high DW pressure condition impact the Division 1 ADS logic assuming all other systems operate as designed?

The Division 1 ADS logic will _____(2)_____.

A. (1) ADS Reactor Water Level 1
(2) NOT receive an automatic initiation signal

B. (1) ADS Reactor Water Level 3 Confirmatory
(2) NOT receive an automatic initiation signal

C. (1) ADS Reactor Water Level 1
(2) automatically initiate after the 6 minute AND 105 second timers time out

D. (1) ADS Reactor Water Level 3 Confirmatory
(2) automatically initiate after the 6 minute AND 105 second timers time out

Answer: A

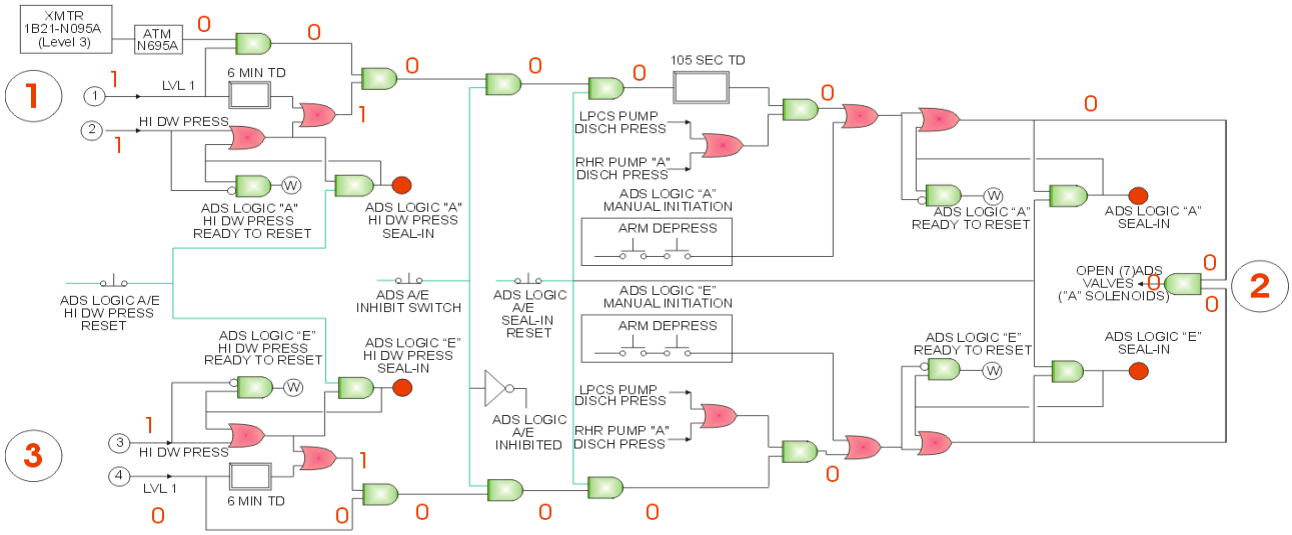
Answer Explanation

A is correct:

Per CPS 9030.01C016 LPCS/RHR Reactor Water Level B21-N691A(E,B,F) Checklist, instruments B21-N691A, E, B, and F provide RPV Low-Low-Low Level 1 input signals to ADS Trip Systems 1 and 2.

Per CPS 9030.01C009 ADS Reactor Water Level B21-N695A(B) Checklist, the ADS Level 3 confirmatory function is provided by ATMs B21-N695A & B.

Per CPS 5067-3A Div 1 High DWL PRESS SIG SEALED-IN, IF RPV Water level 1 & 3 signals are present with a LPCS or RHR A discharge pressure, ADS will initiate after a 105 second time delay. Since there is no RPV Level 3 signal from ADS Channel 'A', or RPV Level 1 or 3 signals from ADS channel 'E', Div 1 ADS logic will not initiate.



ADS (DIVISION 1) LOGIC

Logic Level 0 = NOT Tripped
Logic Level 1 = Tripped

From the simplified logic diagram above, the ADS 'A' Level 1 signal (at point 1) is being held in a tripped condition (logic level 1) per the question stem. However, with ATM N695A untripped (no level 3 signal present) a logic level 0 signal is maintained through all the downstream 'AND' gates (AND gates must get two logic level 1 inputs to get a logic level 1 output) from the 'A' ADS channel up to the final 'AND' gate at point 2.

For the 'E' ADS Channel (Point 3), a logic level 1 signal is generated from the DW pressure instrument, but with no level 1 trip generated from the E channel, a logic level 0 is carried to the final 'AND' gate at point 2, resulting in a logic level 0 output. To get a trip output (logic level 1) from the Div 1 ADS logic, logic level 1 signals from the 'A' AND 'E' channels must be generated.

B is incorrect but plausible if the examinee fails to recall the function of the LPCS/RHR Reactor Water Level B21-N691A(E,B,F) instruments.

C is incorrect but plausible if the examinee fails to recall that an RPV Level 3 confirmatory signal must be generated to trip the 'A' Channel of ADS, or that trips must be generated in ADS Channels 'A' AND 'E' to trip the Div 1 ADS logic.

D is incorrect but plausible if the examinee fails to recall the function of the LPCS/RHR Reactor Water Level B21-N691A(E,B,F) instruments and also fails to recall that the RPV Level 3 confirmatory signal must be generated to trip the 'A' Channel of ADS, or that trips must be generated in ADS Channels 'A' AND 'E' to trip the Div 1 ADS logic.

KA Justification - this question meets the KA because the examinee has to predict how the ADS logic is impacted by performing a channel functional test on a Nuclear Boiler RPV level instrument.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the function of the ADS logic to answer the question.

Question 33 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1110171
User-Defined ID:	CL-ILT-1110171
Cross Reference Number:	
Topic:	The plant is operating at rated thermal power with NO LCOs in effect. The CRS has directed you to
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 9030.01C009 Rev. 25b • CPS 9030.01C016 Rev. 31a • CPS 5067.03 Rev. 32b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 9030.01 Rev. 33a
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 9030.01C009 • CPS 9030.01C016
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F / 1-I)

KA Data

KA Number / System Name: 216000 Nuclear Boiler Instrumentation
Category / KA Statement: AI. Ability to predict and/or monitor changes in parameters associated with operating the NUCLEAR BOILER INSTRUMENTATION controls including: A1.03 Surveillance testing

RO Value: 2.9
SRO Value: 3.2

Tier: 2
RO Group: 2
SRO Group: 2

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: NA

Associated objective(s):

RO Q33 216000 A1.03

34 **ID: 1097909** **Points: 1.00**

If the Power Gate breaker (CB-2) in 1H13-P653 Rod Gang Drive Cabinet trips deenergizing the Control Rod Drive Hydraulic System Stabilizing Valves, Control Rod Drive Hydraulic (CRDH) system rod drive differential pressure will peg ____(1)____, requiring the CRD Pressure Control Valve 1C11-F003 to be throttled _____(2)_____ to restore rod drive differential pressure to the green band.

A. (1) low
(2) open

B. (1) low
(2) closed

C. (1) high
(2) open

D. (1) high
(2) closed

Answer: C

Answer Explanation

C is correct:

Per N-CL-OPS-201001 Control Rod Drive Hydraulic System lesson plan, the CRDH System contains 8 stabilizing valves that are normally open and then close to stabilize RD system flow during control rod movement. The stabilizing valves bypass flow around the CRD Pressure Control Valve 1C11-F003. If the stabilizing valves fail closed, drive header pressure (and dP) will increase.

Per 5006-3G RC&IS INOP, auto action #2 states that on an actual RC&IS lock-up, the RD stabilizing valves fail closed, causing RD drive dP to increase (C11-R602 on P601 will measure off-scale high).

Per N-CL-OPS-201001 Control Rod Drive Hydraulic System lesson plan, the Stabilizing Valves are powered and controlled by RC & IS.

Per N-CL-OPS-201002 Rod Control and Information System, opening CB-2 Power Gate breaker on the Rod Gang Drive Cabinet will deenergize the Control Rod Drive Hydraulic system stabilizing valves, causing the RD stabilizing valves to fail closed.

A is incorrect but plausible if the examinee fails to recall the impact of the loss of power to the RD System stabilizing valves and also incorrectly recalls how to mitigate the consequences of the RC&IS power supply failure.

B is incorrect but plausible if the examinee fails to recall the impact of the loss of power to the RD System stabilizing valves.

D is incorrect but plausible if the examinee correctly recognizes that opening CB-2 on the RGDC will cause rod drive dP to peg high, but incorrectly recalls what actions are required to correct the high differential pressure condition.

KA Justification - this question meets the KA because the examinee has to predict how a loss of power from the Rod Gang Drive Cabinet affects the CRD Hydraulic System, and then has to determine what actions are required to correct the condition.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to predict the response of a failure, and then apply operational knowledge to determine which way to manipulate the PCV to restore system parameters.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 34 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097909
User-Defined ID:	CL-ILT-SYSTEM ID #
Cross Reference Number:	
Topic:	If the Power Gate breaker (CB-2) in 1H13-P653 Rod Gang Drive Cabinet trips deenergizing the Contro
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5006.03 (3G) Rev. 6 • CPS 3304.02E001 Rev. 8e • N-CL-OPS-201001 Rev. 2 • N-CL-OPS-201002 Rev. 5
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5006.03 (3G)
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO / 3-SPK)
KA Data	

KA Number / System Name: 201001 Control Rod Drive Hydraulic System
Category / KA Statement: A2. Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM ; and (b) based on those predictions, use procedures to correct,
control, or mitigate the consequences of those abnormal conditions or operations: A2.03 Power supply failures

RO Value: 3.0
SRO Value: 3.1

Tier: 2
RO Group: 2
SRO Group: 2

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: NA

Associated objective(s):

RO Q34 201001 A2.03

35 **ID: 1104048** **Points: 1.00**

The plant is operating at power with **NO** Control Room maintenance in progress. The Steam Bypass and Pressure Control System controls are as follows:

- The LOAD LIMIT SET potentiometer is set at the 100% position.
- The Steam Flow Demand signal being produced by the Pressure Regulator is 80%.

THEN, a Steam Bypass and Pressure Control System electronic malfunction occurs.

As result, the **LOAD LIMIT SET** setpoint slowly starts LOWERING TO A NEW VALUE OF 70% and stops lowering.

NO operator actions have been taken.

Which ONE of the following describes the expected plant response?

A. Turbine Bypass Valves will open.

B. Generator load will remain at 80%.

C. RPV water level will swell to Level 8.

D. Reactor pressure AND power will stabilize at a higher value.

Answer: A

Answer Explanation

A is correct: Per N-CL-OPS-241000 STEAM BYPASS AND PRESSURE CONTROL, Exceeding the LOAD LIMIT SET:

a. If the STEAM FLOW DEMAND exceeds the LOAD LIMIT SET, the LOAD LIMIT SET will become the lower value going into the LVG and will limit Main Turbine load to its value.
b. The STEAM FLOW DEMAND signal now exceeds the CONTROL VALVE FLOW REFERENCE at the Bypass Valve Summer and the Bypass Valves will open to pass the excess steam flow.
c. When the Bypass Valves open annunciator 5006-5M BYPASS OPEN CHECK LPSP will alarm to alert the operator.

At rated power, LOAD LIMIT SET setpoint is 100%. After the malfunction occurs, the new setpoint is 70%. Steam Flow Demand signal now exceeds the Control Valve Flow Reference signal by 10% (80% steam flow – 70% = 10%). Turbine Bypass Valves (TBVs) will open to pass the excess steam to the condenser. The plant will stabilize with a reduced generator load (about 10% less load) and normal (approximately initial) reactor pressure. Any RPV level transient that may actually occur during the slight (if any noticeable) pressure transient, will be corrected by the Feedwater Level Control System.

B is incorrect but plausible if the candidate fails to recognize that the plant will stabilize with a reduced generator load (about 10% less load).

C is incorrect but plausible if the candidate fails to recognize that any RPV level transient will be corrected by the Feedwater Level Control System.

D is incorrect but plausible if the candidate recognizes that the Turbine Bypass Valve steam flow bypasses feedwater heating which in turn causes reactor power to stabilize at a higher value but fails to recognize that the plant will stabilize at a normal (approximately initial) reactor pressure.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the effect that a loss or malfunction of the Reactor/Turbine Pressure Regulating System will have on Bypass valves. Specifically, the candidate must recognize the Steam Bypass and Pressure Control system malfunction presented in the stem and its effect on the Bypass valves.

Cog Level Justification - this is a high cog question written at the analysis/application level. The examinee has to solve a steam flow demand problem based on conditions presented in the stem and then using knowledge of the Steam Bypass and Pressure Control system, determine the correct system response.

Question 35 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104048
User-Defined ID:	CL-ILT-1104048
Cross Reference Number:	
Topic:	The plant is operating at power with NO Control Room maintenance in progress. The Steam Bypass an
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3105.04 Rev. 14b N-CL-OPS-241001 Rev. 001
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Improved answers and answer explanations. Added K/A and Cog level justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3105.04 Rev. 14b N-CL-OPS-241001 Rev. 001
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 241000 Reactor/Turbine Pressure Regulating System **Category / KA Statement:** K3. Knowledge of the effect that a loss or malfunction of the REACTOR/TURBINE PRESSURE REGULATING SYSTEM will have on the following: K3.06 Bypass valves **RO Value:** 4.1 **SRO Value:** 4.1 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q35 241000 K3.06

36 **ID: 1097911** **Points: 1.00**

The Main Steam Isolation Valves are designed to open with differential pressure no more than _____(1)_____ psid.

During a reactor startup from cold conditions, the MSIVs are normally opened with _____(2)_____.

A. (1) 50
(2) RPV pressure ~ 3-5 psig

B. (1) 200
(2) RPV pressure ~ 3-5 psig

C. (1) 50
(2) Reactor Coolant Temperature between 200°F and 210°F

D. (1) 200
(2) Reactor Coolant Temperature between 200°F and 210°F

Answer: B

Answer Explanation

B is correct:

Per CPS 3101.01 Main Steam (MS) limitation 6.1 MSIV Operational Limits, do not open the MSIVs or Main Steam Shutoff Valves against a dP > 200 psid. Licensing Design Bases (LBD-1) references SER 37-82 which was written to document several industry operating experiences where MSIV hydraulic cylinders failed due to operation with high differential pressure across the valve seat.

CPS 3002.01 Heatup and Pressurization, step 8.1.5.3 states that the MSIVs are normally equalized and opened as soon as RPV pressure is ~ 3 - 5 psig.

CPS 3101.01 Main Steam (MS) discussion step 2.1.4 states that the optimum conditions for opening MSIV's is when the reactor vessel first reaches saturation conditions (~ 213°F to 214°F). In this condition, the delta P across the MSIV's is at it's lowest. Saturation conditions in the vessel will promote boiling and insure a vacuum is not drawn on the vessel internals.

A is incorrect but plausible if the examinee fails to recall the design differential pressure limit for opening the MSIVs. The examinee may select this response based on recall of the preferred limit for opening the MSIVs which is < 50 psid (listed in 3101.01 step 6.1.1).

C is incorrect but plausible if the examinee fails to recall the design differential pressure limit for opening the MSIVs, and incorrect recall of when the MSIVs are opened during a reactor startup and heatup. The examinee may select this response based on:

- recall of the preferred limit for opening the MSIVs which is < 50 psid (listed in 3101.01 step 6.1.1), and
- recall of the reactor water temperature band for closing the Reactor Head Vents (listed in 3002.01 step 8.1.6).

D is incorrect but plausible if the examinee fails to recall when the MSIVs are opened during a reactor startup and heatup. The examinee may select this response based on recall of the reactor water temperature band for closing the Reactor Head Vents (listed in 3002.01 step 8.1.6).

KA Justification - this question meets the KA because the examinee has to recall the differential pressure limit for opening the MSIVs, and the procedural requirements for opening the MSIVs (both of which are operational implications) during a reactor startup & heatup.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall facts about the MSIV design and procedure limits.

Question 36 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097911
User-Defined ID:	CL-ILT-1097911
Cross Reference Number:	
Topic:	The Main Steam Isolation Valves are designed to open with differential pressure no more than _____
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3002.01 Rev. 30e • CPS 3101.01 Rev. 23b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3002.01 CPS 3101.01
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F, 1-P)
KA Data	
KA Number / System Name: 239001 Main and Reheat Steam System **Category / KA Statement:** K5. Knowledge of the operational implications of the following concepts as they apply to MAIN AND REHEAT STEAM SYSTEM : K5.06 Air operated MSIV's **RO Value:** 2.8 **SRO Value:** 2.9 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q36 239001 K5.06

37 **ID: 1103985** **Points: 1.00**

An ATWS has occurred with Reactor Power at 3%. Additional plant conditions are as follows:

- The Main Condenser is being utilized as the RPV heat sink.
- Reactor water level is being maintained by the preferred ATWS systems.

Under these conditions, which ONE of the following is the reason for terminating and preventing injection from Low Pressure Core Spray (LPCS) and Low Pressure Coolant Injection (LPCI) Systems?

A. PREVENTS thermal stressing the fuel cladding thereby precluding fuel damage.

B. PREVENTS diluting boron, allowing it to more effectively insert negative reactivity into the core.

C. PREVENTS injection inside the core shroud which will help prevent power excursions from occurring.

D. REDUCES reactor water level which in turn will REDUCE reactor power through INCREASED voiding.

Answer: C

Answer Explanation

C is correct: Per the Clinton Power Station Emergency Operating Procedures Technical Bases (EOP-TB) page 5-16, the preferred injection systems in ATWS RPV Control are those which inject outside the core shroud. Since LPCS and LPCI inject inside the core shroud, they may be used only if the preferred systems cannot maintain RPV water level within the desired band. If they are in use when EOP 1A is entered, injection must be terminated, even if no requirement for lowering level exists. The initiation logic should be bypassed to preclude undesired automatic starts (Inhibit ADS).

One reason why ADS actuation is prevented (page 5-5): Rapid, uncontrolled injection of relatively cold, unborated water could occur as RPV pressure decreases. If the reactor is not shutdown or if the shutdown margin is small, this could add sufficient positive reactivity to cause a power excursion large enough to damage the core.

A is incorrect but plausible if the candidate mistakenly believes that the EOP-TB reason for Adequate Core Cooling (to prevent rupturing the fuel clad) is applicable to thermal stress produced from LPCS and LPCI injecting inside the core shroud.

B is incorrect but plausible if the candidate fails to realize that under the conditions provided in the stem, SLC injection is not authorized by EOP-1A and therefore boron dilution is not the reason for terminating and preventing injection from the Low Pressure ECCS Systems.

D is incorrect but plausible if the candidate fails to realize that there is no requirement to reduce RPV level to reduce reactor power when using Level Band 'A'.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the specific bases for EOPs with regard to Reactor Vessel Internals. Specifically, the candidate must demonstrate technical bases understanding of ATWS Injection Systems and the reason for preference in their use.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall facts from the EOP technical bases with regard to ATWS Injection Systems and why some are terminated and prevented.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 37 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	2.00
System ID:	1103985
User-Defined ID:	CL-ILT-1103985
Cross Reference Number:	
Topic:	An ATWS has occurred with Reactor Power at 3%. Additional plant conditions are as follows: The M
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

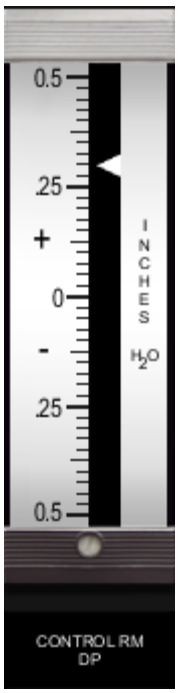
General Data	
Technical Reference with Revision Number:	CPS 4404.01 EOP-1A Rev. 29 EOP-TB Rev. 6
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank 745720
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved Answer Explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4404.01 EOP-1A Rev. 29 EOP-TB Rev. 6
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-B)
KA Data	
KA Number / System Name: 290002 Reactor Vessel Internals **Category / KA Statement:** 2.4.18 Knowledge of the specific bases for EOPs. **RO Value:** 3.3 **SRO Value:** 4.0 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.1	

Associated objective(s):

RO Q37 290002 2.4.18

38 **ID: 1104025** **Points: 1.00**

Main Control Room (MCR) ventilation is in normal operation IAW CPS 3402.01 CONTROL ROOM HVAC (VC). MCR differential pressure is currently as shown below:



In the event of a toxic gas release external to the plant, Control Room HVAC is required to be operated in the _____(1)_____ mode.

During this mode of operation, Control Room D/P is expected to trend ___(2)___.

A. (1) High Chlorine Mode
(2) up

B. (1) High Chlorine Mode
(2) down

C. (1) Manual Purge Initiation Mode
(2) up

D. (1) Manual Purge Initiation Mode
(2) down

Answer: B

Answer Explanation

B is correct: Per CPS 4003.02 TOXIC GAS, 4.0 Subsequent Operator Actions, 4.3 Operate MCR ventilation per CPS 3402.01 CONTROL ROOM HVAC (VC):

1. External Toxic Gas - use High Chlorine Mode
2. Internal Toxic Gas - use Manual Purge Initiation Mode

Per N-CL-OPS-290003 CONTROL ROOM HVAC SYSTEM (VC), E. Chlorine Mode: While in this recirculation mode of operation no makeup air is introduced into the system for the replacement of air lost due to leakage. CR boundary can potentially go negative.

Based on the conditions presented in the stem, the toxic gas threat is external to CPS requiring operation of VC in the High Chlorine Mode. Since in this mode of operation no makeup air is introduced for replacement of air lost due to leakage, the Main Control Room (MCR) envelope differential pressure (D/P) will trend DOWN (toward zero).

A is incorrect but plausible if the candidate recognizes that VC must be shifted to the High Chlorine Mode for an External Toxic Gas situation, but incorrectly believes that in the High Chlorine Mode the MCR envelope D/P will trend UP (more positive) such as what happens when VC is shifted to the Manual Purge Initiation Mode.

C is incorrect but plausible if the candidate fails to recall that VC must be shifted to the High Chlorine Mode for an External Toxic Gas situation, choosing Manual Purge Initiation Mode which will cause the MCR envelope D/P to trend UP (more positive).

D is incorrect but plausible if the candidate fails to recall that VC must be shifted to the High Chlorine Mode for an External Toxic Gas situation, chooses the Manual Purge Initiation Mode and mistakenly believes that in the Manual Purge Initiation Mode the MCR envelope D/P will trend DOWN (toward zero) such as what happens when VC is shifted to the High Chlorine Mode.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the operational implications of Differential Pressure Control as it applies to Control Room HVAC. Specifically, the candidate must recognize the operational implications of the situation presented in the stem and how differential pressure is controlled/affected.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall procedure steps that require shifting VC based on stem conditions and facts about how MCR D/P is controlled/affected based on the VC shift.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 38 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104025
User-Defined ID:	CL-ILT-2175
Cross Reference Number:	
Topic:	Main Control Room (MCR) ventilation is in normal operation IAW CPS 3402.01 CONTROL ROOM HVAC (VC).
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4003.02 Rev. 1a N-CL-OPS-290003 Rev. 002
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4003.02 Rev. 1a N-CL-OPS-290003 Rev. 002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F, 1-P)
KA Data	
KA Number / System Name: 290003 Control Room Heating, Ventilation and Air Conditioning **Category / KA Statement:** K5. Knowledge of the operational implications of the following concepts as they apply to CONTROL ROOM HVAC K5.02 Differential pressure control **RO Value:** 2.8 **SRO Value:** 2.8 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q38 290003 K5.02

39 **ID: 1102597** **Points: 1.00**

CPS is operating at full power with conditions as follows:

- Both Turbine Driven Reactor Feed Pumps (TDRFPs) are on the Master Level Controller (MLC) in Automatic
- Motor Driven Reactor Feed Pump (MDRFP) is in standby and available.

Then, the Main Turbine tripped (cause unknown).

Given these conditions, which one of the following describes the expected:

1) RPV level response to the transient, and

2) FW System response (including manual actions that must be taken, if any)?

(Note - assume any FW system responses not listed actuate correctly.)

	Case 1	Case 2	Case 3	Case 4
RPV Level Response	Lowers below Level 3 and then rises	Lowers below Level 3 and then rises	Rises above Level 8 and then lowers	Rises above Level 8 and then lowers
Expected FW System Response	TDRFP 'A' trips MDRFP auto starts TDRFP 'B' goes to zero speed MDRFP / FW004 controls RPV level in Automatic	TDRFP 'B' trips MDRFP auto starts TDRFP 'A' goes to zero speed MDRFP / FW004 controls RPV level in Automatic	Both TDRFPs trip MDRFP auto starts at ~ 50 inches MDRFP / FW004 controls RPV level in Automatic	Both TDRFPs trip MDRFP / FW004 controls RPV level in Automatic
Manual Actions Required	None	None	None	High Level trips must be manually reset before the MDRFP will start.

A. Case 1

B. Case 2

C. Case 3

D. Case 4

Answer: B

Answer Explanation

B is correct - RPV water level will lower below Level 3 as a result of the void collapse caused by the pressure transient from the Main Turbine trip and the resulting reactor scram.

Per CPS 3103.01 Feedwater (FW) Appendix G DFW Automatic Scram Sequencing, the DFW system will respond during a scram transient as follows:

1. DFW AUTO SCRAM ACTIONS with 2 TDRFPs feeding and MDRFP available : Upon receipt of low reactor water level (+8.9 in), 2 RPS signals and WR level turning (increasing), DFW will trip the B TDRFP, close 1FW002B and start the MDRFP. Once WR level reached 0 inches and rising, the 1FW004 will transfer to AUTO, A TDRFP will go to zero speed, 1FW002A will close and 1FW010A will fully open. Reactor water level will control on 1FW004 at 20 inches NR setpoint.

A is incorrect but plausible if the examinee fails to recall that DFW trips the 'B' TDRFP, not the 'A' TDRFP, if both TDRFPs are feeding with the MDRFP available.

C is incorrect but plausible if the examinee correctly determines that multiple SRVs will lift when the turbine trips (which will cause RPV level to swell) but fails to recall that the swell effect lags the scram and is overridden by the shrink caused by the pressure transient and the scram. This distracter is also incorrect in that Level 8 trips must be manually reset for the MDRFP to automatically start.

D is incorrect but plausible if the examinee correctly determines that multiple SRVs will lift when the turbine trips (which will cause RPV level to swell) but fails to recall that the swell effect lags the scram and is overridden by the shrink caused by the pressure transient and the scram.

KA Justification - this question meets the KA because the examinee has to determine how a change in reactor pressure following a full power turbine trip impacts RPV water level and the resulting impact on the Feedwater System (the operational implication) to answer this question.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to determine how the transient described in the stem will impact RPV water level and FW system response based on analysis of conditions provided in the stem.

Question 39 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102597
User-Defined ID:	CL-ILT-1102597
Cross Reference Number:	
Topic:	CPS is operating at full power with conditions as follows: Both Turbine Driven Reactor Feed Pumps
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3103.01 Rev. 29d
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295005 Main Turbine Generator Trip **Category / KA Statement:** AK1. Knowledge of the operational implications of the following concepts as they apply to MAIN TURBINE GENERATOR TRIP : AK1.03 Pressure effects on reactor level **RO Value:** 3.5 **SRO Value:** 3.7 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.8 to 41.10 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q39 295005 K1.03

40 **ID: 1102767** **Points: 1.00**

The plant was initially operating at 92% power when an inadvertent Group 1 isolation occurred.

Very little rod motion occurred on the subsequent scram.

Neither manual scram nor ARI were successful.

The 'B' RO reported both SLC pumps were started at 10:05.

The 'A' RO is having success inserting control rods per CPS 4411.08 ALTERNATE CONTROL ROD INSERTION.

What is the FIRST opportunity that a cooldown is allowed to be started?

A. As soon as reactor power is less than IRM Range 7 and lowering.

B. At time 10:45.

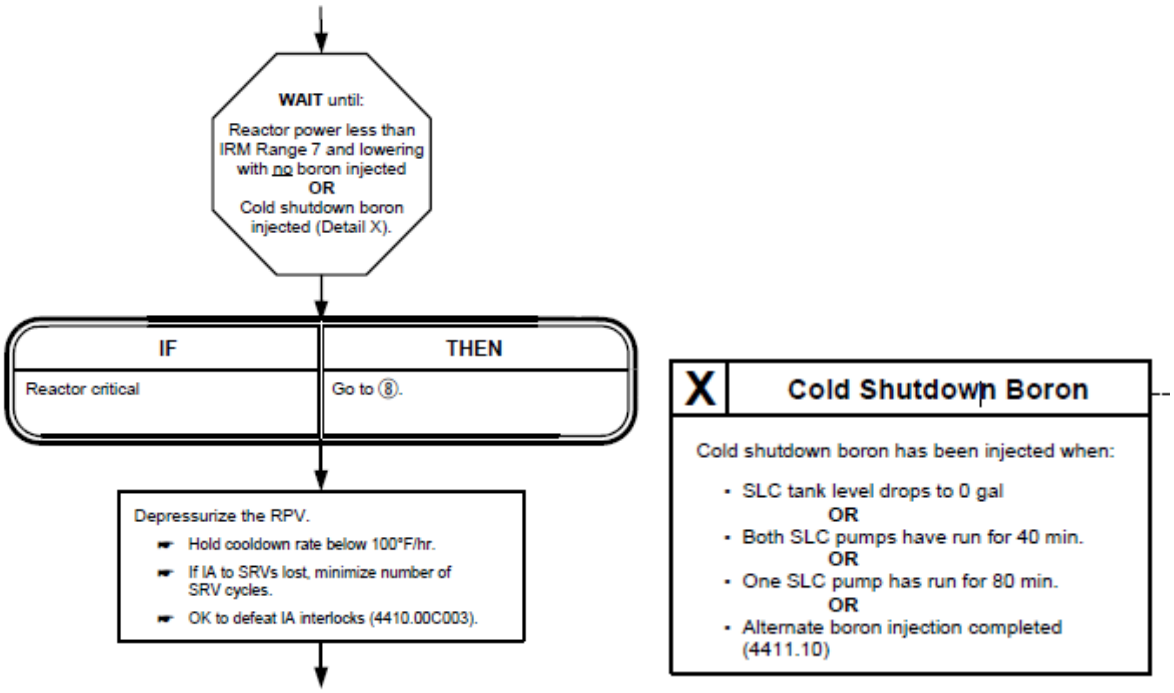
C. At time 11:25.

D. At time 11:35 when all rods are in.

Answer: B

Answer Explanation

B is correct: Per CPS 4404.01 EOP-1A ATWS RPV Control, with the ATWS a cooldown can only be commenced when either cold shutdown boron weight has been injected or the reactor is subcritical with no boron injected. In the stem SLC was reported started at 10:05 which includes verifications that SLC is injecting and that the RWCU system has isolated (injecting properly). At 10:45 both SLC pumps have been operating for 40 minutes which corresponds to Cold Shutdown Boron Weight.



A is incorrect but plausible if the candidate fails to recognize that even if the reactor becomes subcritical, boron has been injected and therefore a cooldown cannot commence until Cold Shutdown Boron Weight has been injected IAW EOP-1A pressure leg.

C is incorrect but plausible if the candidate mistakenly applies the necessary run time for one SLC pump to reach Cold Shutdown Boron Weight.

D is incorrect but plausible if the candidate fails to recognize that the cooldown may commence before all rods are in if Cold Shutdown Boron Weight is injected.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the operational implications of cooldown effects on reactor power with regard to an ATWS condition. Based on plant conditions, Cold Shutdown Boron MUST be completely injected in order to minimize the chances of a rise in reactor power (return to criticality) once cooldown is commenced.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the criteria for Cold Shutdown Boron Weight and its application to the stem conditions.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 40 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102767
User-Defined ID:	CL-ILT-N08002
Cross Reference Number:	
Topic:	The plant was initially operating at 92% power when an inadvertent Group 1 isolation occurred. V
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4404.01 EOP-1A Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	CPS NRC exam 08-01
Question Source: (i.e. New, Bank, Modified)	Bank CL-ILT-N08002
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved one distractor and answer explaination.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4404.01 EOP-1A Rev. 29
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)

KA Data

KA Number / System Name: 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown
Category / KA Statement: EK1. Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : EK1.06 Cooldown effects on reactor power

RO Value: 4.0
SRO Value: 4.2

Tier: 1
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.8 to 41.10
10CFR55-43 (SRO) Data: N/A

Associated objective(s):

RO Q40 295037 K1.06

41 **ID: 1098578** **Points: 1.00**

Consider EOP-1A, ATWS RPV Control, when answering the following.

WITH reactor power ABOVE 5%, which ONE of the following identifies the HIGHEST reactor water level that can be characterized by the following statement?

“Some oscillations could still occur, but large-scale instabilities leading to core damage are NOT EXPECTED.”

A. - 40 inches

B. - 60 inches

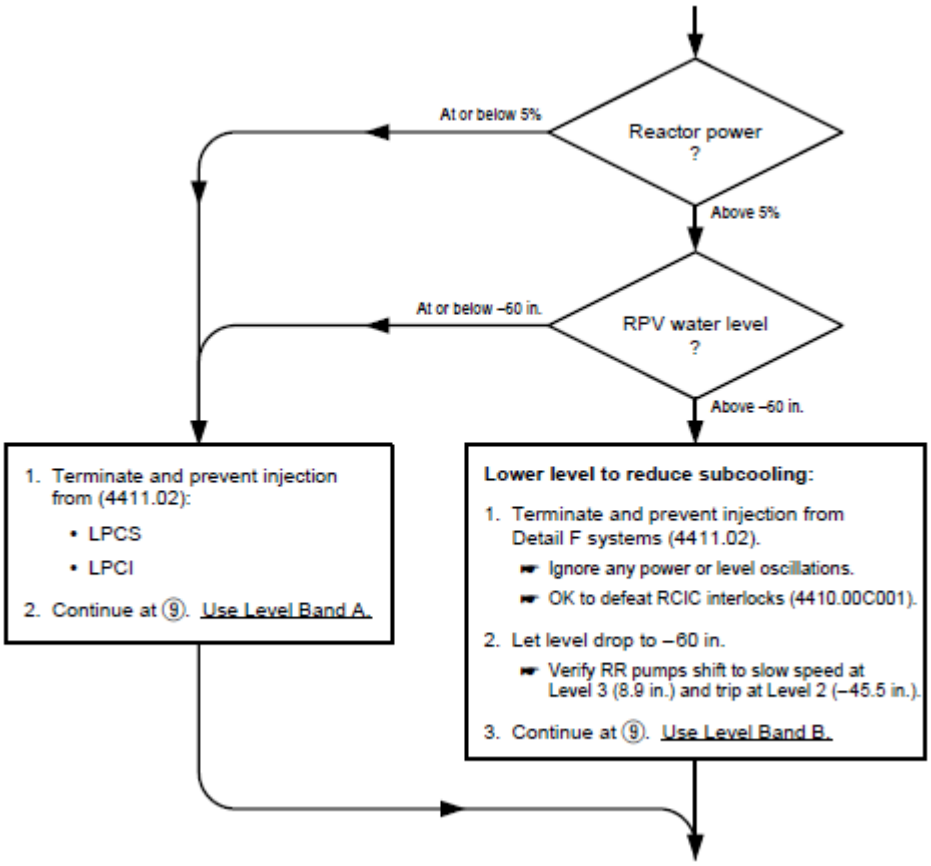
C. - 140 inches

D. - 162 inches

Answer: B

Answer Explanation

B is correct: Per Clinton Power Station Emergency Operating Procedures Technical Bases (EOP-TB) for EOP-1A ATWS RPV Control starting on page 5-14; Prompt level reduction is the most effective method of preventing or suppressing power oscillations. If power remains above the APRM downscale setpoint following a reactor scram, RPV water level is lowered to an elevation 2 ft. below the feedwater sparger. Uncovering the sparger heats the incoming feedwater, thereby reducing subcooling at the core inlet. RPV water level is lowered only if reactor power is above 5%, the APRM downscale setpoint. At lower power levels, the boiling boundary will be relatively high and the void content will be relatively low. Some oscillations could still occur, but large-scale instabilities leading to core damage are not expected.



RPV water level is allowed to drop from boiloff until it reaches -60 in. The following step will then reestablish injection and stabilize RPV water level. "Level Band B" controls level between the top of the active fuel and -60 in. Controlling level above the top of the active fuel ensures that the core will remain adequately cooled and avoids loss of the Wide Range level indication. Controlling level below -60 in. maintains the core inlet subcooling low, thereby preventing core instabilities.

A is incorrect but plausible if the candidate fails to recognize that the potential for instabilities is largely dependent upon core inlet subcooling. As such, 'lowering level to reduce subcooling' ONLY allows the use of Level Band B (- 162 in. to - 60 in.). In this situation, the candidate incorrectly selected a level in Level Band A (- 162 in. to 52 in.) which is used when no explicit requirement for lowering RPV water level exists.

C is incorrect but plausible if the candidate fails to recognize that 'lowering level to reduce subcooling' ONLY allows the use of Level Band B (- 162 in. to - 60 in.) OR although within Level Band B, question stem asks for highest value within Level Band B.

D is incorrect but plausible if the candidate fails to recognize that 'lowering level to reduce subcooling' ONLY allows the use of Level Band B (- 162 in. to - 60 in.) OR although within Level Band B, the candidate believes that maintaining level at - 162 in. (TAF) is appropriate when going below that value could jeopardize adequate core cooling.

KA Justification - this question meets the KA because the candidate must understand the operational implications of RPV water level effects on reactor power. In this case how and why lowering RPV water level reduces subcooling during an ATWS scenario. An ATWS scenario was chosen for this question because changing reactor water level in the normal control band has no effect on reactor power.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall information found in the EOP Technical Bases to answer the question.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 41 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1098578
User-Defined ID:	CL-ILT-1098578
Cross Reference Number:	
Topic:	Consider EOP-1A, ATWS RPV Control, when answering the following. WITH reactor power ABOVE 5%, whi
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4404.01 Rev. 29 EOP-TB Rev. 6
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Improved answer explaination.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4404.01 Rev. 29 EOP-TB Rev. 6
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-B)
KA Data	
KA Number / System Name: 295031 Reactor Low Water Level **Category / KA Statement:** EK1. Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL : EK1.03 Water level effects on reactor power **RO Value:** 3.7 **SRO Value:** 4.1 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.8 to 41.10 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q41 295031 K1.03

42 **ID: 1102844** **Points: 1.00**

At 0100 an earthquake was reported and you note the following:

- Drywell pressure is 1.5 psig and RISING
- HPCS storage tank level is 3 inches and LOWERING

At 0102 you note the following:

- Main Generator TRIPPED
- Reactor SCRAM
- Drywell pressure is 1.7 psig and RISING
- RPV water level is 55 inches and STEADY

Which of the following scenarios describes how High Pressure Core Spray would respond WITH NO FURTHER OPERATOR ACTION?

	HPCS Pump (1E22-C001)	HPCS To CNMT Outbd Isln Valve (1E22-F004)	HPCS Pump Min Flow To Suppr Pool Valve (1E22-F012)	HPCS Storage Tank Suction Valve (1E22-F001)	HPCS Suppr Pool Suction Valve (1E22-F015)
1	Starts	Opens	Remains Shut	Shuts	Opens
2	Starts	Remains Shut	Opens	Shuts	Opens
3	Remains Off	Remains Shut	Remains Shut	Shuts	Opens
4	Remains Off	Remains Shut	Remains Shut	Remains Open	Remains Shut

A. 1

B. 2

C. 3

D. 4

Answer: B

Answer Explanation

B is correct: Per CPS 3309.01 HIGH PRESSURE CORE SPRAY (HPCS), the HPCS system initiates automatically on either high drywell pressure (1.68 psig) or low RPV water level (Level 2, -45.5 in.). Based on plant conditions presented in the stem, the HPCS pump would START on high Drywell Pressure but the RPV water level channel trip (Level 8, 52 in.) results in a closure signal to the HPCS Pump Discharge Valve (1E22-F004). Since the HPCS Pump Discharge Valve (1E22-F004) remains SHUT; whenever HPCS flow is < 625 gpm with HPCS discharge pressure >145 psig, the Suppression Pool Min Flow Bypass Valve (1E22-F012) would OPEN.

Additionally, the HPCS pump suction automatically shifts to the suppression pool from the RCIC storage tank (1E22-F015 opens and 1E22-F001 closes) upon receiving any of the following:
- Low RCIC Storage Tank Level: 0.3’ (3”)
- High Suppression Pool Level: 19’ 11.5”

This shift takes place regardless of whether the system is operating or not.

A is incorrect but plausible if the candidate determines that based on the conditions presented in the stem the HPCS pump suction would shift due to low RCIC storage tank level and the HPCS pump would start on high drywell pressure but fails to recognize that the RPV level presented in the stem would preclude the HPCS Pump Discharge Valve (1E22-F004) from opening due to level being greater than the high RPV water level (Level 8, 52 in.) setpoint.

C is incorrect but plausible if the candidate determines that based on the conditions presented in the stem the HPCS pump suction would shift due to low RCIC storage tank level but fails to recognize that the HPCS pump would start on high drywell pressure.

D is incorrect but plausible if the candidate fails to recognize that based on the conditions presented in the stem the HPCS pump suction would shift due to low RCIC storage tank level and the HPCS pump would start on high drywell pressure.

KA Justification - this question meets the KA because the candidate must have knowledge of the interrelations between high drywell pressure and the HPCS system to correctly select the system's response based on the plant conditions presented in the stem.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to recognize interactions between different systems (drywell instrumentation, RPV water level instrumentation, RCIC storage tank level instrumentation, HPCS) and identify the consequences based on plant conditions.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 42 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1102844
User-Defined ID:	CL-LC-0664
Cross Reference Number:	CPS QUESTIONS TRANSFER 2-2
Topic:	At 0100 an earthquake was reported and you note the following: Drywell pressure is 1.5 psig and R
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3309.01 Rev. 17 CPS 5062.02 Rev. 28
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Modified 597971
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Reformatted answers, added suction swap, improved answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3309.01 Rev. 17 CPS 5062.02 Rev. 28
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 295024 High Drywell Pressure **Category / KA Statement:** EK2. Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: EK2.02 HPCS: Plant-Specific **RO Value:** 3.7 **SRO Value:** 3.7 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q42 295024 K2.02

43 **ID: 1102728** **Points: 1.00**

The plant was operating at rated thermal power when annunciator 5003-5M CNMT/DW IA ISOL VLV CLOSED was received.

Attempts to restore CNMT/DW instrument air were unsuccessful.

Based on these conditions, the in-service CRD Flow Control Valve (1C11-F002B) will fail ____(1)____.

Then, the reactor was manually scrammed at the direction of the Control Room Supervisor (CRS).

This loss of air will _____(2)_____ the time required for all rods to fully insert.

A. (1) to the minimum flow position
(2) NOT significantly impact

B. (1) to the minimum flow position
(2) significantly shorten

C. (1) to the maximum flow position
(2) significantly lengthen

D. (1) to the maximum flow position
(2) NOT significantly impact

Answer: A

Answer Explanation

A is correct:

Per CPS 3214.01C001 Cnmt/DW IA Outage Checklist, the table on page 2 states that the 1C11-F002A(B) Flow Control Valves fail to minimum position, and the scram inlet and outlet valves fail open filling the Scram Discharge volume causing a scram.

Per N-CL-OPS-201001 Control Rod Drive Hydraulic System, during a scram, the CRD Flow Controller will sense high flow in the CRD Charging Header causing the in-service CRD FCV to stroke closed to the minimum flow position. Since the fail position and the scram position are the same, rod insertion time will not be impacted.

B is incorrect but plausible if the examinee fails to recall the response of the CRD FCV to a scram and then determines that scram insertion time is shortened during a scram with a loss of containment air.

C is incorrect but plausible if the examinee incorrectly recalls the failure response of the CRD FCVs (they fail to the minimum flow position on loss of air, not open) and then determines that the scram insertion time is lengthened based on the incorrect recall. Plausible because many air operated valves at CPS do fail open on loss of air.

D is incorrect but plausible if the examinee incorrectly recalls the failure response of the CRD FCVs (they fail to the minimum flow position on loss of air, not open) and also fails to recall the response of the CRD FCV to a scram. Plausible if the examinee fails to recall that high flow in the CRD charging water header during the scram will cause the CRD FCV (which controls cooling water header flow) to close.

KA Justification - this question meets the KA because the examinee has to determine how a loss of instrument air in the containment will affect the CRD Hydraulic system.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the conditions in the stem, and then determine the impact to the CRD system and the control rods.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 43 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102728
User-Defined ID:	CL-ILT-1102728
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when annunciator 5003-5M CNMT/DW IA ISOL VLV CLOSED
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3214.01C001 Rev. 6b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank - Modelled from CL-ILT-5302
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Revised the stem. Added distracter plausibility statements. Added KA and cog level justification statements. Added General Data table.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 295019 Partial or Complete Loss of Instrument Air **Category / KA Statement:** AK2. Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: AK2.01 CRD hydraulics **RO Value:** 3.8 **SRO Value:** 3.9 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

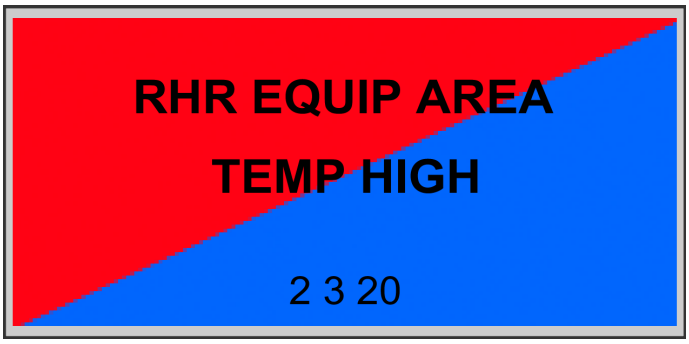
RO Q43 295019 K2.01

44 **ID: 1097920** **Points: 1.00**

The plant is in Mode 3 transitioning to Mode 4 with conditions as follows:

- The preferred RHR loop is in Shutdown Cooling Mode.
- RPV Head Spray is in service with head spray flow at ~ 500 gpm.

Then, the annunciator shown in the graphic below was received due to a leak in the heat exchanger room of the in-service SDC loop.



The 'B' RO has verified both temperature modules tripped for RHR Heat Exchanger Room 'B'.

Under these conditions, which of the following components is expected to automatically realign (valves reposition from open to close, closed breakers trip open, etc.).

ONLY the components in line _____ will realign.

1	RHR 'A' Pump	1E12-F053A	1E12-F008 & F009	1E12-F023
2	RHR 'A' Pump	1E12-F053A	1E12-F008 & F009	
3	RHR 'B' Pump	1E12-F053B	1E12-F008 & F009	1E12-F023
4	RHR 'B' Pump	1E12-F053B	1E12-F008 & F009	

Note - Valve descriptions are as follows:

Valve	Description
1E12-F053A	RHR A To Feedwater S/D Cooling Rtrn Vlv
1E12-F053B	RHR B To Feedwater S/D Cooling Rtrn Vlv
1E12-F008	Shutdown Cooling Outbd Suct Isol Vlv
1E12-F009	Shutdown Cooling Inbd Suct Isol Vlv
1E12-F023	RPV Head Spray Injection Isol Valve

A. 1

B. 2

C. 3

D. 4

Answer: C

Answer Explanation

C is correct:

Per CPS 3312.03 RHR - Shutdown Cooling (SDC) & Fuel Pool Cooling and Assist (FPC&A), the 'B' loop of RHR is preferred to the 'A' loop of RHR because system flushing and vessel letdown can be aligned remotely using valves controlled from the MCR which reduces radiation dose to operators. In addition, Head Spray can be initiated only when RHR Loop B is operating in SDC (the head spray line taps off upstream of the 1E12-F053B RHR B to Feedwater S/D Cooling Return Valve).

Per annunciator 5064-4E RHR EQUIP AREA TEMP HIGH, a high temperature condition in the RHR Hx B room will cause a Group 2, 3 and 20 CRVICS actuation.

Per CPS 4001.02C001 Automatic Isolation Checklist, CRVICS Group 3 consists of 1E12-F053A, 1E12-F053B, 1E12-F008, 1E12-F009, and 1E12-F023.

Per CPS 9000.01D001 page 19, there are two ambient temperature instruments in the 'B' RHR Heat Exchanger Room (1E31-N610A and N610B).

- Per E02-1LD99-105, contact E31-N610A opens on high temperature, de-energizing relay K4A (shown on Ref. 6 sheet 22 - E02-1NB99-222). On E02-1NB99-222 at H3, opening contact E31-K4A results in closure signals for 1E12F037A and 1E12-F053A (shown on the same page), and also sends closure signals to 1E12-F008 and 1E12-F023 (shown on E02-NB99-225 at B4).
- Per E02-1LD99-106, contact E31-N610B opens on high temperature, de-energizing relay K4B (shown on Ref. 6 sheet 23 - E02-1NB99-223). On E02-1NB99-223 at H3, opening contact E31-K4B results in closure signals for 1E12F037B and 1E12-F053B (shown on the same page), and also sends a closure signal to 1E12-F009 (shown on E02-NB99-226 at E12).

Per annunciator 5065-3A, closure of 1E12-F009 Shutdown Cooling Inbd Suct Isol Vlv with 1E12-F004B RHR 'B' Suppr Pool Suction Valve not full open will cause RHR 'B' pump to trip. In SDC Mode, 1E12-F004B is required to be closed.

A is incorrect but plausible if the examinee incorrectly recalls which loop of RHR is preferred for SDC.

B is incorrect but plausible if the examinee incorrectly recalls which loop of RHR is preferred for SDC and also fails to recall that 1E12-F023 (a Division 1 valve) is a CRVICS Group 3 isolation valve and will automatically close on high ambient temperature in the RHR 'B' Hx Room.

D is incorrect but plausible if the examinee fails to recall that 1E12-F023 (a Division 1 valve) will automatically close on a Group 3 Isolation signal caused by high ambient temperature in the RHR 'B' Hx Room.

KA Justification - this question meets the KA because the examinee has to determine the impact of a high Heat Exchanger Room Ambient temperature condition on the operating SDC loop and the Head Spray Isolation Valve to answer the question.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall which RHR Loop is preferred for SDC and also has to recall the actuations that occur when a Group 3 Isolation signal is generated.

Question 44 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097920
User-Defined ID:	CL-ILT-1097920
Cross Reference Number:	
Topic:	The plant is in Mode 3 transitioning to Mode 4 with conditions as follows: The preferred RHR loop
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 9000.01D001 Rev. 54c (page 19) • CPS 4001.02C001 Rev. 15e • CPS 5064.04 (4E) Rev. 32c • CPS 5065.03 (3A) Rev. 28a • E02-1LD99-105 Rev. N • E02-1LD99-106 Rev. M • E02-1NB99-222 Rev. L • E02-1NB99-223 Rev. K • E02-1NB99-225 Rev. F • E02-1NB99-226 Rev. E
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F / 1-I)
KA Data	
KA Number / System Name: 295021 Loss of Shutdown Cooling **Category / KA Statement:** AK2. Knowledge of the interrelations between LOSS OF SHUTDOWN COOLING and the following: AK2.06 Reactor vessel headspray: Plant-Specific **RO Value:** 2.5 **SRO Value:** 2.6 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

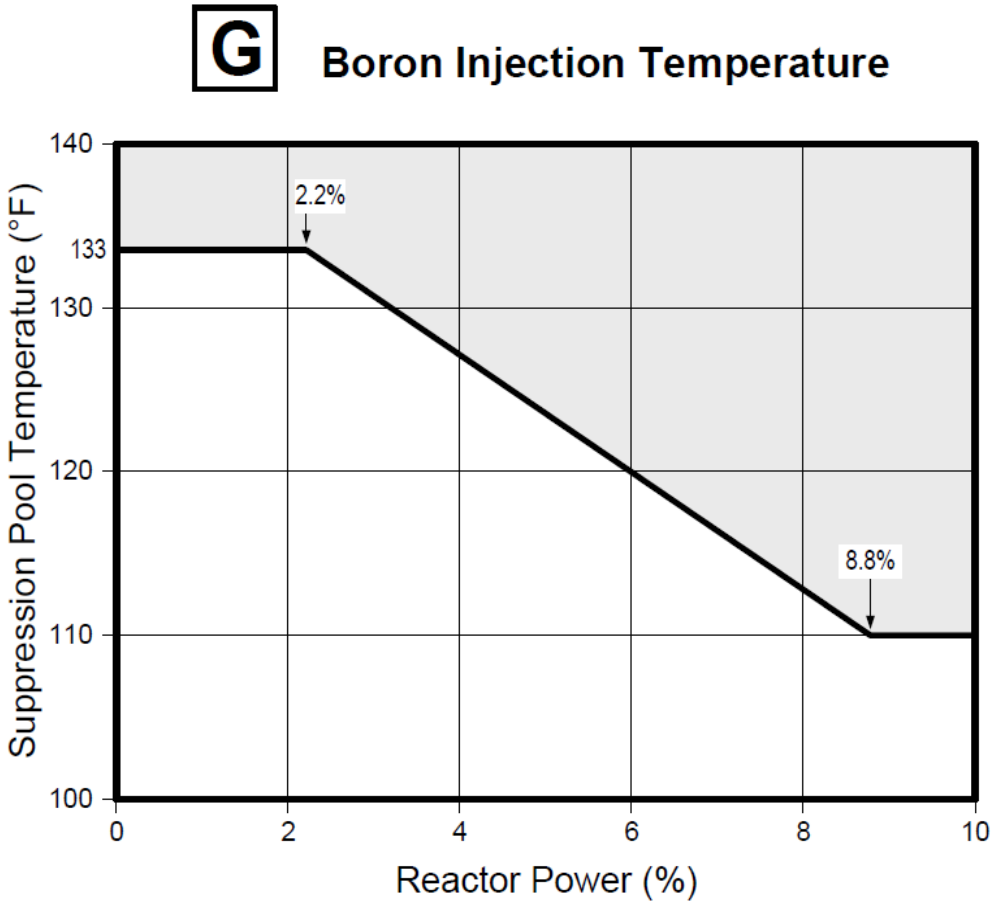
RO Q44 295021 K2.06

45 **ID: 1102807** **Points: 1.00**

While operating at 10% power a reactor scram occurred.

After the scram reactor power remained at 4% and was steady.

Given the following:



What is the HIGHEST Suppression Pool temperature that can be reached BEFORE boron must be injected to shutdown the reactor?

A. 109°F

B. 110°F

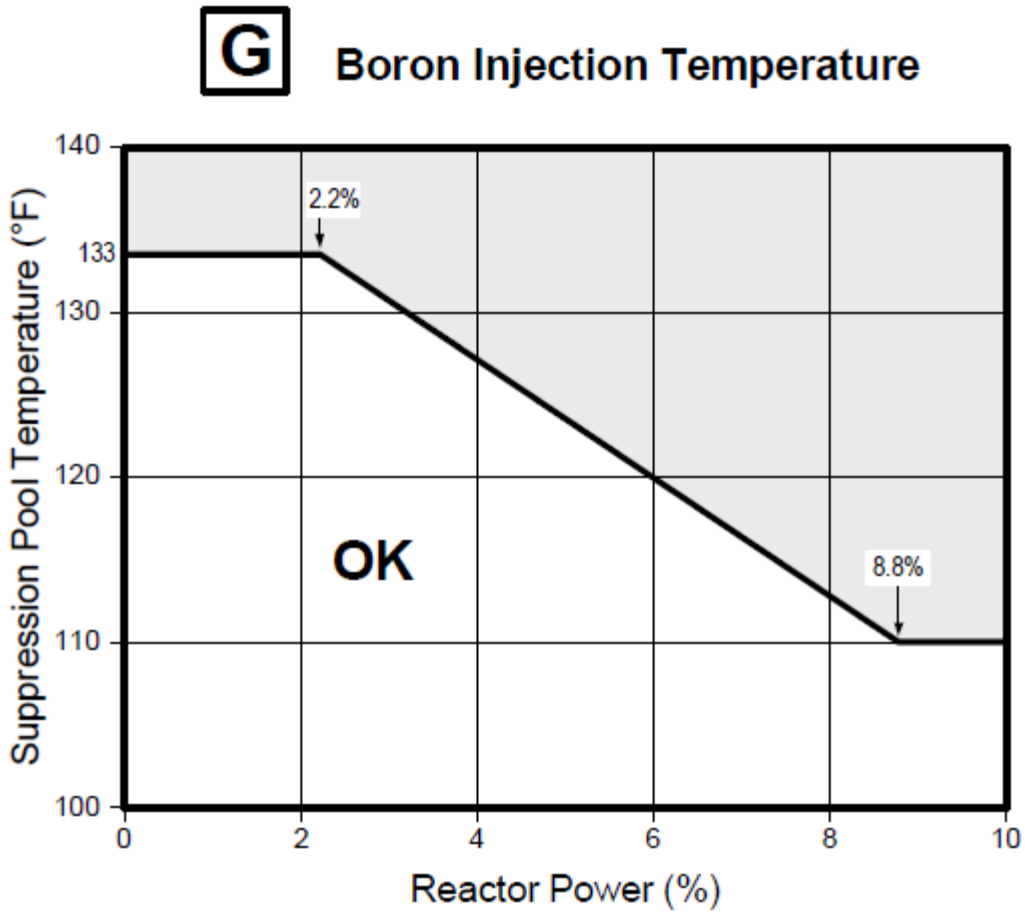
C. 125°F

D. 132°F

Answer: C

Answer Explanation

C is correct: Boron must be injected before average Suppression Pool water temperature reaches the Boron Injection Temperature (BIT). Per EOP Figure G, with reactor power at 4%, average suppression pool water temperature can rise to 127°F before the BIT is reached.



A is incorrect but plausible if the candidate determines that the highest Suppression Pool temperature must be below the BIT curve, but incorrectly believes that the correct Suppression Pool temperature should be based on selecting the SP temperature just below (109°F) the temperature limit (110°F) that correlates with the reactor power (10%) that existed at the beginning of the transient.

B is incorrect but plausible if the candidate determines that the highest Suppression Pool temperature must be below the BIT curve, but incorrectly believes that the correct Suppression Pool temperature should be based on selecting the SP temperature that correlates with the reactor power (10%) that existed at the beginning of the transient.

D is incorrect but plausible if the candidate determines that the highest Suppression Pool temperature must be below the BIT curve, but incorrectly believes that the correct Suppression Pool temperature should be based on selecting the least conservative (lowest) reactor power as limiting and therefore a Suppression Pool Temperature less than 133°F.

KA Justification - this question meets the KA because the candidate must determine the correct Suppression Pool Temperature based on the conditions presented in the stem which allude to an already elevated Suppression Pool Temperature.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recognize the correct Suppression Pool Temperature based on a provided reference.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 45 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102807
User-Defined ID:	CL-ILT-1102807
Cross Reference Number:	
Topic:	While operating at 10% power a reactor scram occurred. After the scram reactor power remained at
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	EOP-1A Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank 635458
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved distractors and answer/distractor justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 295026 Suppression Pool High Water Temperature **Category / KA Statement:** EA2. Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: EA2.01 Suppression pool water temperature **RO Value:** 4.1 **SRO Value:** 4.2 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

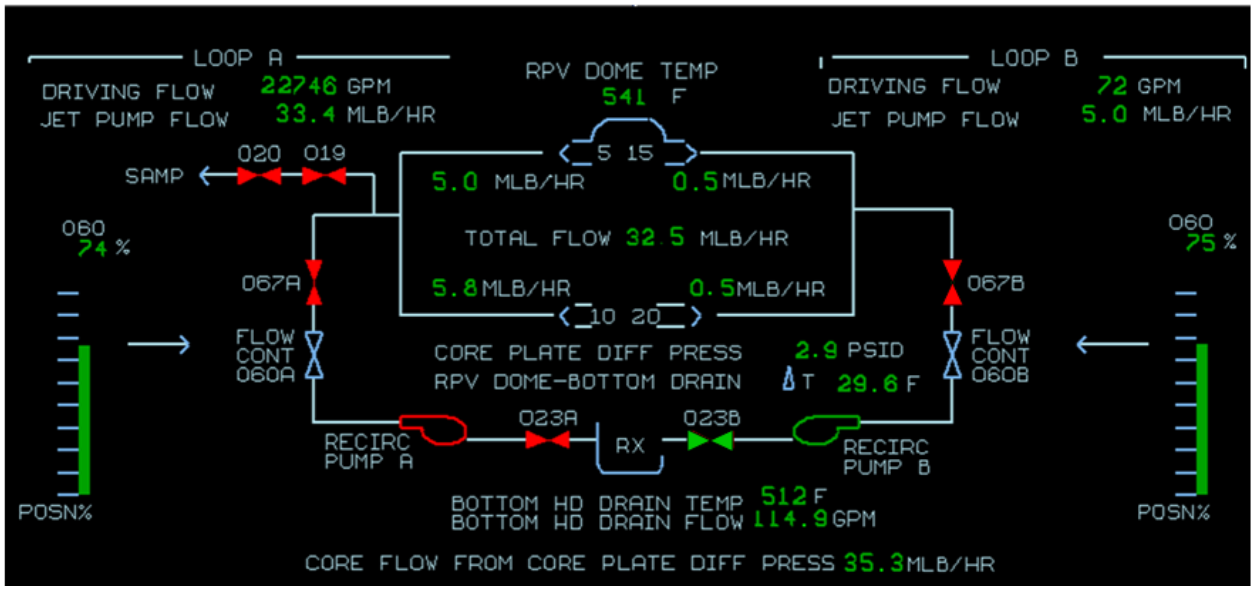
RO Q45 295026 A2.01

46 **ID: 1102452** **Points: 1.00**

The plant was operating at power when a transient occurred on the Reactor Recirculation (RR) system resulting in the indications shown in the graphic below.

Reactor power stabilized at 55%.

Under these conditions, which core flow indicator (Total Flow or Core Flow From Core Plate Diff Press) should be used to determine required actions? Why? What actions are required?



Choice #	Indication to use?	Reason for choosing?	Action(s) Required?
1	Total Flow	The Total Flow indication is more accurate than the Core Flow From Core Plate Diff Press indication.	Control Rods must be inserted.
2	Total Flow	The Total Flow indication is more accurate than the Core Flow From Core Plate Diff Press indication.	Place the Reactor Mode Switch in shutdown.
3	Core Flow From Core Plate Diff Press	Total flow indication is not valid.	Control Rods must be inserted.
4	Core Flow From Core Plate Diff Press	Total flow indication is not valid.	Place the Reactor Mode Switch in shutdown.

Choice ...

A. 1

B. 2

C. 3

D. 4

Answer: C

Answer Explanation

C is correct:

- The graphic in the stem indicates that the 'B' RR Pump has tripped (pump is green, Loop B Driving Flow is minimal)
- Per CPS 3302.01 Reactor Recirculation, step 6.12 Stability Control Concerns, step 6 Core Flow Indication Guidance, item 3 states that the only valid indication of total core flow is via core plate dP when only one RR pump is running.
- Per CPS 3005.01 Unit Power Changes Figure 1: Stability Control & Power/Flow Operating Map, with core flow from core plate differential press at 35.3 Mlbh and reactor power at 55%, operation is within the Controlled Entry Region. CPS 3302.01 step 6.12.4 directs promptly exiting the controlled entry region using reverse rod sequence or CRAM RODS.

A is incorrect but plausible - Per CPS 3302.01 step 6.12.6 Core Flow Indication Guidance, when two RR Pumps are running, the most accurate and preferred indication of total core flow is via jet pump flow (computer point B33DA024). The examinee may select this response if he/she fails to recall that the accuracy of the total flow indication only exceeds the core flow from core plate dP instrument reading during two loop operation.

B is incorrect but plausible - Per CPS 3302.01 step 6.12.6 Core Flow Indication Guidance, when two RR Pumps are running, the most accurate and preferred indication of total core flow is via jet pump flow (computer point B33DA024). Per CPS 3302.01 step 6.12.3 Restricted Zone, if the restricted zone is entered, then scram the reactor. The examinee may select this response if he/she fails to recall that the accuracy of the total flow indication only exceeds the core flow from core plate dP instrument reading during two loop operation and also misreads the power to flow map and determines that the Restricted Zone has been entered.

D is incorrect but plausible if the examinee incorrectly reads the P-F map or uses the core flow reading from PPC (not core flow from core plate dP as required in single loop) and determines that the plant is operating in the restricted zone. If this were true, placing the mode switch in shutdown is the correct action.

KA justification - this question meets the KA because the examinee has to analyze the indications provided in the graphic in the question stem, and then determine 1) the core flow indication that has be be used to determine required actions, and 2) the reason that instrument is used during a partial loss of forced core flow circulation.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the parameters in a graphic, diagnose the indications, and then determine required actions based on knowledge of the limitations of the core flow indicators during single loop operations.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 46 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102452
User-Defined ID:	CL-ILT-1102452
Cross Reference Number:	
Topic:	The plant was operating at power when a transient occurred on the Reactor Recirculation (RR) syste
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

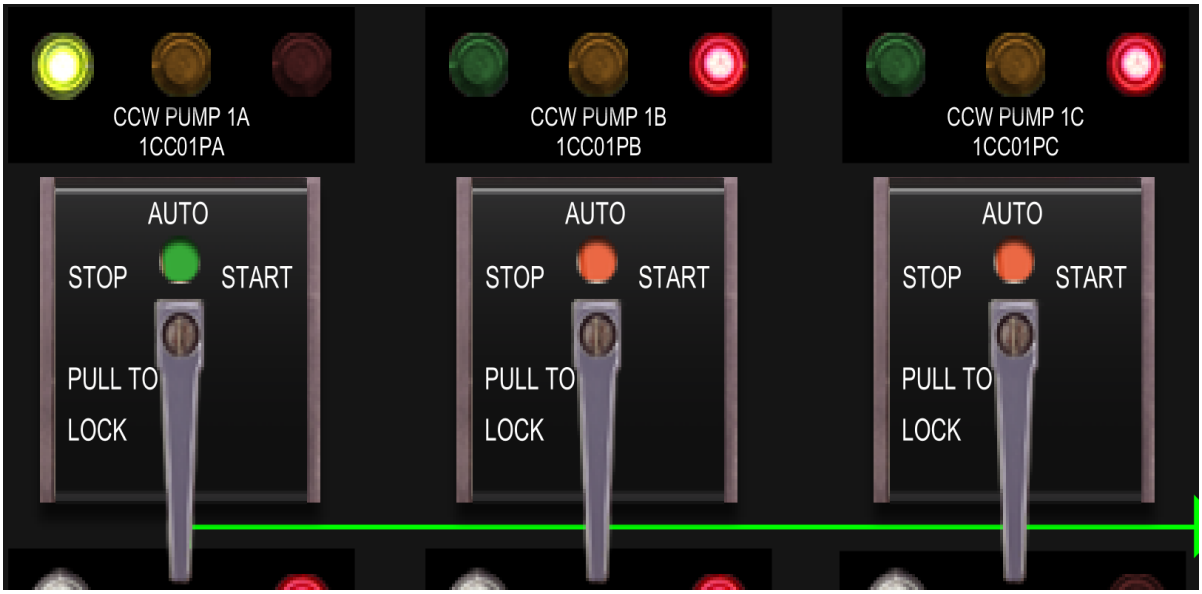
General Data	
Technical Reference with Revision Number:	• CPS 3302.01 Rev. 35a • CPS 3005.01 Rev. 42a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 3005.01 Unit Power Changes FIGURE 1: STABILITY CONTROL & POWER/FLOW OPERATING MAP
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK & 3-SPR)
KA Data	
KA Number / System Name: 295001 Partial or Complete Loss of Forced Core Flow Circulation **Category / KA Statement:** AK3. Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : AK3.06 Core flow indication **RO Value:** 2.9 **SRO Value:** 3.0 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

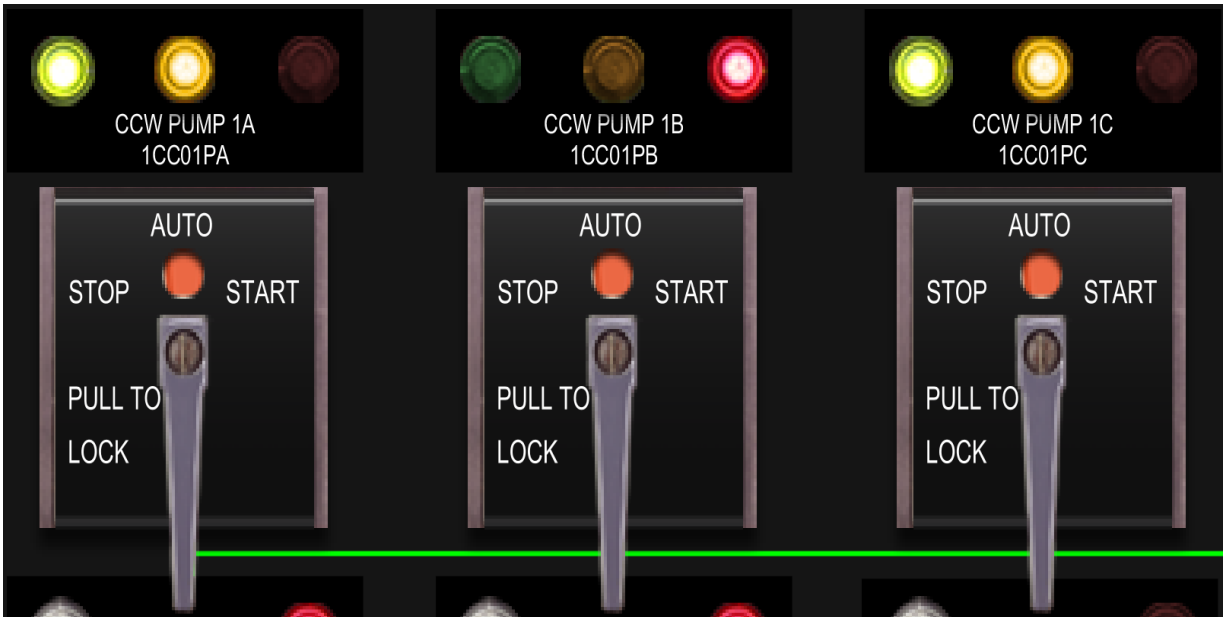
RO Q46 295001 K3.06

47 **ID: 1102693** **Points: 1.00**

The plant is operating at rated thermal power with the Component Cooling Water (CCW) system aligned as shown in the following graphic:



Then, a transient occurred AND actions were taken by the 'B' RO resulting in the following CCW system indications.



Under these conditions, which of the following additional actions is required and why?

A. Shutdown Reactor Recirculation (RR) pumps to protect the RR pump seals and motors.

B. Scram the plant and perform a manual MSIV isolation due of a loss of Instrument Air (IA).

C. Isolate Reactor Water Cleanup (RT) system within one minute to prevent RT pump seal damage.

D. Shut down the running Fuel Pool Cooling (FC) pump and isolate the FC Heat Exchangers to minimize load on the CCW system.

Answer: D

Answer Explanation

D is correct:

The indications provided in the stem show that CCW Pumps 'B' and 'C' are operating with 'A' in standby. The second graphic shows that CCW Pump 'C' has tripped and that CCW Pump 'A' tripped when manually started.

'B' CCW Pump is the only remaining running CCW Pump.

IAW CPS 5040.01 (1B), if only one CCW Pump is running, then start a standby CCW Pump , or shutdown the running FC Pump and shut 1CC076A & 76B, FC Heat Exchanger Outlet Valves.

A is incorrect but plausible - per 5040-1B, a complete loss of CCW (no CCW Pumps running) requires the RR Pumps to be secured within 1 minute to protect the RR Pump Motors and seals.

B is incorrect but plausible - per CPS 3203.01 section 8.3.6, a loss of CCW will cause an eventual loss of the Service Air Compressors which supply instrument air to the Main Steam Isolation Valves (MSIVs). The MSIVs will then fail closed on a loss of IA.

C is incorrect but plausible - per CPS 3203.01 Appendix B CCW Loads, CCW supplies the Reactor Water Cleanup Pumps. Per CPS 3303.01 section 8.3.3, RWCU cannot be operated with a complete loss of Component Cooling Water to prevent damage to the RWCU Filter Demins and pumps seals, but the pumps are not required to be secured within one minute on a partial loss of CCW. The 1 minute time requirement pertains to a complete loss of CCW to the RR Pumps. In addition, annunciator 5000-2E Cleanup Pump Seal Gland Plate Temp Hi requires RWCU Pumps to be removed from service if 5000-2E is received and does not specify a time requirement.

KA Justification - this question meets the KA because the candidate must understand the reasons for the responses to a loss of CCW in order to select the correct action (isolation of non-essential heat loads) based on the conditions in the stem.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to interpret the indications provided in the stem of the question, recognize the actions the B RO would have taken and then determine the appropriate actions based on that analysis.

Question 47 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102693
User-Defined ID:	CL-ILT-1102693
Cross Reference Number:	
Topic:	The plant is operating at rated thermal power with the Component Cooling Water (CCW) system aligne
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5040.01 (1B) Rev. 28 • CPS 3203.01 Rev. 34a (section 8.3.6 and Appendix B) • CPS 5000.02 (2E) Rev. 25a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295018 Partial or Complete Loss of Component Cooling Water **Category / KA Statement:** AK3. Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : AK3.01 Isolation of non-essential heat loads: Plant-Specific **RO Value:** 2.9 **SRO Value:** 3.2 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q47 295018 K3.01

48 **ID: 1098581** **Points: 1.00**

You have received a Main Control Room (MCR) fire alarm accompanied by a red flashing strobe light also in the MCR.

(1) Which ONE of the following identifies a panel whose detector would initiate these indications?

AND

(2) How would an operator extinguish a small fire in the upper section of this panel (i.e. NOT in the subfloor or surrounding areas)?

A. (1) 1H13-P661, Div 1 NSPS Cabinet.
(2) Discharge a portable fire extinguisher into the panel.

B. (1) 1H13-P678, Standby Information Panel.
(2) Discharge a portable fire extinguisher into the panel.

C. (1) 1H13-P661, Div 1 NSPS Cabinet.
(2) MANUALLY initiate the MCR Halon system for this panel.

D. (1) 1H13-P678, Standby Information Panel.
(2) MANUALLY initiate the MCR Halon system for this panel.

Answer: A

Answer Explanation

A is correct: CPS 1893.04 Fire Fighting Section 8.1.2 identifies a fire alarm AND associated red flashing strobe light for MCR panel H13-P661, H13-P662 or the associated subfloor areas. CPS 1893.04M364 CPS Pre-Fire Plan states that the MCR Halon suppression system is for sub-floor sections only. Fires inside termination cabinets or panel bays must be combated manually (e.g. fire extinguisher).

B is incorrect but plausible. The candidate may select this response if he/she correctly believes that the proper way to combat a fire in 1H13-P678, Standby Information Panel is by using a fire extinguisher but incorrectly believes that a red flashing strobe light will initiate in response to the activation of a detector in 1H13-P678, Standby Information Panel.

C is incorrect but plausible. The candidate may select this response if he/she realizes that a red flashing strobe light initiates in response to the activation of a detector in 1H13-P661, Div 1 SRV Cabinet but incorrectly believes that the proper response to a detector activation in P661 would be to MANUALLY initiate the MCR Halon system for this panel. Operators must use a portable fire extinguisher to extinguish panel fires.

D is incorrect but plausible. The candidate may select this response if he/she incorrectly believes that a red flashing strobe light initiates in response to the activation of a detector in P680 or that the proper response to a detector activation in 1H13-P678, Standby Information Panel and also incorrectly believes in P678 would be to MANUALLY initiate the MCR Halon system for this panel. Operators must use a Portable Halon Extinguisher to extinguish panel fires.

KA Justification - this question meets the KA because the candidate must demonstrate the ability to operate and/or monitor plant fire zone panel (including detector location) as they apply to Plant Fire On Site. Specifically, the candidate must recognize the location of a MCR fire based on (monitoring) the detection system indications presented in the stem and then select the appropriate/available firefighting equipment to combat the casualty at that location.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the location of the MCR Panels that have the strobe light indications for fire detection and how to fight fires in them.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 48 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1098581
User-Defined ID:	CL-ILT-N11049
Cross Reference Number:	
Topic:	You have received a Main Control Room (MCR) fire alarm accompanied by a red flashing strobe light
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 1893.04 Rev. 17 CPS 1893.04M364 Rev. 3
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT 10-1 NRC exam
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added K/A & Cog level justification.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 1893.04 Rev. 17 CPS 1893.04M364 Rev. 3
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)
KA Data	
KA Number / System Name: 600000 Plant Fire On Site **Category / KA Statement:** AA1. Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: AA1.09 Plant fire zone panel (including detector location) **RO Value:** 2.5 **SRO Value:** 2.7 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** N/A **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q48 600000 A1.09

49 **ID: 1104648** **Points: 1.00**

The plant was initially operating at 92% power when a Main Control Room evacuation was required.

The reactor was shutdown at 10:00 and the Remote Shutdown Panel (RSP) was manned.

At 10:30 the following system alignments exist:

- RCIC is in service operating in tank to tank mode.
- RHR 'A' is in Suppression Pool Cooling.

At 10:30 plant parameters are as follows:

Parameter	Value	Trend
RPV Level	39 inches	lowering at 0.5 inches/min
RPV Pressure	550 psig	lowering at 5 psig/min
RCIC Flow	550 gpm	stable
RCIC Storage Tank Level	25 feet	lowering 2 inch/min (due to a RCIC leak)
Suppression Pool Temperature	90ºF	rising 1ºF every 10 minutes
Suppression Pool Level	19.1 feet	stable

If current trends continue, which of the following actions is required next to prevent exceeding procedural limits?

A. Lower RCIC Flow Controller setpoint.

B. Shift RCIC suction to the Suppression Pool.

C. Shift RCIC discharge to the Reactor Vessel.

D. Shut 1E12-F048A RHR 'A' Hx Bypass Valve.

Answer: A

Answer Explanation

A is correct: The cooldown rate is the limiting parameter in the stem and requires action first to prevent exceeding the cooldown rate limit of 100ºF per hour. The calculation is as follows:

- At 1000, RPV pressure was 547ºF (saturation temperature for a normal RPV pressure of 1020 psig).
- At 1030, RPV pressure was 550 psig (480ºF) with pressure lowering at 5 psig/min.
- The 100ºF limit is 447ºF (547 - 100 = 447) which equates to an RPV pressure of 395 psig.
- At 5 psig / min, 395 psig will be reached in 31 minutes - (550 - 395) / 5 = 31 min

Reducing the RCIC Flow Controller setpoint will lower RCIC Turbine Speed and lower the reactor cooldown rate.

B is incorrect but plausible if the candidate incorrectly believes that the lowering RCIC Storage Tank Level is the limiting parameter in the stem. CPS 4003.01C002 (caution before step 4.1) requires RCIC suction to be shifted to the suppression pool if RCIC Storage Tank Level reaches 3.2 feet. With current RCIC Storage Tank level at 25 feet and lowering at 2 inches per minute, the RCIC Storage Tank will not reach 3.2 feet for 131 minutes which is less limiting than the RPV cooldown rate.

C is incorrect but plausible if the candidate incorrectly believes that the lowering RPV level is the limiting parameter in the stem. CPS 4003.01 Remote Shutdown (RS) step 4.3.5 directs maintaining RPV Level between Level 3 (8.9 inches) and Level 8 (52 inches). With current RPV level at 39 inches and lowering at 0.5 inches per minute, Level 3 will be reached in 60 minutes which is less limiting than the RPV cooldown rate.

D is incorrect but plausible if the candidate incorrectly believes that the rising Suppression Pool Temperature is the limiting parameter in the stem. CPS 4402.01 Primary Containment Control requires Suppression Pool Temperature to be maintained below 95°F. With current Suppression Pool temperature at 90°F and rising at 1°F every 10 minutes, Suppression Pool temperature will not reach 95°F for 50 minutes which is less limiting than the RPV cooldown rate.

KA Justification - this question meets the KA because the candidate has to demonstrate the ability to control RPV pressure / cooldown rate from the remote shutdown panel during Control Room Abandonment to answer the question.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the parameters provided in the stem, perform calculations to determine which parameter will exceed its limit first, and then determine what mitigating actionis required to control that parameter.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 49 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104648
User-Defined ID:	CL-ILT-1104648
Cross Reference Number:	
Topic:	The plant was initially operating at 92% power when a Main Control Room evacuation was required.
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4003.01 Rev. 17b • CPS 4003.01F003 Rev. 0 • CPS 4003.01C002 Rev. 5a • CPS 4402.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	2004 CPS NRC exam
Question Source: (i.e. New, Bank, Modified)	Bank - modeled from 689026
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Revised question stem. Added distracter plausibility statements. Added KA and cog level justification statements. Added General Data table.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 4003.01F003
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 4003.01 • CPS 4003.01C002 • CPS 4402.01
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295016 Control Room Abandonment **Category / KA Statement:** AA1. Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : AA1.08 Reactor pressure **RO Value:** 4.0 **SRO Value:** 4.0 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q49 295016 A1.08

50 **ID: 1097926** **Points: 1.00**

During a reactor startup with IRMs on range 3, the highest reading IRM is reading 30/125.

If reactor period is 100 seconds, the earliest time an IRM Upscale scram setpoint will be reached is...

A. 35 seconds

B. 70 seconds

C. 140 seconds

D. 200 seconds

Answer: C

Answer Explanation

C is correct:

Per CPS 3306.01 step 2.5, the IRM channel Upscale Trip setpoint is 120/125.

Per CPS 3001.01 note before step 8.2.3, reactor period may be calculated by multiplying the amount of time it takes for indicated power level (from any operable SRM/IRM indication) to double (Doubling Time) by a factor of 1.443.

Since the highest IRM reading in the stem is 30/125, 2 doublings are needed to reach the IRM upscale trip setpoint (30 to 60, and 60 to 120), and the reactor period is 100 seconds, the doubling time is 69.3 seconds (100/1.443 = 69.3). 2 doublings will take 138.6 seconds (69.3 * 2 = 138.6).

A is incorrect but plausible if the examinee miscalculates and determines that the time to reach the scram setpoint is half the time to the first doubling.

B is incorrect but plausible if the examinee miscalculates and determines that the time to reach the scram setpoint is the time to the first doubling.

D is incorrect but plausible if the examinee miscalculates and determines that the time to reach the scram setpoint is twice the period.

KA Justification - this question meets the KA because the examinee has to determine how long it will take to reach an IRM Upscale Scram setpoint provided IRM and reactor period indications in the stem.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the parameters provided in the stem, and then perform a calculation to determine how long it will take to reach the IRM Upscale Trip setpoint.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 50 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097926
User-Defined ID:	CL-ILT-1097926
Cross Reference Number:	
Topic:	During a reactor startup with IRMs on range 3, the highest reading IRM is reading 30/125. If reac
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3306.01 Rev. 12b • CPS 3001.01 Rev. 21
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	Modelled from 2007 Monticello ILT Exam (Q43)
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Revised question for use at CPS. Changed period parameter in the stem to comply with normal period limitations during reactor startup.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295006 SCRAM **Category / KA Statement:** AA1. Ability to operate and/or monitor the following as they apply to SCRAM : AA1.05 Neutron monitoring system **RO Value:** 4.2 **SRO Value:** 4.2 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q50 295006 A1.05

51 **ID: 1102727** **Points: 1.00**

Suppression pool level is lowering due to an unisolable leak in the LPCS Pump Suction piping.

(1) Which of the following is the LOWEST suppression pool level that permits actuation of ADS?

(2) Why?

A. (1) 8 ft 0 in.
(2) Prevents direct communication between the Drywell and Containment.

B. (1) 13 ft 1 in.
(2) Prevents direct communication between the Drywell and Containment.

C. (1) 8 ft 0 in.
(2) Prevents direct pressurization of the Containment via the ADS SRV Discharge Spargers.

D. (1) 13 ft 1 in.
(2) Prevents direct pressurization of the Containment via the ADS SRV Discharge Spargers.

Answer: C

Answer Explanation

C is correct:

Per Clinton Power Station Emergency Operating Procedures Technical Bases (EOP-TB) page 7-11, the SRVs may be used to depressurize the RPV only if suppression pool water level is above 8 feet, the minimum indicated suppression pool water level. An on-scale indication is required to ensure that the actual suppression pool level is above the top of the SRV discharge device. If the SRVs were opened with the discharge devices exposed, steam would pass directly into the containment airspace, bypassing the suppression pool. This direct discharge of steam could damage equipment needed for the safe shutdown of the plant and result in excessive containment pressure.

A is incorrect but plausible - 13'1" is the lowest suppression pool level that allows the Hydrogen Mixing Compressors to be operated. Per the EOP Tech Bases, Mixer (HG) operation is permitted in the Drywell/Containment Pressure and Drywell/Containment Hydrogen branches (Parts L and Q) only if suppression pool water level is above 13 ft. 1 in. If suppression pool water level were below 13 ft. 1 in., the mixer discharge would be uncovered and mixer operation would open a path from the drywell directly into the containment. A break in the drywell could then overpressurize the containment. The direction to stop mixers in the Pool Level branch ensures that appropriate action is taken if suppression pool level drops below the discharge elevation after the mixers are started.

B is incorrect but plausible if the candidate confuses the suppression pool level limit and bases for securing the Mixing Compressors with the ADS SRV opening limit on low suppression pool level.

D is incorrect but plausible if the candidate correctly recalls the bases for not opening the ADS SRVs on low suppression pool level but incorrectly recalls the EOP suppression pool level value.

KA Justification - this question meets the KA because the candidate must determine the lowest suppression pool level that permits use of the ADS SRVs to depressurize the RPV.

Cog Level Justification - this is a low cog question written at the memory level. The examinee must recall the suppression pool level value that permits use of ADS SRVs to emergency depressurize the reactor in EOP-3 Emergency RPV Depressurization.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 51 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	3.00
System ID:	1102727
User-Defined ID:	CL-ILT-1102727
Cross Reference Number:	
Topic:	Suppression pool level is lowering due to an unisolable leak in the LPCS Pump Suction piping. (
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4402.01 EOP-6 Rev. 29 CPS 4401.01 EOP-1 Rev. 29 EOP-TB Rev. 6
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	None
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4402.01 EOP-6 Rev. 29 CPS 4401.01 EOP-1 Rev. 29 EOP-TB Rev. 6
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Lower (1-P)
KA Data	
KA Number / System Name: 295030 Low Suppression Pool Water Level **Category / KA Statement:** EA2. Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : EA2.03 Reactor pressure **RO Value:** 3.7 **SRO Value:** 3.9 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q51 295030 A2.03

52 **ID: 1102808** **Points: 1.00**

What is the basis for performing an Emergency Depressurization during the execution of EOP-9, RADIOACTIVITY RELEASE CONTROL?

Under these conditions, performing an Emergency Depressurization ensures the . . .

A. pressure suppression capability of the containment is maintained.

B. lowest possible driving head and flow from the primary systems to reduce the discharge rate.

C. release of energy does NOT challenge the design temperature of the secondary containment.

D. availability of equipment in the turbine building that may be necessary to mitigate the event is NOT challenged.

Answer: B

Answer Explanation

B is correct: Per the Clinton Power Station Emergency operating Procedures Technical Bases (EOP-TB) page 10-4, an offsite release rate above the 'General Emergency' level is an indication of degrading conditions and presents a more immediate threat to the health and safety of the public. If a primary system is discharging outside the primary and secondary containments, a blowdown is performed before the release reaches the General Emergency level to reduce the discharge rate. Before the blowdown, the reactor is scrammed and EOP-1 RPV Control, is entered. These actions are prescribed for the following reasons:

- The scram reduces the rate of energy production and thus the rate of radioactivity release.
- EOP-1 coordinates control of RPV water level and pressure following the blowdown.
- EOP-1 branches to EOP-1A, ATWS RPV Control, if all rods are not inserted.

A is incorrect but plausible if the candidate mistakenly believes that the bases for performing a Blowdown on containment pressure IAW EOP-6 Primary Containment Control is the correct reason for performing a Blowdown IAW EOP-9 Radioactivity Release Control.

C is incorrect but plausible if the candidate mistakenly believes that the bases for performing a Blowdown on secondary containment area temperatures IAW EOP-8 Secondary Containment Control is the correct reason for performing a Blowdown IAW EOP-9 Radioactivity Release Control.

D is incorrect but plausible if the candidate mistakenly believes that the bases for restarting turbine building ventilation if shutdown IAW EOP-9 Radioactivity Release Control is the correct reason for performing a Blowdown IAW EOP-9 Radioactivity Release Control.

KA Justification - this question meets the KA because the candidate must have knowledge of the reason for (bases) of Emergency Depressurization (Blowdown) during a High Off-site Release which is covered under EOP-9 Radioactivity Release Control.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall/recognize the bases for performing a Blowdown IAW EOP-9 Radioactivity Release Control.

Question 52 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102808
User-Defined ID:	CL-ILT-635442
Cross Reference Number:	
Topic:	What is the basis for performing an Emergency Depressurization during the execution of EOP-9, RADI
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	EOP-TB Rev. 6
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank 635442
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved answer/distractor justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	EOP-TB Rev. 6
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-B)
KA Data	
KA Number / System Name: 295038 High Off-Site Release Rate **Category / KA Statement:** EK3. Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE : EK3.04 †Emergency depressurization **RO Value:** 3.6 **SRO Value:** 3.9 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q52 295038 K3.04

53 **ID: 1102536** **Points: 1.00**

Which ONE of the following describes the impact of a loss of DC MCC 1B while operating at rated thermal power?

A. Reactor Core Isolation Cooling (RCIC) CANNOT be initiated.

B. RPS Solenoid Bus ‘B’ Inverter is WITHOUT a 125 VDC backup source.

C. Reactor Recirc Pump ‘B’ will automatically trip.

D. Safety Relief Valves CANNOT be operated from the Remote Shutdown Panel.

Answer: C

Answer Explanation

C is correct - per CPS 4201.01C002 Loss of 125VDC MCC 1B (1DC14E) Load Impact List page 5, circuit 17 supplies control power to the RR Pump 1B breaker 3B. Loss of control power to RR Pump 1B breaker 3B will cause the RR Pump 1B 5B breaker to trip open (fast speed trip the 'B' RR Pump).

A is incorrect but plausible if the examinee fails to recall that RCIC System valves are powered from DC MCC 1A, not 1B.

B is incorrect but plausible if the examinee fails to recall that the backup 125VDC power source to the 'B' RPS Solenoid Inverter comes from 125VDC MCC 1F.

D is incorrect but plausible if the examinee fails to recall that the Div 1 SRVs can still be opened manually from the RSP using Div 1 DC solenoid power (DC MCC 1A).

KA Justification - this question meets the KA because the examinee has to determine the system lineups resulting from a loss of DC MCC 1B.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the impact of a loss of DC power to the loads listed in the question stem to answer the question.

Question 53 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102536
User-Defined ID:	CL-ILT-1102536
Cross Reference Number:	
Topic:	Which ONE of the following describes the impact of a loss of DC MCC 1B while operating at rated th
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5003.05 (5F) Rev. 30c • CPS 4201.01C002 Rev. 1
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-636855
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Revised the answer explanation section. Added distracter plausibility statements. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F)
KA Data	
KA Number / System Name: 295004 Partial or Complete Loss of D.C. Power **Category / KA Statement:** AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : AA2.04 System lineups **RO Value:** 3.2 **SRO Value:** 3.3 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q53 295004 A2.04

54 **ID: 1102868** **Points: 1.00**

The plant is in a refueling outage with core alterations in progress when reactor cavity water level begins to lower.

Additionally, you note the following:

- The Refueling SRO reported that the Refuel Platform ARM High Radiation alarm has been received.
- CPS 4011.01 REACTOR CAVITY LEAKAGE DURING REFUELING immediate operator actions are complete.
- Water level is currently at the top of the reactor vessel flange and is decreasing at a rate of 3 in/min (~600 gpm).
- The leak location has not been identified.

CPS 4011.01 subsequent actions are in progress. As the 'A' RO, you have been directed to refill the reactor cavity to the normal refueling level using available injection systems.

Under these conditions, which of the following systems is preferred to refill the reactor cavity?

A. Control Rod Drive

B. Condensate/Feedwater

C. High Pressure Core Spray

D. Low Pressure Coolant Injection

Answer: B

Answer Explanation

B is correct: Per CPS 4011.01 REACTOR CAVITY LEAKAGE DURING REFUELING subsequent Action 4.5.1, PREFERRED systems for level restoration should be those systems which inject from clean water sources. These include:

- Condensate/Feedwater
- CRD
- Fuel Pool Cooling
- Cycled Condensate
- Makeup Condensate

The SECONDARY systems for level restoration include:

- RHR through Shutdown Cooling
- HPCS
- LPCS
- LPCI
- ECCS Water Leg Pumps
- SLC Test Tank

Additionally, since the leak rate is ~600 gpm, Condensate/Feedwater is the only PREFERRED system that can overcome the current leak rate and raise level.

A is incorrect but plausible if the candidate correctly identifies that Control Rod Drive (CRD) system is preferred but fails to recognize that the runout of a CRD pump is 200 gpm (ref: N-CL-OPS-201001 Control Rod Drive Hydraulic System). Therefore, even if both CRD pumps were utilized, the total capacity would be less than that required to overcome the leak.

C is incorrect but plausible if the candidate incorrectly identifies the High Pressure Core Spray (HPCS) system as preferred or believes that it is otherwise available (RPV vessel level currently precludes HPCS system injection).

D is incorrect but plausible if the candidate incorrectly identifies the Low Pressure Coolant Injection system as preferred or believes that it is otherwise prudent to have an injection source discharging directly on top of the core.

KA Justification - this question meets the KA because the candidate must demonstrate the ability to perform specific system and integrated plant procedures during all modes of plant operations. In this case, the candidate is placed in a refueling accident scenario and demonstrates the knowledge of an Off-Normal Procedure applicable to the plant conditions. The candidate must choose the correct system to be used for level restoration.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to analyze plant conditions and recognize the suitability (consequences and implications) of the systems presented to be used for level restoration.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 54 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102868
User-Defined ID:	CL-ILT-0399
Cross Reference Number:	
Topic:	The plant is in a refueling outage with core alterations in progress when reactor cavity water lev
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4011.01 Rev. 4f • N-CL-OPS-201001 Rev. 002
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Modified CL-ILT-2838
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	added more detail to stem and changed answers to single systems. Improved answer explanations.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 4011.01 Rev. 4f • N-CL-OPS-201001 Rev. 002
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 295023 Refueling Accidents **Category / KA Statement:** 2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. **RO Value:** 4.3 **SRO Value:** 4.4 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q54 295023 2.1.23

55 **ID: 1102884** **Points: 1.00**

The plant was operating at rated thermal power when the following indications were observed on Containment Bulk Temperature recorders 1PR-CM256 AND 1PR-CM257 ON 1H13-P601:

- 1PR-CM256 - 124°F
- 1PR-CM257 - 127°F

Based on these indications, which, if any, of the following limits have been exceeded?

1) ITS 3.6.1.5 Primary Containment Air Temperature LCO
2) EOP-6 Primary Containment Control Containment Temperature entry condition
3) Containment Design Temperature limit

A. 1 ONLY

B. 1 & 2 ONLY

C. 1, 2 AND 3

D. None of listed limits have been exceeded.

Answer: B

Answer Explanation

B is correct:

Per CPS 4402.01 Primary Containment Control, the EOP-6 entry condition for High Containment Temperature is 122°F.

ITS 3.6.1.5 Primary Containment Air Temperature LCO requires containment temperature to be ≤115°F. Per 9000.01D001, ITS SR 3.6.1.5.1 is satisfied by calculating the arithmetical average of the 2 containment temperature indications on 1PR-CM256 and 1PR-CM257.

A is incorrect but plausible if the examinee correctly recalls that the ITS 3.6.1.5 LCO limit is lower than the EOP-6 entry condition, but incorrectly recalls the LCO value and determines that the EOP-6 entry condition on high containment temperature has not been exceeded.

C is incorrect but plausible if the examinee incorrectly recalls the containment design temperature limit which is 185°F.

D is incorrect but plausible if the examinee incorrectly recalls the EOP-6 entry condition and the ITS 3.6.1.5 LCO for Containment temperature.

KA Justification - this question meets the KA because the examinee has to evaluate the parameters provided in the stem and determine that the ITS LCO limit and EOP-6 entry conditions have been exceeded for containment temperature.

Cog Level Justification - this is a low cog question written at the memory level; the examinee must recall the containment temperature limits in ITS 3.6.1.5 and EOP-6 to answer the question.

Question 55 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1102884
User-Defined ID:	CL-ILT-1102884
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when the following indications were observed on Con
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• ITS 3.6.1.5 Amendment No. 192 • CPS 4402.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam history
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Low (1-P)
KA Data	
KA Number / System Name: 295027 High Containment Temperature (Mark III Containment Only) **Category / KA Statement:** 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. **RO Value:** 4.4 **SRO Value:** 4.7 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q55 295027 2.1.07

56 **ID: 1097932** **Points: 1.00**

The plant was operating at rated thermal power when annunciator 5064-7D LD SYSTEM VLV STEM LEAKAGE HIGH LEAK RATE was received.

When indications were checked on recorder E31-R612 VLV STEM LEAKAGE RECORDER, it was observed that Point 7 VLV B33-F067A STEM LEAKAGE is in alarm reading 250°F.

Additional plant parameters are as follows:

Parameter	Value	Trend
DW RE Flow	5 gpm	rose from 2.3 gpm at the beginning of shift and is now stable
DW RF Flow	36 gpm	rose from 0.1 gpm at the beginning of shift and is now stable
DW Temperature	105°F	rising
DW Pressure	0.7 psig	rising

CGCS Hydrogen Cmpr 1A AND 1B were started. Plant parameters 15 minutes later are as follows:

Parameter	Value	Trend
DW RE Flow	5 gpm	stable
DW RF Flow	36 gpm	stable
DW Temperature	141°F	rising
DW Pressure	0.9 psig	slowly rising

Based on these indications, the _____(1)_____ has failed on 1B33-F067A RR Pump 'A' Discharge Valve.

The CRS has directed you to place the control switch shown in the graphic below in the "close" position IAW 5064-7D ARP. Performing this action _____(2)_____ stop the reactor coolant leakage.

A. (1) inner packing ONLY
(2) will

B. (1) inner packing ONLY
(2) will NOT

C. (1) inner AND outer packing

(2) will

D. (1) inner AND outer packing
(2) will NOT

Answer: D

Answer Explanation

D is correct:

Per CPS 3315.02 Leak Detection (LD), discussion step 2.11 states that the valve stem leak detection uses a thermocouple to measure an increased temperature in a line which taps between inner and outer rings of valve stem packing.

Per M05-1072-1 at C-1, this leakoff line discharges to the DW Equipment Drain Sump via DW Equipment Drain Cooler 1RE03AB (M05-1046-4 C-7). The above normal DW RE Flow provided in the stem confirms that the inner packing has failed on 1B33-F067A.

Based on the remaining elevated DW parameters (DW RF Flow, DW Temperature, and DW Pressure) provided in the stem, the outer packing has also failed on 1B33F067A.

Closing the stem leakoff isolation valve for 1B33-F067A will only isolate the leakoff line between the inner and outer packing rings on 1B33-F067A and will not stop the reactor coolant leakage into the DW atmosphere.

A is incorrect but plausible if the examinee misdiagnoses the parameters provided in the stem and determines that the inner packing only has failed on 1B33-F067A. If the outer packing was still intact, DW pressure, DW temperature, and DW RF flow would be unaffected. If the outer packing was intact, closing the stem leakoff isolation valve would stop the reactor coolant leakage.

B is incorrect but plausible if the examinee misdiagnoses the parameters provided in the stem and determines that the inner packing only has failed on 1B33-F067A. If the outer packing was still intact, DW pressure, DW temperature, and DW RF flow would be unaffected.

C is incorrect but plausible if the examinee correctly diagnoses the indications provided in the stem and determines the inner and outer packing has failed, but incorrectly determines that closing the stem leakoff isolation valve will stop reactor coolant leakage from the outer packing gland.

KA Justification - this question meets the KA because the examinee has to interpret the parameters provided in the stem (including High DW temperature) and determine the status of the valve packing on 1B33-F067A, and also has to determine if closing the stem leakoff isolation valve will isolate the reactor coolant leakage.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the conditions provided in the question stem, diagnose the failure based on that analysis, and also has to determine how directed actions will impact plant conditions.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 56 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097932
User-Defined ID:	CL-ILT-1097932
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when annunciator 5064-7D LD SYSTEM VLV STEM LEAKAGE
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5064.07 (7D) Rev. 30c • CPS 3315.02 Rev. 14d • M05-1072-1 Rev. AG • M05-1046-4 Rev. U
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	

KA Number / System Name: 295028 High Drywell Temperature
Category / KA Statement: 2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

RO Value: 4.2
SRO Value: 4.4

Tier: 1
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: 43.5

Associated objective(s):

RO Q56 295028 2.2.44

57 **ID: 1102875** **Points: 1.00**

The unit was operating at full power when severe weather caused a loss of power to the 345KV Switchyard North **AND** South busses and a Main Generator trip.

All appropriate immediate operator actions were taken.

5 minutes later, plant conditions are as follows:

- SRV 1B21-F051D is full open.
- SRV 1B21-F051C is cycling open and closed.
- Reactor water level is cycling between minus 30" and plus 10".
- Suppression pool level is 19' 3" and slowly rising.
- Suppression pool temperature is 98°F and slowly rising.

Based on these conditions, which of the following Emergency Operating Procedures (EOPs) is required to be entered?

_____(1)_____ AND EOP-6 Primary Containment Control due to _____(2)_____.

A. (1) EOP-1 RPV Control ONLY
(2) Suppression Pool Level

B. (1) EOP-1 RPV Control ONLY
(2) Suppression Pool Temperature

C. (1) EOP-1 RPV Control AND EOP-1A ATWS RPV Control
(2) Suppression Pool Level

D. (1) EOP-1 RPV Control AND EOP-1A ATWS RPV Control
(2) Suppression Pool Temperature

Answer: D

Answer Explanation

D is correct:

A loss of the 345KV Switchyard North and South Busses will result in a loss of the RAT Transformers A, B, and C and a generator trip. This will result in a loss of BOP power in the plant, removing the Main Condenser as a heat sink and resulting in a high reactor pressure condition requiring SRVs to lift to control reactor pressure.

The current conditions provided in the stem indicate that an ATWS has occurred. Each SRV can pass approximately 6% reactor power, so with one SRV full open and the second cycling open and closed, reactor power is between 6% and 12%.

Based on the parameters provided in the stem, there are three EOP-1 RPV Control entry conditions:
- RPV Water Level below Level 3 (8.9")
- RPV Pressure above 1065 psig - SRV 51D lifts at 1103 psig and 51C lifts at 1113 psig
- Reactor Power above 5% or unknown when scram required - power is between 6% & 12% as explained above

EOP-1A ATWS RPV Control is required to be entered when EOP-1 has been entered and shutdown criteria is not met. With reactor power between 6% & 12% as explained above, EOP-1A is required to be entered.

EOP-6 Primary Containment Control is required to be entered when Suppression Pool Temperature exceeds 95°F.

A is incorrect but plausible if the examinee fails to determine that power is above 5% requiring EOP-1A to be entered, and also incorrectly recalls the entry conditions for EOP-6. The EOP-6 entry condition for SP Level is 19' 5" (19.4 ft).

B is incorrect but plausible if the examinee fails to determine that power is above 5% requiring EOP-1A to be entered.

C is incorrect but plausible if the examinee fails to recall the entry conditions for EOP-6. The EOP-6 entry condition for SP Level is 19' 5" (19.4 ft).

KA Justification - This question meets the KA because the examinee, when confronted with a high reactor pressure condition, has to intepret the suppression pool temperature value provided in the stem to determine which EOPs must be entered.

Cog Level Justification - this question is a high cog question written at the analysis level. The examinee has to diagnose the conditions in the stem to determine required actions.

Question 57 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1102875
User-Defined ID:	CL-ILT-1102875
Cross Reference Number:	
Topic:	The unit was operating at full power when severe weather caused a loss of power to the 345KV Switc
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4401.01 Rev. 29 • CPS 4402.01 Rev. 29 • CPS 4404.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	EOP-1, 1A, and 6
LORT	
PRA: (i.e. Yes or No or #)	Yes
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	High (3-SPK)
KA Data	
KA Number / System Name: 295025 High Reactor Pressure **Category / KA Statement:** EA2. Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: EA2.03 Suppression pool temperature **RO Value:** 3.9 **SRO Value:** 4.1 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q57 295025 A2.03

58 **ID: 1102513** **Points: 1.00**

The plant was operating at rated power when the following sequence of events occurred:

TIME (hh:mm:ss)	EVENT
01:00:00	Drywell pressure is 2.6 psig.
01:01:00	A complete loss of off-site power occurs.
01:01:08	Diesel Generator 1A re-energizes 4KV Bus 1A1.
01:01:10	Diesel Generator 1C re-energizes 4KV Bus 1C1.
01:01:12	Diesel Generator 1B re-energizes 4KV Bus 1B1.

Which ONE of the following ECCS pumps is the FIRST to be running following the loss of off-site power?

A. High Pressure Core Spray (HPCS)

B. Low Pressure Core Spray (LPCS)

C. Low Pressure Coolant Injection (LPCI) 'A'

D. Low Pressure Coolant Injection (LPCI) 'B'

Answer: B

Answer Explanation

B is correct:

From UFSAR Section 8.3.1.1.2:

a. Each diesel generator is automatically started by one of the following events:

1. associated bus voltage and both offsite power source voltages below the preset values; or
2. reactor low water level (Subsection 7.3.2); or
3. high drywell pressure (Subsection 7.3.2); or
4. associated bus second level under-voltage below the preset values (degraded voltage condition).

b. Upon loss of voltage at the 4160-V division buses, all 4-kV motor loads on the Division 1 and Division 2 buses will be shed. Division 3 loads are not shed following a loss of bus voltage.

c. After each diesel-generator set has accelerated to approximately rated frequency and voltage, its breaker will close if normal a-c power has not been restored to either of the other sources. A small amount of 480-Vac MCC load will be applied immediately when the circuit breaker closes.

d. If normal a-c power is still present and the diesel generator was started by signals indicated in Items a.2 or a.3, the diesel-generator breaker will not close, and the set will remain unconnected at rated frequency and voltage until manually shut down.

e. If normal a-c power is lost and signals indicated in Items a.2 and a.3 are not present, all loads will be connected automatically or manually by the operator's action as station conditions require.

f. If, while operating as per Item e, a LOCA signal is received, any nonemergency load that is running will be automatically tripped, and the required Class 1E loads will be started automatically.

g. The sequential starting of Class 1E loads will take place as shown in Table 8.3-13 for Division 1, 2 and 3 as required.

Per UFSAR Table 8.3-13, load sequence delay time (sec nominal) after DG Circuit Breaker is closed is as follows:

- Residual Heat Removal Pumps A & B - 5 seconds
- Residual Heat Removal Pump C - 0 seconds
- LPCS Pump - 0 seconds
- HPCS Pump - does not load shed; restarts as soon as 4.16 kV bus 1C1 reenergizes

The LPCS pump restarts as soon as the 1A1 bus re-energizes from DG 1A (01:01:08)

A is incorrect but plausible if the examinee incorrectly recalls the load sequence timer setpoints for the Div 1, 2, and 3 ECCS Pumps - the HPCS pump restarts as soon as the 1C1 bus re-energizes from DG 1C (01:01:10), which is 2 seconds after LPCS starts.

C is incorrect but plausible if the examinee incorrectly recalls the load sequence timer setpoints for the Div 1, 2, and 3 ECCS Pumps - the LPCI 'A' pump restarts 5 seconds after the 1A1 bus re-energizes from DG 1A (01:01:13), which is 5 seconds after LPCS starts.

D is incorrect but plausible if the examinee incorrectly recalls the load sequence timer setpoints for the Div 1, 2, and 3 ECCS Pumps - the LPCI 'B' pump restarts 5 seconds after the 1B1 bus re-energizes from DG 1B (01:01:17), which is 9 seconds after LPCS starts.

KA justification - this question meets the KA because the examinee has to recall how a LOP/LOCA event will affect the ECCS Pumps, which are AC electrical loads supplied from the 4KV ESF Buses.

Cog Level justification - this is a high cog written at the comprehension level. The examinee has to comprehend the various timing sequences for loading the buses and what load comes off what bus to answer the question.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 58 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1102513
User-Defined ID:	CL-ILT-1102513
Cross Reference Number:	
Topic:	The plant was operating at rated power when the following sequence of events occurred: TIME (hh:m
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	UFSAR Section 8.3.1.1.2 Rev. 15 UFSAR Table 8.3-13 Rev. 15
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Modified
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Modified CL-ILT-A11025 to make LPCS the correct answer and adjusted the answer explanation section accordingly.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)

KA Data

KA Number / System Name: 295003 Partial or Complete Loss of A.C. Power
Category / KA Statement: AK2. Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: AK2.04 A.C. electrical loads

RO Value: 3.4
SRO Value: 3.5

Tier: 1
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.7
10CFR55-43 (SRO) Data: NA

Associated objective(s):

RO Q58 295003 K2.04

59 **ID: 1103353** **Points: 1.00**

Given the following plant conditions:

- A reactor startup is in progress.
- Reactor pressure is 100 psig.
- CRD DRIVE WATER PUMP AUTO TRIP, 5068.03 alarms.
- Accumulator Fault annunciator is received for control rods 32-21 and 32-29.
- Equipment Operator reports Accumulator 32-21 is 1300 psig and slowly dropping and Accumulator 32-29 is 1550 slowly dropping.
- CRD 32-21 is at notch position 48.
- CRD 32-29 is at notch position 48.

Which of the following describe the required action(s)?

A. Fully insert control rods 32-21 and 32-29 within 1 hour.

B. Place the reactor mode switch in the shutdown position immediately.

C. Restore charging water header pressure to ≥1600 psig within 20 minutes.

D. Declare control rods 32-21 and 32-29 slow immediately, no further actions are required.

Answer: B

Answer Explanation

B is correct - Per ITS 3.1.5 and based on plant conditions presented in the stem, entry into CONDITION C is required (One or more control rod scram accumulators inoperable and the reactor steam dome pressure < 600 psig). Two REQUIRED ACTIONS must be met:

C.1 Verify all control rods associated with inoperable accumulators are fully inserted
AND
C.2 Declare the associated control rod inoperable

The allowed COMPLETION TIME of 1 hour is reasonable for REQUIRED ACTION C.2 however, there is no way to meet the C.1 requirement of verifying all control rods associated with inoperable accumulators are fully inserted (Immediately upon discovery of charging water header pressure <1600 psig) because they are currently at position 48 and cannot be moved due to the CRD pump trip.

Since there is no way to meet 3.5.1.C.1 requirement of verifying all control rods associated with inoperable accumulators are fully inserted, entry into CONDITION D is also required (Required Action and associated Completion Time of Required Actions B.1 or C.1 not met). REQUIRED ACTION D.1 (Place the reactor mode switch in the shutdown position) must be performed IMMEDIATELY.

A is incorrect but plausible if the candidate mistakenly believes that fully inserting inoperable control rods is a REQUIRED ACTION of ITS 3.1.5 (It is part of a REQUIRED ACTION for ITS 3.1.3, CONDITION C - One or more control rods inoperable for reasons other than Condition A or B) or incorrectly believing that ITS 3.1.3 is applicable.

C is incorrect but plausible if the candidate fails to recognize that Reactor pressure is < 600 psig and incorrectly chooses CONDITION B (Two or more control rod scram accumulators inoperable with reactor steam dome pressure ≥ 600 psig) requiring the restoration of the charging water header pressure to ≥ 1600 psig within 20 minutes from discovery of Condition B with charging water header pressure < 1600 psig.

D is incorrect but plausible if the candidate fails to recognize that Reactor pressure is < 600 psig, confuses the number of affected accumulators and incorrectly chooses a Required Action associated with CONDITION A (One control rod scram accumulators inoperable with reactor steam dome pressure ≥ 600 psig).

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of how reactor pressure impacts rod insertion capability when a loss of CRD pumps occur. Specifically, the candidate must choose ITS actions based on a loss of CRD pumps and then further distinguish his/her answer based on reactor pressure.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to show understanding by recognizing the interaction between the CRD and rod control systems and the implications of reactor pressure above or below 600 psig.

Question 59 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103353
User-Defined ID:	CL-ILT-1103353
Cross Reference Number:	
Topic:	Given the following plant conditions: A reactor startup is in progress. Reactor pressure is 100 p
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	ITS 3.1.5 Amendment 192
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank 738956
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	ITS 3.1.5
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 295022 Loss of CRD Pumps **Category / KA Statement:** AK1. Knowledge of the operational implications of the following concepts as they apply to LOSS OF CRD PUMPS: AK1.01 Reactor pressure vs. rod insertion capability **RO Value:** 3.3 **SRO Value:** 3.4 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.8 to 41.10 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q59 295022 K1.01

60 **ID: 1103432** **Points: 1.00**

The plant is operating at 86% power when the feeder breaker for CB MCC 1A trips open.

(1) An impact on the Reactor Recirculation System is that the "A" Recirc Flow Control Valve (FCV) can drift _____.

(2) What procedural action is taken to correct, control, or mitigate this impact?

A. (1) SHUT
(2) Adjust the operable FCV to maintain steady state power.

B. (1) OPEN
(2) Adjust the operable FCV to maintain steady state power.

C. (1) SHUT
(2) Scram before exceeding Tech Spec Limit for Jet Pump Flow Mismatch.

D. (1) OPEN
(2) Scram before exceeding Tech Spec Limit for Jet Pump Flow Mismatch.

Answer: B

Answer Explanation

B is correct. Power would be lost to the “A” HPU which would inhibit FCV “A”. Per a Caution in CPS 5003.04 (4B), the FCV could drift open at <1%/min. Subsequent operator actions direct adjusting the operable FCV to maintain steady state power. CPS 4008.01 also directs control of reactor power.

A is incorrect but plausible. The candidate may select this response if he/she recognizes that adjusting the operable FCV will be required to maintain steady state power, but incorrectly believes that the FCV will drift SHUT vice OPEN based on plant conditions.

C is incorrect but plausible. The candidate may select this response if he/she incorrectly believes that the FCV will drift SHUT vice OPEN or that a Scram is required based on plant conditions even though loop flows can be adjusted with the operable FCV.

D is incorrect but plausible. The candidate may select this response if he/she recognizes that the FCV will drift OPEN but incorrectly believes a Scram is required based on plant conditions even though loop flows can be adjusted with the operable FCV.

KA Justification - this question meets the KA because the candidate must demonstrate knowledge of the interrelations between an inadvertent reactivity addition and recirculation flow control. Specifically, the candidate must recognize an inadvertent reactivity addition caused by a recirculation flow control malfunction and determine the correct action to mitigate it's effect.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to recognize how inhibiting the FCV affects reactivity including the consequences, implication and mitigating strategies.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 60 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103432
User-Defined ID:	CL-ILT-N11034
Cross Reference Number:	
Topic:	The plant is operating at 86% power when the feeder breaker for CB MCC 1A trips open. (1) An im
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 5003.04 Sect. 5004-4B Rev. 30e CPS 4008.01 Sect. 4.3 Rev. 20a CPS 3514.01C020 Rev. 3c
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	ILT 10-1 NRC exam
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 5003.04 CPS 4008.01 CPS 3514.01C020
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (2-RI)
KA Data	
KA Number / System Name: 295014 Inadvertent Reactivity Addition **Category / KA Statement:** AK2. Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: AK2.11 Recirculation flow control **RO Value:** 3.6 **SRO Value:** 3.7 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: N/A	

Associated objective(s):

RO Q60 295014 K2.11

61 **ID: 1097937** **Points: 1.00**

The plant was operating at rated thermal power when conditions required a manual scram to be inserted.

Some, but NOT all, control rods inserted.

The Control Room Supervisor (CRS) has directed you to insert control rods per CPS 4411.08 Alternate Control Rod Insertion and CPS 4410.00C012 Defeating ATWS Interlocks.

Under these conditions, the Rod Pattern Controller is defeated by _____(1)_____.

The reason the Rod Pattern Controller is bypassed is because the _____(2)_____.

A. (1) installing backplane jumpers on logic cards in 1H13-P661, P662, P663, AND P664
(2) In Timer Skip pushbutton will NOT work when a rod insert block exists

B. (1) installing backplane jumpers on logic cards in 1H13-P661, P662, P663, AND P664
(2) Reactor Mode Switch in shutdown inserts a rod block

C. (1) turning the set adjustment screws clockwise 26 turns on ATMs located in 1H13-P661 AND P662
(2) In Timer Skip pushbutton will NOT work when a rod insert block exists

D. (1) turning the set adjustment screws clockwise 26 turns on ATMs located in 1H13-P661 AND P662
(2) Reactor Mode Switch in shutdown inserts a rod block

Answer: C

Answer Explanation

C is correct:

Per CPS 4410.00C012 Defeating ATWS Interlocks, the Rod Pattern Controller is defeated to allow manual insertion of control rods irrespective of pattern and sequence constraints which would otherwise be imposed on movement of control rods under "high" reactor power conditions (Turbine 1st Stage Pressure). This is accomplished in section 3.3 by turning the Analog Trip Module (ATM) SET adjustment screws clockwise 26 turns for RCIS Cards C11-N654A and C11-N654B in 1H13-P661 and P662.

A is incorrect but plausible - backplane jumpers are installed on RPS logic cards in 1H13-P661, 662, 663, and 664 in section 3.2 of CPS 4410.00C012 to allow the scram to be reset, the scram discharge volume drained, and the CRD accumulators recharged for subsequent manual scram attempts.

B is incorrect but plausible - backplane jumpers are installed on RPS logic cards in 1H13-P661, 662, 663, and 664 in section 3.2 of CPS 4410.00C012 to allow the scram to be reset, the scram discharge volume drained, and the CRD accumulators recharged for subsequent manual scram attempts. Placing the reactor mode switch in shutdown inserts a rod withdrawal block, not an insertion block.

D is incorrect but plausible - Placing the reactor mode switch in shutdown inserts a rod withdrawal block, not an insertion block.

KA Justification - this question meets the KA because the examinee has to identify the reason that rod insertion blocks are bypassed during an ATWS transient.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall information contained in a procedure to answer the question.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 61 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097937
User-Defined ID:	CL-ILT-1097937
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when conditions required a manual scram to be inser
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4410.00C012 Rev. 4
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	2008 LaSalle ILT NRC Exam (Q25)
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Revised the LaSalle question for use at CPS. Added General Data table. Added KA and Cog Level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 295015 Incomplete SCRAM **Category / KA Statement:** AK3. Knowledge of the reasons for the following responses as they apply to INCOMPLETE SCRAM : AK3.01 Bypassing rod insertion blocks **RO Value:** 3.4 **SRO Value:** 3.7 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q61 295015 K3.01

62 **ID: 1103301** **Points: 1.00**

Initial plant conditions were as follows:

- The Reactor was operating at 43% power on a 55% Rod Line.
- Circulating Water (CW) Pump 'C' was tagged out for repairs.
- CW Pump 'B' tripped on a motor breaker electrical fault.
- CW Pump 'A' remained operating.
- "A" RO lowered reactor power with Reactor Recirc flow and rods until Main Condenser vacuum stabilized.

Current plant conditions are:

- Main condenser vacuum is now 24" Hg and steady.
- Reactor power is now 30%.

Which one of the following describes the operational concern at this time?

A. Cavitation of the RR Pumps.

B. Overheating of the LP turbine last stage buckets.

C. Absence of automatic tripping of CW Pump 'A' on high condenser pit level.

D. Operating within the Power/Flow Operating Map CONTROLLED ENTRY REGION.

Answer: B

Answer Explanation

B is correct:

The parameters provided in the stem indicate a low vacuum condition exists. Per 5007-2B and 2D, the low vacuum alarm for Low Pressure Turbines 1A and 1B comes in at 24.1" Hg Vacuum. Per N-CL-OPS-245000 Main Turbine, operating the turbine with degraded vacuum could inflict severe duty on the long last stage buckets.

A is incorrect but plausible if the examinee misreads the Power to Flow Operating Map and determines that the plant is operating below the cavitation protection lines. With the conditions provided in the stem, if the power reduction were performed completely using control rod insertion, power would drop straight down from the intersection of 43% power and 55% FCL to the intersection of 30% power and ~ 37% FCL (below the 40% FCL and above the cavitation protection line). Since the stem states that flow and power were used to reduce power, the margin to the cavitation protection line is even greater than the worst case scenario described above.

C is incorrect but plausible if the examinee incorrectly recalls that tripping power for the CW Pumps on high condenser pit level is supplied from CW Pump 'C'. Tripping power is supplied from the 'A' CW Pump, not the 'C' CW Pump. Nothing in the stem is provided that would indicate a loss of control power exists to the 'A' CW Pump.

D is incorrect but plausible if the examinee misreads the Power to Flow Operating Map and determines that the plant is operating in the controlled entry region. With the conditions provided in the stem, if the power reduction were performed completely using recirc flow reduction, power would drop from the intersection of 43% power and 55% FCL to the intersection of 40% flow and and 30% power, which is to the right of the controlled entry region. Since the stem states that flow and power were used to reduce power, the margin to the controlled entry region is even greater than the worst case scenario described above.

KA Justification - this question meets the KA because the examinee has to use the degraded condenser vacuum indications in the stem to determine the impact on the main turbine to answer the question correctly.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the impact of a low vacuum condition on the main turbine.

Question 62 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103301
User-Defined ID:	CL-ILT-1103301
Cross Reference Number:	
Topic:	Initial plant conditions were as follows: The Reactor was operating at 43% power on a 55% Rod Lin
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5007.02 (2B & 2D) Rev. 26 • N-CL-OPS-245000 Rev. 2 • CPS 3005.01 (Figure 1: Stability Control & Power/Flow Operating Map) Rev. 42a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-635580
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Changed vacuum value in the stem to 24" (from 25"). Added distracter plausibility statements. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 3005.01 - Figure 1: Stability Control & Power/Flow Operating Map
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 295002 Loss of Main Condenser Vacuum **Category / KA Statement:** AA1. Ability to operate and/or monitor the following as they apply to LOSS OF MAIN CONDENSER VACUUM : AA1.05 Main Turbine **RO Value:** 3.2 **SRO Value:** 3.2 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q62 295002 A1.05

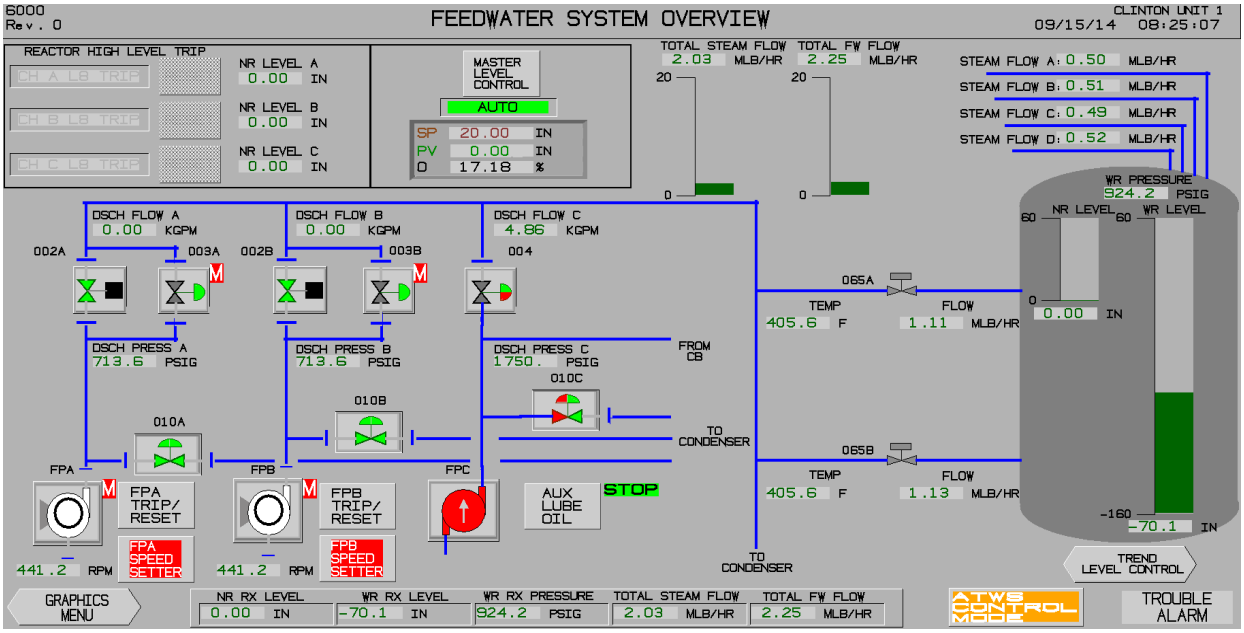
63 **ID: 1097939** **Points: 1.00**

The plant was operating at 80% power when both TDRFPs tripped resulting in a reactor scram.

Some, but NOT all control rods inserted.

EOP-1A ATWS RPV Control actions are being performed.

Current status of the Digital Feedwater System (DFW) is shown in the graphic below and the attached duplicate graphic.



Based on the indications provided in the graphic, the expected RPV level trend is _____(1)_____.

RPV water level is _____(2)_____ the controlling controller setpoint.

A. (1) rising
(2) below

B. (1) rising
(2) above

C. (1) lowering
(2) below

D. (1) lowering
(2) above

Answer: A

Answer Explanation

A is correct:

Based on the conditions provided in the stem and the graphic, the Digital Feedwater System (DFW) is controlling RPV level in ATWS Control Mode via the Master Level Controller.

Per CPS 3103.01 Feedwater (FW) section 8.3.2 ATWS Level Control, ATWS mode will shift level control from the master level controller (narrow range) to the ATWS level controller (wide range). Once ATWS mode is selected, the ATWS controller setpoint (SP) will be the average of the 2 Wide Range inputs as soon as ATWS mode is selected.

The DFW graphic shows that the DFW system has been shifted to the ATWS Control Mode, and that total feedwater flow is > total steam flow which indicates a rising trend in RPV water level. In addition, with 1FW004 partially open (red and green indication on the graphic), and feedwater flow > steam flow, actual RPV water level is below the controller setpoint.

B is incorrect but plausible if the examinee incorrectly believes that with Total Steam Flow < Total FW Flow, RPV water level must be above the ATWS controller setpoint.

C is incorrect but plausible if the examinee incorrectly determines that the FW system is not operating correctly with the MLC setpoint at 20 inches and actual RPV level at -70 inches and then determines that RPV water level is lowering. Incorrect because the SP in the graphic is the Setpoint Setdown setpoint, which is ignored when in ATWS Control Mode.

D is incorrect but plausible if the examinee incorrectly determines that RPV level is lowering based on the level indications (-70") provided in the graphic and does not use the steam flow / feed flow mismatch indication to predict the level trend. Also incorrect if the examinee incorrectly believes that the ATWS Level Controller setpoint is normally set at -100 inches per Level Band B of EOP-1A, therefore concluding that actual RPV water level is above the ATWS controller setpoint.

KA Justification - this question meets the KA because the examinee has to interpret the steam flow/feed flow mismatch indications provided in the question stem to determine expected RPV level trend during a low RPV water level condition.

Cog Level Justification - this is a high cog question written at the analysis & comprehension level. The examinee has to analyze the indications in the graphic, and then predict how RPV water level is affected by those indications.

Question 63 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097939
User-Defined ID:	CL-ILT-1097939
Cross Reference Number:	
Topic:	The plant was operating at 80% power when both TDRFPs tripped resulting in a reactor scram. Some,
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3103.01 Rev. 29d
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-PEO)
KA Data	
KA Number / System Name: 295009 Low Reactor Water Level **Category / KA Statement:** AA2. Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL : AA2.02 Steam flow/feed flow mismatch **RO Value:** 3.6 **SRO Value:** 3.7 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q63 295009 A2.02

64 **ID: 1103370** **Points: 1.00**

The plant was operating at rated power when annunciator 5000-5A REACTOR WATER CLEANUP PUMP HEAT EXCHANGER ROOM WEST TEMPERATURE HIGH was received.

The 'B' RO investigates and notes that the RWCU HX Room West temperature as indicated on E31-N620A AND E31-N620B on 1H13-P632 AND P642 are reading 194ºF AND 198ºF respectively.

Under these conditions, which of the following conditions are consistent with these indications?

A. ONLY Division 2 RWCU containment isolation (inboard) valves should have isolated.

B. ONLY Division 1 RWCU containment isolation (outboard) valves should have isolated.

C. BOTH divisions of RWCU containment isolation (inboard and outboard) valves should have isolated.

D. NEITHER division of RWCU containment isolation (inboard or outboard) valves should have isolated.

Answer: C

Answer Explanation

C is correct:

Per CPS 5000-5A, RWCU HX RM WEST TEMP HI alarm provides indication of a high energy leak into the 'A' RWCU Heat Exchanger room which exceeds the CRVICS Group 4 isolation setpoint. Since E31-N620A & B are both reading above their trip setpoints (190°F), per CPS 4001.02C001 Automatic Isolation Checklist, all CRVICS Group 4 Isolation Valves (Div 1 and 2) should have isolated.

A is incorrect but plausible if the examinee incorrectly recalls that the West RWCU Heat Exchanger Room ambient room temperature thermocouples only affect the Division 2 RWCU containment isolation valves. Each RWCU Heat Exchanger Room (east and west) contains a Div 1 and 2 thermocouple so that a reactor coolant leak into the room will initiate a complete CRVICS Group 4 Isolation.

B is incorrect but plausible if the examinee incorrectly recalls that the West RWCU Heat Exchanger Room ambient room temperature thermocouples only affect the Division 1 RWCU containment isolation valves. Each RWCU Heat Exchanger Room (east and west) contains a Div 1 and 2 thermocouple so that a reactor coolant leak into the room will initiate a complete CRVICS Group 4 Isolation.

D is incorrect but plausible if the examinee incorrectly recalls the automatic actions that occur when 5000-5A is received and/or incorrectly recalls the CRVICS Group 4 isolation setpoints for high RT Heat Exchanger Room ambient temperature (190ºF). An examinee may select this choice if he/she confuses annunciator 5000-4A with 5000-4F RWCU EQPT RM AMB TEMP HI which comes in at 165ºF as a pre-warning of a Group 4 isolation.

KA Justification - this question meets the KA because the examinee has to determine how the RWCU system should respond to a leak in the RWCU Heat Exchanger Rooms indicated by an annunciator. A leak from the RWCU Heat Exchanger rooms will result in a reactor coolant leak into the containment, raising containment temperature.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the RWCU system interlocks that are actuated on a high ambient temperature condition in the RWCU Heat Exchanger Rooms.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 64 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103370
User-Defined ID:	CL-ILT-1103370
Cross Reference Number:	
Topic:	The plant was operating at rated power when annunciator 5000-5A REACTOR WATER CLEANUP PUMP HEAT EX
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5000.04 (4F) Rev. 27 • CPS 5000.05 (5A) Rev. 27 • CPS 4001.02C001 Rev. 15e
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank - modelled from CL-ILT-6493
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Revised the question stem for readability. Added answer plausibility statements. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-I)

KA Data

KA Number / System Name: 295011 High Containment Temperature (Mark III Containment Only)
Category / KA Statement: 2.4.46 Ability to verify that the alarms are consistent with the plant conditions.

RO Value: 4.2
SRO Value: 4.2

Tier: 1
RO Group: 2
SRO Group: 2

10CFR55-41 (RO) Data: 41.10
10CFR55-43 (SRO) Data: 43.5

Associated objective(s):

RO Q64 295011 2.4.46

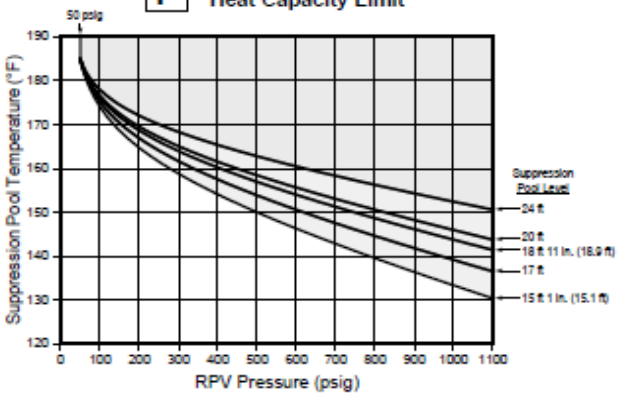
65 **ID: 1103386** **Points: 1.00**

The plant was operating at full power when an ATWS occurred that resulted in the following plant conditions:

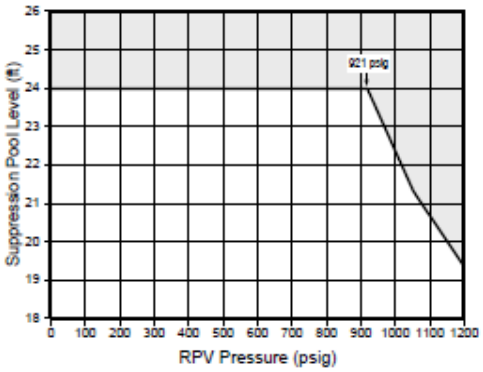
- Reactor pressure is 1100 psig and CANNOT be reduced
- Suppression pool temperature is 140ºF
- Drywell Temperature is 185ºF
- Containment Temperature is 155ºF
- Suppression pool level is 21 ft slowly rising
- Reactor water level is 0 inches and steady

Given the following:

P Heat Capacity Limit



Q SRV Tail Pipe Limit



Under these conditions, the EOP Technical Bases states that a blowdown is required to prevent.....

A. exceeding Heat Capacity Limit.

B. exceeding drywell design temperature.

C. exceeding containment design temperature.

D. failures that would directly pressurize containment.

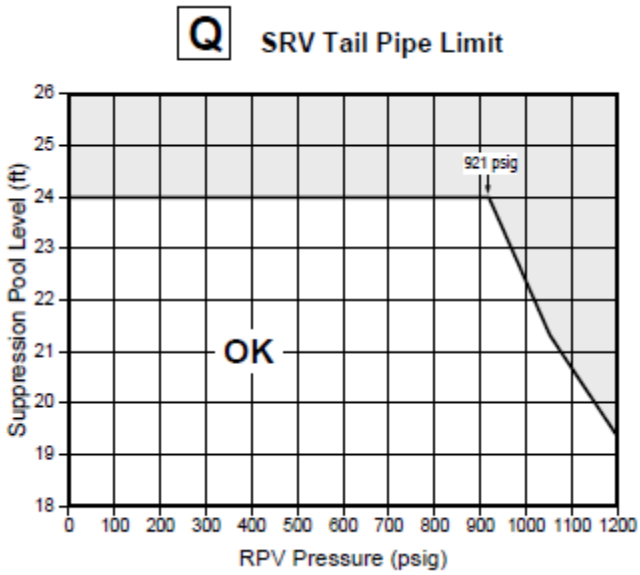
Answer: D

Answer Explanation

D is correct: Per Clinton Power Station Emergency Operating Procedures Technical Bases (EOP-TB) page 11-46, the SRV Tail Pipe Limit is defined to be the lower of:

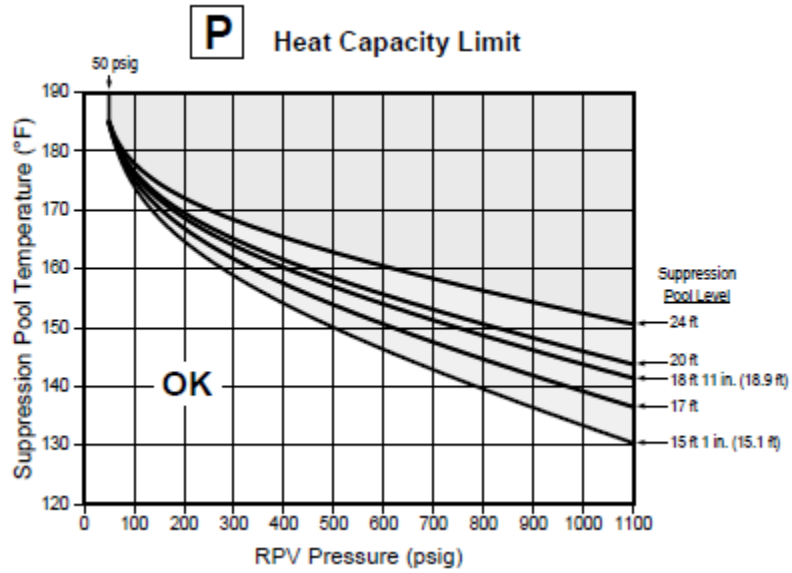
- The Maximum Pressure Suppression Primary Containment Water Level (23 ft. 9 in.)
- The highest suppression pool water level at which opening an SRV will not result in exceeding the capability of the SRV tail pipe, tail pipe supports, quencher, or quencher supports.

The SRV Tail Pipe Level Limit is a function of RPV pressure. SRV operation with suppression pool water level above the SRV Tail Pipe Level Limit could damage the SRV discharge lines. This, in turn, could lead to containment failure from direct pressurization and damage to equipment inside the containment from pipe-whip and jet-impingement loads.



Current conditions are placing us in the unsafe region of Detail Q SRV Tail Pipe Limit. If suppression pool water level cannot be maintained below this limit, a blowdown will ultimately be required to preclude SRV system damage and containment failure.

A is incorrect but plausible if the candidate mistakenly believes that conditions place us in the unsafe region of Detail P Heat Capacity Limit. Operation is still in the safe region of the Heat Capacity Limit graph.



B is incorrect but plausible if the candidate mistakenly believes that the drywell design temperature has been exceeded. Drywell design temperature is 330ºF (vs. 185ºF actual).

C is incorrect but plausible if the candidate mistakenly believes that the Containment design temperature has been exceeded. Containment design temperature is 185ºF (vs. 155ºF actual).

KA Justification - this question meets the KA because the candidate must interpret suppression pool level as it applies to a high suppression pool level. Additionally, using conditions presented in the stem, the candidate must use that high suppression pool level condition to determine the correct reason a blowdown would be required.

Cog Level Justification - this is a high cog question written at the application/analysis level. The examinee has to analyze conditions presented in the stem, use knowledge to determine the correct variables and recognize that Detail Q is pertinent to the analysis. Based on the correct application of the graph, the examinee must again use knowledge to select the correct reason a blowdown is required.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 65 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1103386
User-Defined ID:	CL-ILT-6491
Cross Reference Number:	
Topic:	The plant was operating at full power when an ATWS occurred that resulted in the following plant c
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	EOP-TB Rev. 6
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank 597614
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved stem and answer explanation.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	EOP-TB Rev. 6
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK, 3-SPR)
KA Data	
KA Number / System Name: 295029 High Suppression Pool Water Level **Category / KA Statement:** EA2. Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL : EA2.01 Suppression pool water level **RO Value:** 3.9 **SRO Value:** 3.9 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q65 295029 A2.01

66 **ID: 1110312** **Points: 1.00**

The plant was operating at rated power when a loss of all Feedwater occurs. You note the following indications:

- 5062-1D REACTOR VESSEL WATER LOW LEVEL 2
- 5062-3C RUNNING DIESEL GEN 1C
- 5062-4E HPCS PUMP AUTO START

There are NO annunciators lit on panels 5060 OR 5061.

Which of the following alignments will validate these indications?

Alignment 1		

Alignment 2	 DW IA HDR INBD ISOL VLV 1IA008 CNMT IA OUTBD ISOL VLV 1IA005 AUTO CLOSE OPEN DW IA OUTBD ISOL VLV 1IA007 CNMT IA INBD ISOL VLV 1IA006 AUTO CLOSE OPEN	 ADS IA CNMT INBD ISOL VLV 1IA012B AUTO CLOSE OPEN ADS IA CNMT OUTBD ISOL VLV 1IA012A AUTO CLOSE OPEN ADS IA CNMT INBD ISOL VLV 1IA013B AUTO CLOSE OPEN ADS IA CNMT OUTBD ISOL VLV 1IA013A AUTO CLOSE OPEN

Alignment 3	 DW IA HDR INBD ISOL VLV 1IA008 CNMT IA OUTBD ISOL VLV 1IA005 AUTO CLOSE OPEN DW IA OUTBD ISOL VLV 1IA007 CNMT IA INBD ISOL VLV 1IA006 AUTO CLOSE OPEN	 ADS IA CNMT INBD ISOL VLV 1IA012B AUTO CLOSE OPEN ADS IA CNMT OUTBD ISOL VLV 1IA012A AUTO CLOSE OPEN ADS IA CNMT INBD ISOL VLV 1IA013B AUTO CLOSE OPEN ADS IA CNMT OUTBD ISOL VLV 1IA013A AUTO CLOSE OPEN

Alignment 4		

A. Alignment 1

B. Alignment 2

C. Alignment 3

D. Alignment 4

Answer: B

Answer Explanation

B is correct:

Per N-CL-OPS-300000 Service and Instrument Air System, motor operated Compressed Gas Inboard Isolation Valves 1IA012B (Division 1) and 1IA013B (Division 2) supply the air amplifier output to the ADS and LLS SRVs. 1IA012B and 1IA013B are normally OPEN. 1IA012B and 1IA013B will automatically CLOSE on Low Reactor level 2. Motor operated Compressed Gas Outboard Isolation Valves 1IA012A (Division 1) and 1IA013A (Division 2) make available an alternate source of air from either the ADS Backup Air Bottles or an outside air connection. 1IA012A and 1IA013A are normally CLOSED but will automatically OPEN when 1IA012B and 1IA013B are fully CLOSED.

Per CPS 5003.05 ALARM PANEL 5003 ANNUNCIATORS - ROW 5, Annunciator 5003-5M CNMT/DW IA ISOL VLV CLOSED, the following containment and drywell isolation valves will shut at RPV Low Level 1 (-145.5"):
CNMT IA OTBD ISO VLV (1IA005)
CNMT IA INBD ISO VLV (1IA006)
DW IA OTBD ISO VLV (1IA007)
DW IA INBD ISO VLV (1IA008)

The conditions presented in the stem indicate an RPV Low Level 2 (-45.5") actuation (given by the 5062 panel annunciators) while NO annunciators on the 5060 or 5061 panels are an indication of NOT reaching RPV Low Level 1 (-145.5"). Therefore, as validation of the conditions presented in the stem, the compressed gas isolation valves WILL shift (1IA012B and 1IA013B fully CLOSE and 1IA012A and 1IA013A automatically OPEN) while the containment and drywell isolation valves remain OPEN.

A is incorrect but plausible if the examinee recognizes that the containment and drywell isolation valves will not shut until RPV Low Level 1 (-145.5") but fails to recognize that 1IA012B and 1IA013B will automatically CLOSE on RPV Low Level 2 (-45.5") causing the 1IA012A and 1IA013A to automatically OPEN.

C is incorrect but plausible if the examinee incorrectly believes that the containment and drywell isolation valves will shut on RPV Low Level 2 (-45.5") while also failing to recognize that the 1IA012B and 1IA013B will automatically CLOSE on Low Reactor level 2 causing the 1IA012A and 1IA013A to automatically OPEN.

D is incorrect but plausible if the examinee incorrectly believes that the containment and drywell isolation valves will shut on RPV Low Level 2 (-45.5") but recognizes that 1IA012B and 1IA013B will automatically CLOSE on RPV Low Level 2 (-45.5") causing the 1IA012A and 1IA013A to automatically OPEN.

KA Justification - this question meets the KA because the examinee is asked to interpret diverse indications in order to validate the annunciators provided in the stem.

Cog Level Justification - this is a high cog question written at the analysis & comprehension level. The examinee has to analyze the graphics in the stem and determine which one will validate an RPV Low Level 2 actuation.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 66 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1110312
User-Defined ID:	CL-ILT-1110312
Cross Reference Number:	
Topic:	The plant was operating at rated power when a loss of all Feedwater occurs. You note the followin
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	N-CL-OPS-300000 Rev. 002 CPS 5003.05 Rev. 30c
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	N-CL-OPS-300000 Rev. 002 CPS 5003.05 Rev. 30c
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 2.1 Conduct of Operations **Category / KA Statement:** 2.1.45 Ability to identify and interpret diverse indications to validate the response of another indication. **RO Value:** 4.3 **SRO Value:** 4.3 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: 43.7	

Associated objective(s):

RO Q66 2.1.45

67 **ID: 1097943** **Points: 1.00**

The plant is in Mode 1.

CPS 9031.02 APRM CHANNEL FUNCTIONAL (ON-LINE) is scheduled to be performed this shift. The surveillance requires IMD to install a backplane jumper on each APRM Flow Card (one division at a time).

The appropriate verification technique that is to be used for jumper installation is _____(1)_____ verification.

The appropriate verification technique that is to be used for jumper removal is _____(2)_____ verification.

A. (1) concurrent
(2) concurrent

B. (1) concurrent
(2) independent

C. (1) independent
(2) concurrent

D. (1) independent
(2) independent

Answer: B

Answer Explanation

B is correct: Per HU-AA-101 Human Performance Tools and Verification Practices, concurrent verification is used if component manipulation, if performed incorrectly, would cause an irrecoverable condition with immediate adverse consequences to plant operation. Independent verification is used for restoration of equipment.

This methodology is consistent with the verification requirements listed in CPS 9031.02 steps 8.1.1 (jumper installation requires CV), and 8.1.19 (jumper removal requires IV), but can be applied generically to all jumper installation/removal activities.

A is incorrect but plausible if the examinee incorrectly believes that the verification requirements are the same for jumper removal and installation. Incorrect because the jumper removal requires independent verification to ensure that the APRM is returned to an operable status.

C is incorrect but plausible if the examinee incorrectly recalls the verification techniques required for jumper installation and removal. The examinee may select this choice if he/she does not understand the possible implications of installing backplane jumpers, or does not understand the reasoning for performing concurrent and independent verifications.

D is incorrect but plausible if the examinee fails to recall that jumper installation requires concurrent verification. An examinee may select this choice based on the requirement for performing independent verifications for safety related equipment described in HU-AA-101 step 4.3.2.3.

KA Justification - this question meets the KA because the examinee has to demonstrate knowledge of the verification requirements for performing jumper installation and removal to align a system for testing and restoration.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall procedural requirements to answer the question.

Question 67 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097943
User-Defined ID:	CL-ILT-1097943
Cross Reference Number:	
Topic:	The plant is in Mode 1. CPS 9031.02 APRM CHANNEL FUNCTIONAL (ON-LINE) is scheduled to be perfor
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• HU-AA-101 Rev. 8 • CPS 9031.02 Rev. 2a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 2.1 Conduct of Operations **Category / KA Statement:** 2.1.29 Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc. **RO Value:** 4.1 **SRO Value:** 4.0 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

RO Q67 2.1.29

68 **ID: 1104245** **Points: 1.00**

Consider the four cases shown in the table below.

In which case has a Technical Specification Safety (SL) been violated?

Case #	Reactor Power (%)	Reactor Pressure (psig)
1	40	840
2	25	780
3	20	750
4	9	700

A. Case 1

B. Case 2

C. Case 3

D. Case 4

Answer: B

Answer Explanation

B is correct - per ITS 2.1.1.1 Reactor Core SLs, With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow, THERMAL POWER shall be ≤ 21.6% RTP.

Case 2 exceeds this value.

A is incorrect but plausible if the examinee incorrectly recalls reactor power limit for operating at RCS pressure below 785 psig.

C is incorrect but plausible if the examinee incorrectly recalls that the reactor steam dome pressure limit is not applicable with reactor power below 21.6% RTP.

D is incorrect but plausible if the examinee incorrectly recalls that the reactor steam dome pressure limit is not applicable with reactor power below 21.6% RTP.

KA Justification - this question meets the KA because the examinee has to recall the Reactor Core SL to answer the question.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall a value contained in Technical Specifications.

Question 68 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104245
User-Defined ID:	CL-ILT-1104245
Cross Reference Number:	
Topic:	Consider the four cases shown in the table below. In which case has a Technical Specification Saf
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	ITS 2.1.1
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Updated pedigree table and added answer justification and plausibility statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	ITS section 2.0
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 2.2 Equipment Control **Category / KA Statement:** 2.2.22 Knowledge of limiting conditions for operations and safety limits. **RO Value:** 4.0 **SRO Value:** 4.7 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: 43.2	

Associated objective(s):

RO Q68 2.2.22

69 **ID: 1097944** **Points: 1.00**

The Control Room Supervisor has directed you to perform stroke time testing of a valve required by Technical Specifications for post-maintenance testing to restore operability.

To time this valve OPEN, the RO will START the stopwatch when the _____(1)_____, and will STOP the stopwatch _____(2)_____.

A. (1) control switch is placed to OPEN
(2) 5 seconds AFTER the green light extinguishes

B. (1) control switch is placed to OPEN
(2) when the green position indication light extinguishes

C. (1) red position indication light FIRST illuminates
(2) when the green position indication light extinguishes

D. (1) red position indication light FIRST illuminates
(2) 5 seconds AFTER the green light extinguishes

Answer: B

Answer Explanation

B is correct - Per 9061.03 step 2.2.1, stroke time is defined from control switch actuation to receipt of the desired position. For motor operated valves at CPS, the red position indication light indicates that the valve is open, the green light indicates the valve is closed, and dual position (both red and green lights on) indicates that valve is in the intermediate position (not full open or closed).

A is incorrect but plausible if the examinee confuses the requirement to hold the control switch for MOV throttle valves for ~ 5 seconds after seeing the closed indication (OP-CL-108-101-1001 STEP 3.3.1) with the requirements for measuring valve stroke time.

C is incorrect but plausible if the examinee incorrectly believes that the stopwatch is started when the red (open) position indication light first illuminates.

D is incorrect but plausible if the examinee incorrectly believes that the stopwatch is started when the red (open) position indication light first illuminates and is stopped 5 seconds after seeing the green light extinguish as discussed in A above.

KA Justification - this question meets the KA because the examinee must identify the requirements to perform valve stroke timing following maintenance.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall steps contained in two operating procedures.

Question 69 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097944
User-Defined ID:	CL-ILT-1097944
Cross Reference Number:	
Topic:	The Control Room Supervisor has directed you to perform stroke time testing of a valve required by
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• OP-CL-108-101-1001 Rev. 11 • CPS 9061.03 Rev. 39c
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• OP-CL-108-101-1001 • CPS 9061.03
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 2.2 Equipment Control **Category / KA Statement:** 2.2.21 Knowledge of pre- and post-maintenance operability requirements. **RO Value:** 2.9 **SRO Value:** 4.1 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.2	

Associated objective(s):

RO Q69 2.2.21

70 **ID: 1104265** **Points: 1.00**

The plant is operating at 88% when the following occurs:

- 1RIX-PR037 CCW Effluent Monitor alarms (NOT a spike).
- 1RIX-PR037 is nearing its HIGH alarm setpoint.
- The source of the alarm is determined to be a tube leak on the ONLY available NRHX.
- RWCU Sys Diff Flow indicates 42 gpm.

Which ONE of the following describes the required operator action?

A. Enter CPS 4001.02, Automatic Isolation.

B. Commence a normal plant shutdown within 1 hour.

C. Stop the RWCU Pumps and isolate the RWCU system.

D. Isolate CCW from the NRHX and open 1G33-F104 RWCU Heat Exchanger Bypass.

Answer: C

Answer Explanation

C is correct - Per CPS 5140.49 and CPS 4979.05 Subsequent Action 4.6.2 the RWCU pumps must be stopped and the RWCU system must be isolated.

A is incorrect but plausible - Per CPS 4001.02C001 Automatic Isolation Checklist, a Group 4 isolation on RWCU Delta Flow - High occurs at 59 gpm. With actual RWCU Delta Flow below the Group 4 isolation setpoint, there is no requirement to enter CPS 4001.02 Automatic Isolation.

B is incorrect but plausible if the examinee incorrectly determines that the conditions in the stem require entry into a 1 hour or less ITS action statement. The Required Actions of ITS 3.4.5 RCS Operational Leakage are all greater than 1 hour action statements. 0 gpm Pressure boundary leakage is allowed, but if pressure boundary leakage does exist, the plant must be placed in Mode 3 within 12 hours and Mode 4 within 36 hours.

D is incorrect but plausible if the examinee fails to recall that there is no provision in CPS 3303.01 Reactor Water Cleanup (RT) for operating the RWCU system with 1G33-F044 RWCU Filter/Demin Bypass open and the in-service RT Heat Exchanger Train isolated. CPS 3303.01 section 8.2.3.2 Isolating a Hx Train requires the heat exchangers to be shifted per 8.2.3.1, or the RWCU system shutdown per section 8.2.1 RWCU System Shutdown. Since the stem states that the standby NRHX is NOT available, the RWCU system must be shutdown.

KA Justification - this question meets the KA because the examinee has to identify the actions required to control the release of reactor coolant from a tube leak in the Reactor Water Cleanup Non-Regenerative Heat Exchanger to the Component Cooling Water System.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall procedural steps required to mitigate a heat exchanger tube leak to answer the question.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - RO

Question 70 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104265
User-Defined ID:	CL-ILT-657158
Cross Reference Number:	
Topic:	The plant is operating at 88% when the following occurs: 1RIX-PR037 CCW Effluent Monitor alarms (
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3303.01 Rev. 35a • CPS 4001.02C001 Rev. 15e • CPS 4979.05 Rev. 9b • CPS 5140.49 Rev. 0a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-657158
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Revised answer explanation. Added distracter plausibility statements. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 2.3 Radiation Control **Category / KA Statement:** 2.3.11 Ability to control radiation releases. **RO Value:** 3.8 **SRO Value:** 4.3 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.11 **10CFR55-43 (SRO) Data**: 43.4	

Associated objective(s):

RO Q70 2.3.11

71 **ID: 1104464** **Points: 1.00**

On the AR/PR Display, the Common Station HVAC Exhaust Stack Monitor, 0RIX-PR001 indicating tile is RED due to CHANNEL 5, LO NBL GAS.

- Effluent release rates have **NOT** reached the EAL threshold value.

When it is verified that this indication is valid, it is immediately required to enter CPS 4979.01, Abnormal Release of Airborne Radioactivity ___(1)___.

The Accident Range HVAC Monitor, 0RIX-PR012 should be in ___(2)___.

A. (1) AND EOP-9, Radioactivity Release Control
(2) Standby

B. (1) ONLY
(2) Standby

C. (1) AND EOP-9, Radioactivity Release Control
(2) Operation

D. (1) ONLY
(2) Operation

Answer: D

Answer Explanation

D is correct - Per CPS 5140.41 AR/PR ANNUNCIATOR - HVAC EXHAUST PRM #1 - 0RIX-PR001, Auto Actions:

0RIX-PR012, HVAC AXM will automatically initiate on a :
0RIX-PR001 High, High Fail or Low Fail alarm on channel 5 or 7; Loss of AC; or An external Fail alarm

Per EOP-9 RADIOACTIVITY RELEASE CONTROL Entry Conditions, the threshold of "Any offsite liquid or gaseous release rate above EP-AA-1003 Emergency Plan Radiological Effluent 'Alert' Level" has not been met based on conditions presented in the stem.

A is incorrect but plausible if the examinee incorrectly believes that the entry conditions for EOP-9 RADIOACTIVITY RELEASE CONTROL have been met while also failing to recognize that the 0RIX-PR012 will Auto Start on the 0RIX-PR001 channel 5 High Alarm (Red tile).

B is incorrect but plausible if the examinee recognizes that EOP-9 RADIOACTIVITY RELEASE CONTROL entry conditions has not been met but fails to recognize that the 0RIX-PR012 will Auto Start on the 0RIX-PR001 channel 5 High Alarm (Red tile).

C is incorrect but plausible if the examinee incorrectly believes that the entry conditions for EOP-9 RADIOACTIVITY RELEASE CONTROL have been met but correctly recognizes that the 0RIX-PR012 will Auto Start on the 0RIX-PR001 channel 5 High Alarm (Red tile).

KA Justification - this question meets the KA because the candidate must display knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. Specifically, the candidate must display knowledge of the fixed radiation monitor 0RIX-PR001 (Common Station HVAC Exhaust Stack Monitor) when in alarm to include Auto Actions.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall basic facts concerning Procedure entry conditions and expected Auto Actions (Interlocks) based on the conditions presented in the stem.

Question 71 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104464
User-Defined ID:	CL-ILT-6439
Cross Reference Number:	
Topic:	On the AR/PR Display, the Common Station HVAC Exhaust Stack Monitor, 0RIX-PR001 indicating tile is
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4406.01 EOP-9 Rev. 29 CPS 4979.01 Rev. 10b CPS 5140.41 Rev. 1c
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	NRC ILT 08-1 exam
Question Source: (i.e. New, Bank, Modified)	BAnk 597576
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	Updated answer explanation, added K/A & Cog level justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4406.01 EOP-9 Rev. 29 CPS 4979.01 Rev. 10b CPS 5140.41 Rev. 1c
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-F, 1-I)
KA Data	
KA Number / System Name: 2.3 Radiation Control **Category / KA Statement:** 2.3.15 Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. **RO Value:** 2.9 **SRO Value:** 3.1 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** 41.12 **10CFR55-43 (SRO) Data**: 43.4	

Associated objective(s):

RO Q71 2.3.15

72 **ID: 1104320** **Points: 1.00**

Determine the hierarchy (highest to lowest) of those procedures that contain the corrective actions for the annunciators listed below IAW CPS 1005.09 EMERGENCY OPERATING PROCEDURE (EOP) AND SEVERE ACCIDENT GUIDELINES (SAG) PROGRAM.

	Annunciator	Description
1	5017-1A	Auto Trip Turbine Auxiliary Pump/Motor (due to a trip of the operating Turbine Building Closed Cooling Water (WT) Pump)
2	5062-3E	Suppression Pool Water Level High
3	5041-6B	Auto Start Service Air Compressor

A. 2, 1, 3

B. 2, 3, 1

C. 3, 1, 2

D. 3, 2, 1

Answer: B

Answer Explanation

B is correct: Per CPS 1005.09 EMERGENCY OPERATING PROCEDURE (EOP) AND SEVERE ACCIDENT GUIDELINES (SAG) PROGRAM, 8.13.1 Hierarchy of Emergency Response Procedures, the hierarchy relationship of CPS procedures applicable to performance of emergency response activities is established as follows:

- SAG Flowcharts/SAG Support Procedures
- EOP Flowcharts/EOP Support Procedures
- Off-Normal Response Procedures
- Annunciator Response Procedure actions
- ABNORMAL OPERATING section actions located in the System Operating Procedures
- Integrated Plant Operating Procedures
- NORMAL/INFREQUENT OPERATING section actions located in the System Operating Procedures
- All other CPS procedures.

1. 5017-1A AUTO TRIP TURBINE AUXILIARY PUMP/MOTOR (The operating TBCCW Pump indicates TRIPPED). Malfunction - NO running TBCCW pump. Procedural actions are found in the ABNORMAL OPERATING section actions located in the System Operating Procedure - CPS 3204.01 TURBINE BUILDING CLOSED COOLING WATER, 8.3 ABNORMAL OPERATIONS, 8.3.1 Loss of TBCCW System.

2. 5062-3E SUPPRESSION POOL WATER LEVEL HIGH. Malfunction - Suppression Pool High Level (19' 11.5"). Entry condition for CPS 4402.01 EOP-6 PRIMARY CONTAINMENT CONTROL.

3. 5041-6B AUTO START SERVICE AIR COMPRESSOR. Malfunction - Standby Service Air Compressor automatically started. Symptom for entry into off-normal CPS 4004.01 INSTRUMENT AIR LOSS.

Based on the CPS 1005.01 hierarchy, the procedures should be ranked as follows:

2. EOP
3. Off-Normal
1. Abnormal

A is incorrect but plausible if the candidate recognizes that the EOP should be ranked first but then incorrectly believes that the Abnormal procedure should be ranked above the Off-Normal procedure OR incorrectly selected the correct follow on procedure (post Annunciator Response Procedure) for any of the selected annunciators.

C is incorrect but plausible if the candidate fails to recognize that the EOP is ranked above the Off-Normal or Abnormal procedures OR incorrectly selected the correct follow on procedure (post Annunciator Response Procedure) for any of the selected annunciators.

D is incorrect but plausible if the candidate fails to recognize that the EOP is ranked above the Off-Normal OR incorrectly selected the correct follow on procedure (post Annunciator Response Procedure) for any of the selected annunciators.

KA Justification - this question meets the KA because the candidate must display knowledge of the implementation hierarchy and coordination between procedures or guidelines such as EOPs, operating procedures, abnormal operating procedures and severe accident guidelines. Specifically, for each given annunciator in the stem, the candidate must determine the correct follow-on procedures and then rank each instance based on the hierarchy relationship of those procedures.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the annunciators given in the stem, determine the correct follow-on procedure based on that annunciator and then correctly rank those procedures based on the hierarchy relationship of CPS procedures.

Question 72 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104320
User-Defined ID:	CL-ILT-3416
Cross Reference Number:	
Topic:	Determine the hierarchy (highest to lowest) of those procedures that contain the corrective action
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 1005.09 Rev. 9a CPS 3204.01 Rev. 11c CPS 5017.01 Rev. 26 CPS 4004.01 Rev. 9e CPS 5041.06 Rev. 31 CPS 5005.01 Rev. 29d CPS 5004.01 Rev. 28a CPS 4401.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 1005.09 Rev. 9a CPS 3204.01 Rev. 11c CPS 5017.01 Rev. 26 CPS 4004.01 Rev. 9e CPS 5041.06 Rev. 31 CPS 5005.01 Rev. 29d CPS 5004.01 Rev. 28a CPS 4401.01 Rev. 29
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 2.4 Emergency Procedures / Plan **Category / KA Statement:** 2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines. **RO Value:** 3.5 **SRO Value:** 4.4 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

RO Q72 2.4.16

73 **ID: 1104308** **Points: 1.00**

Plant conditions are as follows:

- Reactor power was at 16% with rod withdrawal in progress in preparation to synchronize the generator to the grid.
- The last step of the Control Rod Move Sheet was completed and verified by a second licensed reactor operator.
- Reactor power rose suddenly to 20% and stabilized.
- ROD DRIFT Alarm (5006-4G) was NOT received.

Based on these conditions, which of the following CPS off-normal procedures should be entered?

A. 4007.03 Rod Drop

B. 4008.02 Core Shroud Cracking

C. 4007.02 Inadvertent Rod Movement

D. 4005.01 Loss of Feedwater Heating

Answer: A

Answer Explanation

A is correct: Per 4007.03 Rod Drop, an unexpected change in reactor power with no change in RR flow or FW temperature is a symptom of a rod drop.

B is incorrect but plausible if the candidate fails to recall that per CPS 4008.02 CORE SHROUD CRACKING, a core shroud crack above the top guide, between the top guide and the core plate, and below the core plate will cause reactor power to lower.

C is incorrect but plausible if the candidate recognizes that an unexpected change in reactor power with no change in RR flow or FW temperature is also a symptom of an inadvertent rod movement, but fails to recall that per CPS 5006.04 ALARM PANEL 5006 ANNUNCIATORS - ROW 4, Annunciator 5006-4G ROD DRIFT is a symptom of an inadvertent rod movement and directs you to CPS 4007.02 INADVERTENT ROD MOVEMENT. Since there was no ROD DRIFT Annunciator, it must be a rod drop.

D is incorrect but plausible if the candidate recognizes that per CPS 4005.01 LOSS OF FEEDWATER HEATING a symptom of a loss of feedwater heating is an increasing reactor power with no change in RR flow or rod motion but fails to recall that per CPS 3004.01 TURBINE STARTUP AND GENERATOR SYNCHRONIZATION, feedwater heating is placed in service after synchronizing the generator to the grid and ~18-21% power.

KA Justification - this question meets the KA because the candidate must identify the correct abnormal operating procedure (Off-Normal) to enter based on identifying entry conditions presented as the stem's abnormal indications for system operating parameters.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the conditions in the stem to determine which procedures to enter.

Question 73 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104308
User-Defined ID:	CL-ILT-635491
Cross Reference Number:	
Topic:	Plant conditions are as follows: Reactor power was at 16% with rod withdrawal in progress in prep
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3004.01 Rev. 32d CPS 4005.01 Rev. 18a CPS 4007.02 Rev. 13b CPS 4007.03 Rev. 8d CPS 4008.02 Rev. 2a CPS 5006.04 Rev. 30b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank 635491
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved answer explanation and added KA & Cog level justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 3004.01 Rev. 32d CPS 4005.01 Rev. 18a CPS 4007.02 Rev. 13b CPS 4007.03 Rev. 8d CPS 4008.02 Rev. 2a CPS 5006.04 Rev. 30b
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 2.4 Emergency Procedures / Plan **Category / KA Statement:** 2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. **RO Value:** 4.5 **SRO Value:** 4.7 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.2	

Associated objective(s):

RO Q73 2.4.4

74 **ID: 1097949** **Points: 1.00**

The plant was operating at rated thermal power when the following annunciators were received:

- 5067-3F Main Steam Line Radiation High
- 5067-3E Main Steam Line Div 1,4 Radn High-High or Inop
- High Alarm (Red alarm icon) for 1RIX-PR034 Off-Gas Pre-Treat PRM (NOT due to a spike)

The CRS directed the plant to be scrammed and immediate operator actions to be taken IAW CPS 4100.01 Reactor Scram.

Under these conditions, when performing the SUBSEQUENT actions of CPS 4100.01 Reactor Scram, special precautions must be taken to minimize the radiological impact of this event when...

A. resetting the scram.

B. resetting the Main Turbine.

C. breaking Main Condenser vacuum.

D. starting a Condenser Vacuum (CA) Pump.

Answer: A

Answer Explanation

A is correct:

The indicators in the stem are indicative of a fuel failure. The annunciator response procedure for each of the indicators listed in the stem references CPS 4010.01 Reactor Coolant High Activity.

Per CPS 4100.01 Reactor Scram Appendix A: Resetting Scram, if a fuel failure occurred or is suspected, the Containment Equipment and Floor Drain Sump Discharge CNMT Isolation Valves (1RE021, 1RE022, 1RF021, and 1RF022) are closed before resetting the scram to ensure that high activity coolant is not transferred from the containment to the radwaste building until appropriate radiological controls can be taken.

B is incorrect but plausible - resetting the main turbine following a scram is a normal evolution performed to minimize cooldown loads (CPS 4100.01 Appendix B), and is not prohibited by CPS 4100.01 Reactor Scram even when fuel failure indications exist. An examinee may select this response because of guidance provided in step 4.7.5 which prohibits opening Turbine and MS system drains following the scram when fuel failure indications exist.

C is incorrect but plausible - CPS 4100.01 Reactor Scram step 4.6.1 prohibits breaking main condenser vacuum when a fuel failure exists. The examinee may select this response if they mistakenly believe that breaking main condenser vacuum is permitted by the Scram procedure with a fuel failure condition present. They may choose this distracter if they correctly recall that the Condenser Vacuum Pumps cannot be started, but believe that vacuum must be broken to prevent air from being drawn across the turbine seals, and that special precautions must be taken to minimize the radiological impact when vacuum is broken.

D is incorrect but plausible - CPS 4010.01 Reactor Coolant High Activity, step 4.2.4 requires that radiological conditions be evaluated when performing activities that can bypass the Primary Containment, including Condenser Vacuum Pump operation. However, CPS 4100.01 Reactor Scram step 4.6.1.5 requires shutting 1CA003, Vacuum Pump Suct Isol Vlv when a MSL High-High Radiation condition exists. The examinee may select this response if they incorrectly determine that a vacuum pump can be used to maintain vacuum post-scram with fuel failure conditions present if special precautions are taken. This answer is also incorrect because the Main Condenser Vacuum Pumps receive a trip signal on a MSL Radiation High-High Level and are not available for startup.

KA Justification - this question meets the KA because the examinee has to demonstrate knowledge of the post-scram precautions taken to minimize radiation hazards in the event of a fuel failure.

Cog Level Justification - this is a high cog question written at the analysis and comprehension level. The examinee has to analyze the conditions in the stem, determine that a fuel failure is indicated, and then determine what procedural actions are required based on the analysis.

Question 74 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097949
User-Defined ID:	CL-ILT-1097949
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when the following annunciators were received: 506
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 5067.03 (3E & 3F) Rev. 32b • CPS 4100.01 Rev. 22c • CPS 4010.01 Rev. 11 • CPS 3315.03 Rev. 48 • CPS 5140.45 Rev. 0a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	New question.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	CPS 4100.01 Reactor Scram
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 2.3 Radiation Control **Category / KA Statement:** 2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. **RO Value:** 3.4 **SRO Value:** 3.8 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.12 **10CFR55-43 (SRO) Data**: 43.4	

Associated objective(s):

RO Q74 2.3.14

75 **ID: 1104244** **Points: 1.00**

The High Pressure Core Spray (HPCS) Pump had been operating for 40 minutes in the full-flow test mode when it was manually secured. As soon as it was secured, it was realized that the HPCS Pump needed to be restarted for testing.

Which ONE of the following describes the minimum wait time before attempting another start of the HPCS Pump?

A. No wait time is required.

B. Must wait 15 minutes prior to restarting the pump.

C. Must wait 30 minutes prior to restarting the pump.

D. Must wait 60 minutes prior to restarting the pump.

Answer: A

Answer Explanation

A is correct - per CPS 3309.01 step 6.7 HPCS Motor Starting Restrictions and OP-CL-108-101-1001 General Equipment Operatin Requirements section 3.12 Large Motor Starting Restrictions:

- With the windings at ambient temperature (equilibrium with its environment), the motor can be started and brought up to operating speed 2 (two) times in succession, coasting to rest between stops.
- With the windings at operating temperature (max steady state temp of the windings, **usually reached after ~ 15 min** at operating speed), **the motor can be started and brought up to operating speed 1 (one) time.**
- If the motor has been started (brought up to rated speed) 1 (one) time from operating temperature, an additional restart may be done after the following time constraints have been satisfied (motor windings are assumed to have returned to an acceptable temperature):

  - After 60 minutes with the motor de-energized, or
  - After 30 minutes with the motor running at operating speed.

Since the motor has been running for 40 minutes, it can be started and brought up to operating speed one time with no waiting time required.

B is incorrect but plausible if the examinee believes there is a 15 minute wait period requirement before restarting the HPCS Pump.

C is incorrect but plausible if the examinee believes there is a 30 minute wait period requirement before restarting the HPCS Pump.

D is incorrect but plausible if the examinee believes there is a 60 minute wait period requirement before restarting the HPCS Pump.

KA Justification - this question meets the KA because the examinee has to recall large motor starting restrictions that are used to protect 6.9KV and 4.16KV motors from potential damage to their motor windings from frequent starts.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall limitations in a procedure to answer the question.

Question 75 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1104244
User-Defined ID:	CL-ILT-1104244
Cross Reference Number:	
Topic:	The High Pressure Core Spray (HPCS) Pump had been operating for 40 minutes in the full-flow test m
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• OP-CL-108-101-1001 Rev. 11 • CPS 3309.01 Rev. 17
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-635420
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Added KA and cog level justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	• CPS 3309.01 section 6.0 • OP-CL-108-101-1001
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	RO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 2.1 Conduct of Operations **Category / KA Statement:** 2.1.32 Ability to explain and apply system limits and precautions. **RO Value:** 3.8 **SRO Value:** 4.0 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.2	

Associated objective(s):

RO Q75 2.1.32

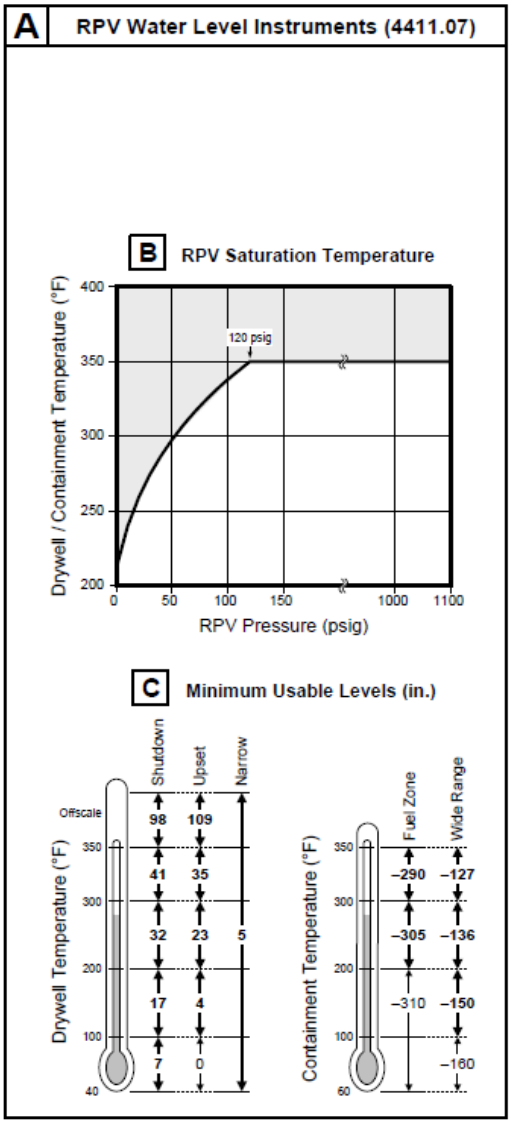
EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

1 **ID: 1097598** **Points: 1.00**

Given the following indications, which of the following actions, if any, is required?

Parameter	Value
RPV Level (Wide Range)	-133 inches
RPV Level (Fuel Zone)	-160 inches
RPV Pressure	805 psig
DW Pressure	4.39 psig
DW Temperature	239°F
Containment Pressure	12.7 psig
Containment Temperature	230°F



A. Enter EOP-2 RPV Flooding.

B. No actions required. WR may be used for trending down to -150".

C. WR can NOT be used for trending. Use Fuel Zone level instruments.

D. WR may be used, but increased monitoring for reference leg boiling is required.

Answer: D

Answer Explanation

D is correct:

Per Detail A of 4401.01, the wide range level instrument is reading above it's minimum usable level of -136" (at 230°F in the containment). Per 4411.07, the instrument may be used to monitor level trends although the displayed value my be inaccurate if the instrument is above it's minimum usable level value.

A is incorrect but plausible - the examinee may choose this answer if he/she determines that based on conditions provided in the stem, there are no valid RPV water level indications available.

B is incorrect but plausible - the examinee may choose this response based on a containment temperature > 100F. The minimum useable level is -136" per Detail C of the EOPs.

C is incorrect but plausible if the examinee incorrectly believes reference leg boiling may occur with the conditions provided in the stem - Per Detail B in the EOP's, boiling would not occur until >350F with RPV pressure at 805 psig.

KA justification - this question meets the KA because the examinee must interpret the Drywell/Containment Temperature vs. RPV Pressure graph (Figure B) of EOP-1 RPV Control to determine the availability of RPV water level instruments and appropriate actions to be performed.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee must solve a problem by analyzing the data in the question stem to determine required actions.

SRO only justification - this question requires the examinee to assess plant conditions and interpret instrument availability based on knowledge and application of Detail A which is an SRO only function at CPS. Linked to 10CFR55.43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 1 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1097598
User-Defined ID:	CL-ILT-1097598
Cross Reference Number:	
Topic:	Given the following indications, which of the following actions, if any, is required? ParameterVa
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

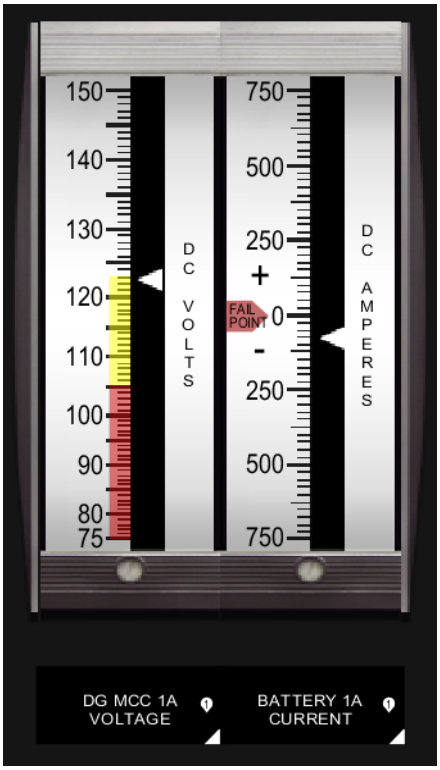
General Data	
Technical Reference with Revision Number:	CPS 4401.01 Rev. 29 4411.07 Rev. 6a
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	Detail A
LORT	
PRA: (i.e. Yes or No or #)	Yes
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295027 High Containment Temperature (Mark III Containment Only) **Category / KA Statement:** EA2. Ability to determine and/or interpret the following as they apply to HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY) : EA2.03 Reactor pressure: Mark-III **RO Value:** 3.3 **SRO Value:** 3.3 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q1/76 295027 A2.03

2 **ID: 1097362** **Points: 1.00**

The unit was operating in Mode 2 with **NO** LCOs in effect when the following indications were observed on 1H13-P877-5060:



The following are excerpts from ITS 3.8.4 DC Sources - Operating, and ITS 3.8.1 AC Sources - Operating:

3.8.4 DC Sources - Operating		
Condition	Required Action	Completion Time
A. One battery charger on Division 1 or 2 inoperable.		
B. One battery on Division 1 or 2 inoperable.		

3.8.1 AC Sources - Operating		
Condition	Required Action	Completion Time
B. One required DG inoperable.		

For the conditions provided in the stem, which of the below listed ITS LCO Condition(s) must be entered?

A. 3.8.4 Condition A ONLY

B. 3.8.4 Condition B ONLY

C. 3.8.4 Condition A AND 3.8.1 Condition B ONLY

D. 3.8.4 Condition B AND 3.8.1 Condition B ONLY

Answer: A

Answer Explanation

A is correct - The DC MCC 1A Voltage and Battery 1A Current indications provided in the stem indicate that Battery Charger 1A has tripped requiring entry into ITS 3.8.4 Condition A.

Per OP-CL-108-104-1001 ITS LCO/ORM OR/ODCM OR EVALUATIONS AND GUIDANCE FOR SAFETY FUNCTION DETERMINATION section 2.10, when the DC Sources LCO is not met but the DC Distribution System is energized either from its associated battery or battery charger, the supported systems should not be declared inoperable, except as provided for in the DC Sources ACTIONS. This only applies to the Div 3 or 4 DC electrical power subsystems, which requires declaring High Pressure Core Spray inoperable (3.8.4 Condition E).

Per ITS 3.0.6 When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered, unless a loss of safety function exists. With DC MCC 1A energized as indicated on the meter provided in the stem, a loss of safety function does not exist and ITS 3.8.1 Condition B is not required to be entered.

B is incorrect but plausible if the examinee incorrectly determines that the Div 1 Battery is inoperable based on battery current indications provided in the stem being greater than 2 amps. Battery float current is used to determine Battery Charger capacity and operability, not battery operability.

C is incorrect but plausible if the examinee incorrectly applies ITS LCO 3.0.6 and determines that ITS 3.8.1 Condition B must be entered based on the inoperability of the Div 1 DC Battery Charger.

D is incorrect but plausible if the examinee incorrectly determines that Div 1 Battery is inoperable based on the battery current indications provided in the stem and also incorrectly applies ITS LCO 3.0.6 and determines that ITS 3.8.1 Condition B must be entered based on the incorrect ITS 3.8.4 call.

KA Justification: This question meets the KA because the examinee has to interpret the battery voltage indications provided in the stem to determine required actions in Technical Specifications.

Cog Level Justification - this question is a high cog question written at the analysis and comprehension level. The examinee has to intepret the indications provided in the stem of the question and then determine required actions based on that analysis.

SRO Justification - linked to SRO only Task 140109.23 (Apply the administrative requirements for execution of Technical Specifications and Off-Site Dose Calculation Manual Requirements). Also linked to 10CFR55.43(b)(2), Facility operating limitations in the Technical Specifications and their bases.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 2 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097362
User-Defined ID:	CL-ILT-N12076
Cross Reference Number:	
Topic:	The unit was operating in Mode 2 with NO LCOs in effect when the following indications were observ
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• ITS 3.8.4 Amendment 187 • ITS 3.8.1 Amendment 163 • ITS 3.0 Amendment 163 • OP-CL-108-104-1001 Rev. 9
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295004 Partial or Complete Loss of D.C. Power **Category / KA Statement:** AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : AA2.03 Battery voltage **RO Value:** 2.8 **SRO Value:** 2.9 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q2/77 295004 A2.03

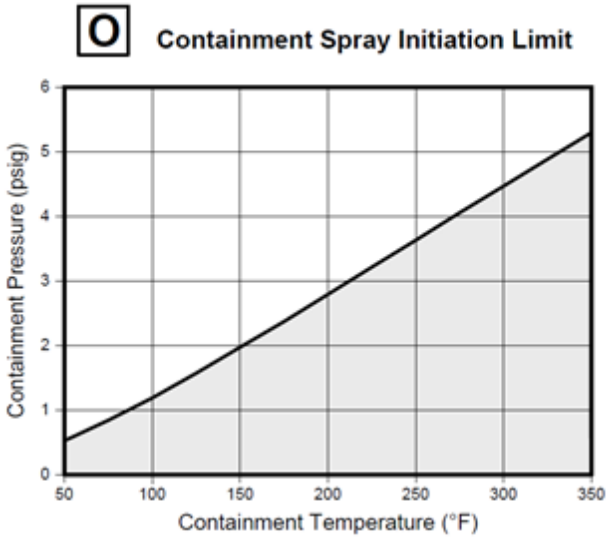
3 **ID: 1097126** **Points: 1.00**

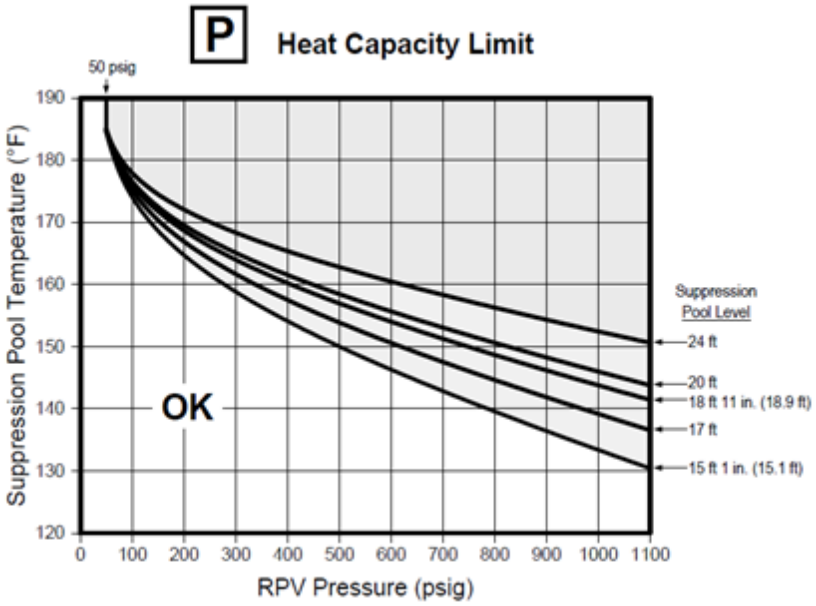
The reactor was at rated power when an event occurred.

Current plant conditions are as follows:

Parameter	Value	Trend
Reactor Power	4%	Steady
Suppression Pool Temperature	145°F	Rising
RPV Pressure	930 psig	Cycling on SRVs
Suppression Pool Level	19'3"	Steady
Containment Temperature	125°F	Rising
Containment Pressure	1.1 psig	Rising
RPV Level	35 inches	Steady

All appropriate EOPs have been entered for the current conditions.





Given these conditions, which of the following actions is required?

A. Perform a blowdown ONLY.

B. Initiate containment spray AND perform a blowdown.

C. Lower and maintain RPV Pressure 500 - 600 psig ONLY.

D. Initiate containment spray AND lower and maintain RPV pressure 500 - 600 psig.

Answer: C

Answer Explanation

C is correct:

Per EOP-6 Primary Containment Control, IF suppression pool temperature cannot be held below Fig P, Heat Capacity Limit AND you are NOT in RPV flooding, THEN lower RPV pressure to stay below the limit of Fig P.

A is incorrect but plausible - the Pool Temperature leg of EOP-6 directs performing a blowdown IF suppression pool temperature AND RPV pressure cannot be held below Fig P, Heat Capacity Limit.

B & D are incorrect but plausible if the examinee misreads Figure O Containment Spray Initiation Limit graph.

KA justification: This question meets the KA because the examinee must be able to interpret the conditions listed in the stem and then determine required actions.

Cog Level Justification - this is a high cog question because the examinee must solve a problem (application of the data provided in the question stem to determine the required action using the correct reference (EOP-6).

SRO only justification: The question is SRO ONLY level because the evaluation of plant parameters (high suppression pool temperature) require the use of details on EOP-6. The interpretation of the data and applying it to the limits of these details is an SRO only function at Clinton Power Station. Also linked to SRO only task 440201.10 (Respond to a high Suppression Pool temperature per EOP-6). Also related to 10CFR55.43(b)(5) for assessment of facility conditions.

Question 3 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097126
User-Defined ID:	CL-ILT-1097126
Cross Reference Number:	
Topic:	The reactor was at rated power when an event occurred. Current plant conditions are as follows:
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4404.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	CL-ILT-N12077
Question Source: (i.e. New, Bank, Modified)	Modified
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Modified from CL-ILT-N12077. Pertinent conditions (parameters) in the stem were changed such that a distractor in the original question became the correct answer.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	4402.01 (EOP-6) - Pool Temperature and Drywell/Containment Pressure Legs
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPR)

KA Data

KA Number / System Name: 295026 Suppression Pool High Water Temp
Category / KA Statement: EA2.01 – Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature

RO Value: 4.1
SRO Value: 4.2

Tier: 1
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.10
10CFR55-43 (SRO) Data: 43.5

Associated objective(s):

SRO Q3/78 295026 A2.01

4 **ID: 1091040** **Points: 1.00**

The plant was operating at 80% power when the "B" Reactor Recirculation (RR) pump tripped.

After Reactor Power, RPV Pressure, and RPV Water Level were stabilized, it was determined that the 'B' RR pump will be unavailable for approximately 24 hours.

Based on the conditions presented above, one tech spec required action would be to reset the Average Power Range Monitor Flow Biased Simulated Thermal Power trip setpoint to...

A. $\leq$ 0.55 (W-8%) + 42.5% RTP within 4 hours.

B. $\leq$ 0.55 (W-8%) + 42.5% RTP within 24 hours.

C. $\leq$ 0.55 W + 62% RTP and $\leq$ 113% RTP within 4 hours.

D. $\leq$ 0.55 W + 62% RTP and $\leq$ 113% RTP within 24 hours.

Answer: B

Answer Explanation

B is correct - per ITS LCO 3.4.1.actions B.1 and C.1 & ITS 3.3.1.1-1 for single loop setpoints, power must be reduced to less than or equal to 58% within 4 hours and the Flow Biased Simulated Thermal Power trip setpoint reset to $\leq$ 0.55 (W-8) + 42.5% RTP within 24 hours.

A is incorrect but plausible - The candidate must reference ITS 3.4.1 to determine the completion time for the required action. Time requirement of 4 hours is for reducing power to less than 58%, not for resetting the Flow Biased Simulated Thermal Power trip setpoint.

C is incorrect but plausible - The candidate may select this answer if errors in both distractors C and D are chosen. $\leq$ 0.55 W + 62% RTP and $\leq$ 113% RTP is the flow biased simulated thermal power setpoint for two loop operation and the 4 hour time requirement is for reducing power to less than 58%, not resetting the equation setpoint.

D is incorrect but plausible - The candidate must reference Table 3.3.1.1-1 to determine the Average Power Range Monitor Flow Biased Simulated Thermal Power trip setpoint. $\leq$ 0.55 W + 62% RTP and $\leq$ 113% RTP is the flow biased simulated thermal power setpoint for two loop operation.

KA Justification - this question meets the KA because the examinee has to recognize system parameters that are entry level conditions for Technical Specification and then further apply those parameters/conditions to determine required actions/completion times.

Cog Level Justification - this is a high cog question because the examinee must solve a problem (application of the data provided in the question stem to determine required actions/completion times) using the correct reference (ITS) .

SRO Justification - this question is linked to 10CFR55.43(b)(2) Facility operating limitations in the technical specifications and their bases. The candidate must not only recognize system parameters that are entry level conditions for Technical Specification (RO level of knowledge) but must additionally determine correct actions/completion times utilizing two different technical specifications.

Question 4 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	5
Difficulty:	0.00
System ID:	1091040
User-Defined ID:	CL-ILT-1091040
Cross Reference Number:	CPS QUESTIONS TRANSFER 2-2
Topic:	The plant was operating at 80% power when the "B" Reactor Recirculation (RR) pump tripped. After
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• ITS 3.4.1 • ITS 3.3.1.1
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Modified
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Modified CL-LC-0072 stem and b/d distracters to make more plausible.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	• ITS 3.4.1 • ITS 3.3.1.1 page 3.3-7 (Table 3.3.1.1-1 page 1 of 3)
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	B-Procedures
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPR)
KA Data	
KA Number / System Name: 295001 Partial or Complete Loss of Forced Core Flow Circulation **Category / KA Statement:** 2.2.42 Ability to recognize system parameters that are entry-level conditions for Technical Specifications. **RO Value:** 3.9 **SRO Value:** 4.6 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7, 41.10 **10CFR55-43 (SRO) Data**: 43.2, 43.3	

Associated objective(s):

SRO Q4/79 295001 2.2.42

5 **ID: 1098104** **Points: 1.00**

The plant was operating at rated thermal power with **NO** LCO actions in effect.

At 1400 on 8/12/14, the Midwest Independent System Operator (MISO) notified CPS that a Real Time Contingency Analysis (RTCA) shows that a trip of CPS will cause 345KV bus voltage to lower to an unacceptable value.

At 1500, the MISO reports that the RTCA is now acceptable for a trip of CPS.

At 1600 on 8/12/14, the RAT SVC tripped.

Based on these conditions, which of the following ITS 3.8.1 AC Sources - Operating Conditions must be entered?

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.		
C. Two offsite circuits inoperable.		

A. Condition A is entered at 1400 ONLY.

B. Condition A is entered at 1600 ONLY.

C. Condition A is entered at 1400 and re-entered at 1600 ONLY.

D. Condition A is entered at 1400 and re-entered at 1600. Condition C is entered at 1600.

Answer: C

Answer Explanation

C is correct.

- Per OP-CL-108-107-1002 Degraded Grid Actions, step 4.2.1, if the contingency that creates the unsatisfactory RTCA 'solution' is a "TRIP OF CPS", then declare the associated offsite source inoperable and enter appropriate actions in ITS LCO 3.8.1 (Condition A).
- Per Annunciator 5011.07 (7E) RAT SVC Trip, the 345KV Offsite Source is INOPERABLE when the RAT SVC is not in-service and functional. Since the 345KV source is already inoperable, 3.8.1 Condition A is re-entered.

A is incorrect but plausible if the examinee correctly determines that 3.8.1 Condition A must be entered based on the RTCA but incorrectly determines that the 345KV source is operable with the RAT SVC out of service.

B is incorrect but plausible if the examinee correctly determines that 3.8.1 Condition A must be entered with the RAT SVC out of service but incorrectly determines that the 345KV source is operable with the provided RTCA as long as the plant is on-line and Aux Power System breaker alignment and indicated power availability to the 345KV source is correct (ITS SR 3.8.1.1).

D is incorrect but plausible if the examinee correctly determines that both conditions provided in the stem render an off-site circuit inoperable requiring entry and re-entry into 3.8.1 Condition A, but incorrectly determines that two off-site circuits are rendered inoperable requiring entry into ITS 3.8.1 Condition C.

SRO Only justification: This question requires the examinee to assess plant conditions and apply the requirements of Tech Specs. Linked to 10CFR55.43(b)(2) Facility operating limitations in the technical specifications and their bases.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to determine the consequences of the conditions provided in the stem and then determine the impact to the safety related AC power sources listed in ITS 3.8.1.

KA justification: This question meets the KA because the examinee is required to determine the operability of the safety related AC Power Sources based on conditions provided in the stem of the question.

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:	0.00
System ID:	1098104
User-Defined ID:	CL-ILT-1098104
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power with NO LCO actions in effect. At 1400 on 8/12
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• OP-CL-108-107-1002 Rev. 6 • CPS 5011.07 (7E) Rev. 29c • ITS 3.8.1 Amendment No. 187
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	OP-CL-108-107-1002 Rev. 6
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 700000 Generator Voltage and Electric Grid Disturbances **Category / KA Statement:** 2.2.37 Ability to determine operability and/or availability of safety related equipment. **RO Value:** 3.6 **SRO Value:** 4.6 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.7 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q5/80 700000 2.2.37

6 **ID: 1097878** **Points: 1.00**

A plant transient occurred resulting in a reactor scram.

The Shift Manager has directed you to analyze plant performance associated with the scram IAW OP-AA-108-114 Post Transient Review to identify any performance deficiencies which would impact plant restart.

The following is an excerpt of all the RPS system alarms received during the transient.

Time	Computer Pt	Description	State
19:42:12.158	C71NC013	TSV CLOSURE CH A	TRUE
19:42:12.158	C71NC016	TSV CLOSURE CH D	TRUE
19:42:12.158	C71NC014	TSV CLOSURE CH B	TRUE
19:42:12.158	C71NC015	TSV CLOSURE CH C	TRUE
19:42:12.158	C71NC032	1/2 SCRM IVA, IB, IIB, IIIA	TRUE
19:42:12.158	C71NC030	1/2 SCRM IIA, IIIB, IVB, 1A	TRUE
19:42:12.158	C71NC018	TCV FAST CLOSURE CH B	TRUE
19:42:12.158	C71NC019	TCV FAST CLOSURE CH C	TRUE
19:42:12.158	C71NC031	1/2 SCRM IIIA, IVB, 1B, IIA	TRUE
19:42:12.158	C71NC029	1/2 SCRM 1A, IIB, IIIB, IVA	TRUE

1) Based on these indications, which of the following ITS LCOs should be entered in the Potential LCO/Mode Restraint log in ESOMs?

2) If the required actions of ITS 3.3.1.1 are taken, does ITS 3.0.4 allow entry into Mode 2 without repair of the failed channels?

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1

Actions

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel inoperable.	A.1 Place one channel in affected Function in trip.	48 hours
B. One or more Functions with two channels inoperable.	B.1 Place one channel in affected Function in trip.	6 hours

A. 1) 3.3.1.1 A.1 ONLY
2) YES

B. 1) 3.3.1.1 A.1 ONLY
2) NO

C. 1) 3.3.1.1 A.1 AND B.1
2) YES

D. 1) 3.3.1.1 A.1 AND B.1

2) NO

Answer: C

Answer Explanation

C is correct:

The alarm log indicates that the scram was caused by a Turbine trip, but two channels of the TCV Fast Closure RPS instruments failed to trip ('A' and 'D'). Per ITS Table 3.3.1.1-1 Function 9, 4 channels per function are required to be OPERABLE when Reactor Power is ≥ 33.3% of RTP (rated thermal power) and are tracked using the Potential LCO/Mode Restraint Log in ESOMs.

Per ITS 3.0.4, When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. Since ITS 3.3.1.1 allows unlimited operation with one of the two inoperable RPS channels tripped, the plant can be transitioned to Mode 2 and a startup commenced.

A is incorrect but plausible if the examinee determines that a single TCV Fast Closure channel tripped requiring entry into ITS 3.3.1.1 A.1 only based on that analysis.

B is incorrect but plausible if the examinee determines that only a single TCV Fast Closure channel tripped and enters 3.3.1.1 A.1 only based on that analysis and also fails to recognize that ITS 3.0.4 permits transition to Mode 2 once one of the two inoperable channels are placed in trip.

D is incorrect but plausible if the examinee fails to recognize that ITS 3.0.4 permits transtition to Mode 2 once one of the two inoperable channels are placed in trip.

KA Justification - this question meets the KA because the examinee has to review an alarm log showing plant response during a scram transient, and then determine what Technical Specifications apply.

Cog Level Justification - this is a high cog question written at the analysis/comprehension level. The examinee has to analyze data from a log, compare the actual response of the plant to the expected response based on the examinee's knowledge, and then determine required actions based on that analysis.

SRO Justification - This question is linked to 10CFR55.43(b)(2), Facility operating limitations in the technical specifications and their bases. SROs are also responsible for applying generic LCO's (section 3.0 of ITS).

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 6 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097878
User-Defined ID:	CL-ILT-SYSTEM ID #
Cross Reference Number:	
Topic:	A plant transient occurred resulting in a reactor scram. The Shift Manager has directed you to an
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	ITS 3.3.1.1 Amendment No. 95
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK / 3-SPR)
KA Data	
KA Number / System Name: 295006 SCRAM **Category / KA Statement:** 2.2.40 Ability to apply Technical Specifications for a system. **RO Value:** 3.4 **SRO Value:** 4.7 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.2, 43.5	

Associated objective(s):

SRO Q6/81 295006 2.2.40

7 **ID: 1097322** **Points: 1.00**

The plant was operating at rated thermal power when a fire required the MCR to be evacuated.

Current plant conditions are as follows:

- Initial MCR Actions prior to evacuation are complete.
- The 'A' RO has transited to the Remote Shutdown Panel (RSP) and has completed the actions to establish RPV pressure control IAW CPS 4003.01C001 RSP - Pressure Control.

You, the CRS, just arriving at the RSP, note the following indications:

- RPV Level is 54 inches and rising rapidly
- RPV Pressure is 600 psig and lowering

You will direct which ONE of the following operator actions NEXT?

A. Shut 1FW024 per CPS 4003.01 Remote Shutdown (RS).

B. Shut the Main Steam Isolation Valves (MSIVs) per CPS 4003.01 Remote Shutdown (RS).

C. Start and operate RCIC in tank to tank mode per CPS 4003.01C002 RSP - RCIC Operations.

D. If HPCS is running, unlock and close 1E22-F301 HPCS Pump Disch valve per CPS 4003.01 Remote Shutdown (RS).

Answer: D

Answer Explanation

D is correct - with the conditions presented in the stem (high reactor water level and low RPV pressure), a vessel overfill is in progress. Per CPS 4003.01 Remote Shutdown (RS), step 4.3.5, the preferred method to prevent or correct an overfill condition caused by a fire induced initiation of HPCS is to unlock and close 1E22-F301 HPCS Pump Disch Valve.

A is incorrect but plausible - In CPS 4003.01 step 4.2.1 Initial MCR Actions prior to Evacuation, 1FW024 RFP Bypass Valve is opened to align the CD/CB Pumps for injection after the MCR has been evacuated. After evacuation, CPS 4003.01 step 4.3.5 directs throttling 1B21-F065A/B Feedwater Shutoff Valves using their respective remote shutdown handswitches at AB MCC 1A2 cubicle 4B to control FW injection to the RPV. There are no remote shutdown controls for 1FW024, or procedural directions for operating 1FW024 after the MCR has been evacuated.

B is incorrect but plausible - CPS 4003.01 step 3.4 directs performance of a manual Group 1 isolation prior to evacuating the MCR. Additionally, the MSIVs cannot be manipulated from the RSP.

C is incorrect but plausible - CPS 4003.01 step 4.3.5 directs operating RCIC IAW CPS 4003.01C002 to maintain RPV Level 3 to Level 8. This step comes after the If - Then statement to investigate the status of HPCS if RPV Level is high and RPV pressure is low. Since these conditions do exist, the next action that should be performed is to close 1E22-F301 to prevent a vessel overfill, not to start and operate RCIC in tank to tank mode.

KA Justification - this question meets the KA because the examinee has to intepret reactor water level indications at the Remote Shutdown Panel to determine required actions following a control room abandonment.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze data contained in the stem of the question, determine that a vessel overfill condition exists, and then determine required actions based on that analysis.

SRO Justification - This question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. This question also requires knowledge of specific procedure content contained in the subsequent actions section of CPS 4003.01 Remote Shutdown (RS) step 4.3.5 which is SRO-only knowledge.

Question 7 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097322
User-Defined ID:	CL-ILT-1097322
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when a fire required the MCR to be evacuated. Curr
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4003.01 Rev. 17b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 295016 Control Room Abandonment **Category / KA Statement:** AA2. Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : AA2.02 Reactor water level **RO Value:** 4.2 **SRO Value:** 4.3 **Tier:** 1 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q7/82 295016 A2.02

8 **ID: 1097879** **Points: 1.00**

The plant was operating at power with conditions as follows:

Parameter	Value
Reactor Power	84%
Core Flow	66.6 Mlbh
Reactor Steam Dome Pressure	988 psig

Then, a pressure regulator malfunction occurred resulting in the following conditions:

Parameter	Value
Reactor Power	88%
Core Flow	66.6 Mlbh
Reactor Steam Dome Pressure	1040 psig

1) Under these conditions, which of the following actions is required?

2) If the plant was stabilized 4 hours and 30 minutes later, is this event reportable in accordance with 10 CFR 50.72, “Immediate Notification Requirements for Operating Nuclear Power Reactors” and/or 10 CFR 50.73, “Licensee Event Report System”?

ITS 3.2.1 APLHGR

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 21.6% RTP.	4 hours

ITS 3.2.2 MCPR

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any MCPR not within limits.	A.1 Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 21.6% RTP.	4 hours

ITS 3.2.3 LHGR

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any LHGR not within limits.	A.1 Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 21.6% RTP.	4 hours

ITS 3.4.12 Reactor Steam Dome Pressure

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor Steam Dome Pressure not within limit.	A.1 Restore Reactor Steam Dome Pressure to within limit.	
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

A. 1) Enter ITS 3.4.12
2) Event is reportable

B. 1) Enter ITS 3.4.12
2) Event is NOT reportable

C. 1) Enter ITS 3.2.1, 3.2.2, AND 3.2.3
2) Event is reportable

D. 1) Enter ITS 3.2.1, 3.2.2, AND 3.2.3
2) Event is NOT reportable

Answer: C

Answer Explanation

C is correct:

Per CPS 3005.01 Unit Power Changes Figure 1: Stability Control & Power/Flow Operating Map, the pressure regulator malfunction has caused reactor power to rise above the MELLLA limit (100.7% FCL).

Per CPS 3005.01 Unit Power Changes Limitation 6.5 MELLLA Limit Operational Concerns, if the MELLLA Limit is exceeded, enter the following LCO Actions: LCO 3.2.1 APLHGR, LCO 3.2.2. MCPR, and LCO 3.2.3 LHGR.

LS-AA-1020 Reportability Reference Manual requires a 60 day written notification (LER) of any operation or condition which was prohibited by Technical Specifications. Since reactor pressure and power were NOT restored below the MELLLA limit within the B.1 completion time limits and power remained above 21.6%, this event is reportable.

A is incorrect but plausible if the examinee fails to recall the ITS 3.4.12 limit for reactor steam dome pressure (1045 psig) and determines that 3.4.12 must be entered and makes a correct reportability call (initiation of a plant shutdown required by Technical Specifications) based on the incorrect ITS call.

B is incorrect but plausible if the examinee fails to recall the ITS 3.4.12 limit for reactor steam dome pressure (1045 psig) and determines that 3.4.12 must be entered and also makes an incorrect reportability call (initiation of a plant shutdown required by Technical Specifications).

D is incorrect but plausible if the examinee determines that the conditions in the stem is not reportable with the plant operating above the MELLLA limit beyond the B.1 Completion Time requirement. The examinee may select this response based on the information in the stem that the parameters were restored to within ITS limits.

KA Justification - this question meets the KA because the examinee has to intepret the change in reactor power following the pressure regulator malfunction to determine the impact to plant operations using the Stability Control & Power/Flow Operating Map and the actions required.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the conditions in the stem using the power to flow operating map, and then determine required actions based on knowledge of procedural requirements.

SRO Justification - Part 1 of this question can be answered using RO level knowledge. Part 2 of this question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Part 2 of this question is also linked to SRO only task 996666.11 Analyze conditions to determine if NRC Notifications are required per 10CFR50.72, 10CFR50.73, and 10CFR20.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 8 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097879
User-Defined ID:	CL-ILT-SYSTEM ID #
Cross Reference Number:	
Topic:	The plant was operating at power with conditions as follows: ParameterValueReactor Power84%Core F
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3005.01 Rev. 42a • LS-AA-1020 Rev. 21 • ITS 3.2.1, 3.2.2, and 3.2.3 Amendment 192 • ITS 3.4.12 Amendment 192
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam history
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 3005.01 Figure 1 Stability Control & Power/Flow Operating Map
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK / 3-SPR)
KA Data	
KA Number / System Name: 295007 High Reactor Pressure **Category / KA Statement:** AA2. Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE : AA2.02 Reactor power **RO Value:** 4.1 **SRO Value:** 4.1 **Tier:** 1 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q8/83 295007 A2.02

9 **ID: 1098224** **Points: 1.00**

A transient has occurred from rated power and the following conditions exist:

Parameter	Value
Drywell Temperature	155°F
Suppression Pool Temperature	94°F
Containment Temperature	120°F
Drywell Pressure	1.2 psig
RPV water level	25 inches
Reactor power	2%

Given the current plant conditions, which of the following actions is required to be taken?

A. Start Standby Liquid Control IAW CPS 4411.10 SLC Operations.

B. Start containment sprays IAW CPS 3312.01 Residual Heat Removal (RHR).

C. Maintain RPV water level between TAF and -60 inches IAW CPS 4411.03 Injection/Flooding Sources.

D. Start all available drywell cooling IAW CPS 3320.01 Drywell Cooling System (VP) and CPS 3413.01 Plant Chill Water System (WO).

Answer: D

Answer Explanation

D is correct - per CPS 4402.01 Primary Containment Control, if Drywell temperature can NOT be held below 150°F, then start all available drywell cooling IAW CPS 3320.01 Drywell Cooling System (VP) and CPS 3413.01 Plant Chill Water System (WO).

A is incorrect but plausible if the examinee determines that SLC should be started based on shutdown criteria not met. EOP-1A only directs SLC to be started when power is below 5% if suppression pool temperature reaches Figure G Boron Injection Temperature. With power at 2%, the BIT suppression pool temperature is 133°F.

B is incorrect but plausible if the examinee determines that containment sprays should be initiated due to the elevated containment temperature provided in the stem. Action is incorrect because containment sprays are only initiated when containment temperature reaches 185°F with containment pressure in the 'OK to Spray' region of Figure O Containment Spray Initiation Limit.

C is incorrect but plausible if the examinee incorrectly determines that EOP-1A ATWS RPV Control requires RPV level to be lowered. With Reactor Power below 5%, there is no requirement to lower RPV level.

KA Justification - this question meets the KA because the examinee has to assess the parameters in the question stem to determine that actions are required to preserve DW integrity.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the conditions in the stem and then determine required actions based on that analysis.

SRO Justification - This question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. This question also requires knowledge of EOP-6 steps (content) to determine the required course of action and is therefore an SRO-only question.

Question 9 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1098224
User-Defined ID:	CL-ILT-1098224
Cross Reference Number:	
Topic:	A transient has occurred from rated power and the following conditions exist: ParameterValueDrywe
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4404.01 Rev. 29 • CPS 4402.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-6425
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Revised question stem for readability (placed parameters in a data table). Enhanced the answer explanation. Added KA, cog level, and SRO only justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	

KA Number / System Name: 295012 High Drywell Temperature
Category / KA Statement: 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.

RO Value: 4.0
SRO Value: 4.6

Tier: 1
RO Group: 2
SRO Group: 2

10CFR55-41 (RO) Data: 41.7
10CFR55-43 (SRO) Data: 43.5

Associated objective(s):

SRO Q9/84 295012 2.4.21

10 **ID: 1097689** **Points: 1.00**

The plant is operating at rated power when a transient results in a steam leak into Secondary Containment.

Plant conditions are currently as follows:

- Reactor power is 65%, stable.
- Annunciator 5063-8B, RCIC PIPE/EQUIP AMBIENT TEMP HIGH is lit.
- Fuel Building Exhaust radiation monitors, 1RIX-PR006A, B, C, AND D are in the ALERT alarm condition and rising slowly.
- Point 8 on recorder 1TR-CM326 indicates 160°F, rising slowly.

1TR-CM326

T	Area Temperature Limits (°F)			
Rec Pt	Area	Alarm	Max Normal	Max Safe
1	HPCS Pump Room	104	130	140
2	Aux Bldg Aisl EL 707' 6" (West)	104	130	140
3 4	RHR Pump Room A RHR Heat Exch Room A	104 104	130 130	140 140
5 6	RHR Pump Room B RHR Heat Exch Room B	104 104	130 130	140 140
7	RHR Pump Room C	104	130	140
8 9	Aux Bldg RCIC Pump Room Aux Bldg RCIC Instr Pnl Rm	104 104	130 130	200 200
10	LPCS Pump Room	104	130	140
11	Aux Bldg Access Aisle EL 737' (West)	104	130	140
12	Aux Bldg Access Aisle EL 737' (East)	122	130	140
13	Aux Bldg RW Pipe Tunnel	122	130	200
14*	Aux Bldg Below MS Tunnel *	150	156	200
15	RWCU Pump Room A	104	130	200
16	RWCU Pump Room B	104	130	200
17	RWCU Pump Room C	104	130	200
18	Aux Bldg Steam Tunnel	148	163	200
19,20	Fuel Pool Clg Heat Exch Rm	122	122	135

Which of the following describes the NEXT required action?

A. Scram the Reactor and enter EOP-1, RPV CONTROL.

B. Verify Fuel Building HVAC isolation and Standby Gas Treatment start.

C. Shutdown the Reactor in accordance with CPS 3006.01, UNIT SHUTDOWN.

D. Isolate all discharges into affected areas EXCEPT systems needed for fire fighting or EOP actions.

Answer: D

Answer Explanation

D is correct - the temperature leg of EOP-8 Secondary Containment Control directs isolating all discharges into affected areas except for systems needed for fire fighting and EOP actions if any Table T temperature is above max normal.

A is incorrect but plausible if the examinee determines that an unisolable primary system leak into the secondary containment exists. The alarm setpoint for 5063-8B RCIC Pipe/Equip Ambient Temp High is 170°F, which is below the Group 5 & 6 isolation setpoint on RCIC Room Ambient Temp which is 192°F. EOP-8 only requires a scram if an unisolable primary system is discharging into the secondary containment before temperatures reach max safe values.

B is incorrect but plausible if the examinee incorrectly determines that EOP-8 requires verification of VF isolation and VG start based on the conditions provided in the stem. EOP-8 directs performing this action if Fuel Building Ventilation (VF) exhaust radiation is above 10 mr/hr. This corresponds to the High alarm condition. Per CPS 5140.63, the Alert alarm setpoint is 1.99 mr/hr.

C is incorrect but plausible if the examinee incorrectly believes that EOP-8 directs performing a reactor shutdown based on the conditions provided in the stem. EOP-8 requires a reactor shutdown if 2 or more areas exceed max safe temperatures.

KA Justification - this question meets the KA because the examinee has to intepret the area temperature parameters provided in the question stem to determine required actions.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the conditions in the stem and then determine required actions based on that analysis.

SRO Justification - This question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Question 10 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097689
User-Defined ID:	CL-ILT-1097689
Cross Reference Number:	
Topic:	The plant is operating at rated power when a transient results in a steam leak into Secondary Cont
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4406.01 Rev. 29 CPS 5140.63 Rev. 1a CPS 4001.02C001 Rev. 15e
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-LC-1360
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added EOP-8 Table T to the stem. Enhanced the answer explanation and added plausibility statements. Added KA, cog level, and SRO only justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	

KA Number / System Name: 295032 High Secondary Containment Area Temperature
Category / KA Statement: EA2. Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE : EA2.01 Area temperature

RO Value: 3.8
SRO Value: 3.8

Tier: 1
RO Group: 2
SRO Group: 2

10CFR55-41 (RO) Data: 41.10
10CFR55-43 (SRO) Data: 43.5

Associated objective(s):

SRO Q10/85 295032 A2.01

11 **ID: 1097605** **Points: 1.00**

The plant is in MODE 3, with the following:

- 'B' RR Pump is running in slow speed
- 'A' RR Pump is off and the loop is isolated (seal failure)
- RHR 'B' is operating in Shutdown Cooling mode
- RHR 'A' is inoperable

THEN, all power is lost to 4160V Bus 1B1.

Using ITS 3.4.9 actions below:

(A) What is/are the appropriate condition(s) to be entered?
(B) How many alternate methods of decay heat removal must be verified?

CONDITION	REQUIRED ACTION
A. One or two RHR shutdown cooling subsystems inoperable.	A.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status. AND A.2 Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem. AND A.3 Be in MODE 4.
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.1 Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation. AND B.2 Verify reactor coolant circulation by an alternate method. AND B.3 Monitor reactor coolant temperature and pressure.

A. (A) Condition A ONLY
(B) one

B. (A) Condition A ONLY
(B) two

C. (A) Condition A & B

(B) one

D. (A) Condition A & B
(B) two

Answer: B

Answer Explanation

B is correct:

Per CPS 3514.01C006 4160V BUS 1B1 (1AP09E) OUTAGE, on a loss of 4160V Bus 1B1, RHR Pump 1B will deenergize causing a loss of Shutdown Cooling. The 'B' RR Pump is unaffected.

Per ITS 3.4.9 RESIDUAL HEAT REMOVAL (RHR) SHUTDOWN COOLING SYSTEM - HOT SHUTDOWN, with two RHR shutdown cooling subsystems are inoperable CONDITION A is met. Since both shutdown cooling subsystems are inoperable, TWO alternate methods of decay heat removal must be verified. Since 'B' RR Pump is unaffected, it is still in operation and CONDITION B is not met.

A is incorrect but plausible if the candidate incorrectly determines that only one RHR shutdown cooling subsystem is inoperable based on the conditions in the stem and chooses that only ONE alternate method of decay heat removal must be verified.

C is incorrect but plausible if the candidate correctly determines that Condition A must be entered, incorrectly determines that Condition B must be entered (RR is unaffected by the power loss) and also incorrectly determines that only one alternate method of decay heat removal must be verified.

D is incorrect but plausible if the candidate correctly determines that Condition A must be entered, but incorrectly determines that Condition B must be entered (RR is unaffected by the power loss).

KA Justification - this question meets the KA because the candidate must select the correct impact of the abnormal condition presented (AC failure) and then select the correct procedure (ITS) to control the abnormal condition.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze plant conditions, predict an impact based on the event and determine the correct procedure to control the event.

SRO Justification - This question is linked to 10CFR55.43(b)(5), since the candidate must assess facility conditions and select the appropriate procedure (ITS) during normal, abnormal and emergency situations. Specifically, the question involves the assessment of plant conditions as presented and then selecting the section of a procedure(ITS) with which to proceed.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 11 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097605
User-Defined ID:	CL-ILT-1097605
Cross Reference Number:	
Topic:	The plant is in MODE 3, with the following: 'B' RR Pump is running in slow speed 'A' RR Pump is o
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 3514.01C006 Rev. 9a ITS 3.4.9 Amendment 95/192
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	New
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)

KA Data

KA Number / System Name: 205000 Shutdown Cooling System (RHR Shutdown Cooling Mode)
Category / KA Statement: A.2 Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.2.03 A.C. failure

RO Value: 3.2
SRO Value: 3.2

Tier: 2
RO Group: 1
SRO Group: 1

10CFR55-41 (RO) Data: 41.5
10CFR55-43 (SRO) Data: 43.5

Associated objective(s):

SRO Q11/86 205000 A2.03

12 **ID: 1097881** **Points: 1.00**

Plant conditions are as follows:

- Mode 4
- CPS 9061.04 Containment/Drywell Isolation Auto Actuation surveillance is in progress.

When the CONTAINMENT & REACTOR VESSEL ISOLATION CONTROL SYSTEM MANUAL INITIATION LOGIC 'A' button was armed and depressed in step 8.1.12 of 9061.04, the breaker for 1E51-C002F RCIC Gland Seal Air Compressor at 125 VDC MCC 1A (1DC13E) compartment 10B failed to trip.

Under these conditions, a mode restraint should be entered for which one of the following ITS LCOs?

A. 3.8.1 AC Sources - Operating

B. 3.8.4 DC Sources - Operating

C. 3.8.9 Distribution Systems - Operating

D. 3.5.3 Reactor Core Isolation Cooling (RCIC) System

Answer: A

Answer Explanation

A is correct - The RCIC Gland Seal Air Compressor is designed to shunt trip on a Level 2 or High DW Pressure signal. This function is verified by performing CPS 9061.04 Containment/Drywell Isolation Auto Actuation. Failure of the shunt trip to actuate constitutes a failure to meet ITS SR 3.8.1.19.b and thus renders Div 1 DG inoperable. Since Div 1 DG is only required to be operable in Modes 1, 2, and 3, and the question stem states that the plant is in Mode 4, a mode restraint is entered for ITS 3.8.1.

B is incorrect but plausible if the examinee incorrectly believes that Div 1 DC is rendered inoperable due to failure of the RCIC Gland Seal Air Compressor to shunt trip. Div 1 DC is operable when energized from an operable battery and battery charger. Failure of the RCIC Gland Seal Air Compressor to shunt trip does not impact the operability of Div 1 DC.

C is incorrect but plausible if the examinee incorrectly believes that Div 1 AC Electrical Power Distribution System is rendered inoperable by failure of the RCIC Gland Seal Air Compressor to shunt trip. Operability of the Div 1 AC Power Distribution Systems - Operating is established when the correct breaker alignments and voltage to required AC bus electrical power distribution subsystems exists.

D is incorrect but plausible if the examinee incorrectly believes that failure of the RCIC Gland Seal Air Compressor to shunt trip renders RCIC System inoperable. The RCIC system would be considered inoperable if the Gland Seal Air Compressor failed to automatically start on a RCIC system initiation, but is designed to shunt trip on a Level 2 or High DW pressure signal.

KA Justification - this question meets the KA because the examinee has to predict the impact of a failure of a DC electrical distribution breaker to shunt trip during LOCA testing, and the actions required to control the failure.

Cog Level Justification - this is a high cog question written at the comprehension level. The examinee has to determine how a failure of the RCIC Gland Seal Air Compressor shunt trip function impacts DG operability.

SRO Justification - This question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and situations and 10CFR55.43(b)(2) Facility operating limitations in the technical specifications and their bases.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 12 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097881
User-Defined ID:	CL-ILT-SYSTEM ID #
Cross Reference Number:	
Topic:	Plant conditions are as follows: Mode 4 CPS 9061.04 Containment/Drywell Isolation Auto Actuation
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 9061.04 Rev. 45b • CPS 4001.02 Table 1 Rev. 17a • ITS 3.5.3 Amendment No. 163 • ITS 3.8.1 Amendment No. 163 • ITS 3.8.4 Amendment No. 187 • ITS 3.8.9 Amendment No. 95
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 223002 Primary Containment Isolation System /Nuclear Steam Supply Shut-Off **Category / KA Statement:** A2. Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.02 D.C. electrical distribution failures **RO Value:** 2.9 **SRO Value:** 3.2 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: 43.2, 43.5	

Associated objective(s):

SRO Q12/87 223002 A2.02

13 **ID: 1098227** **Points: 1.00**

0000 - Plant conditions are as follows:

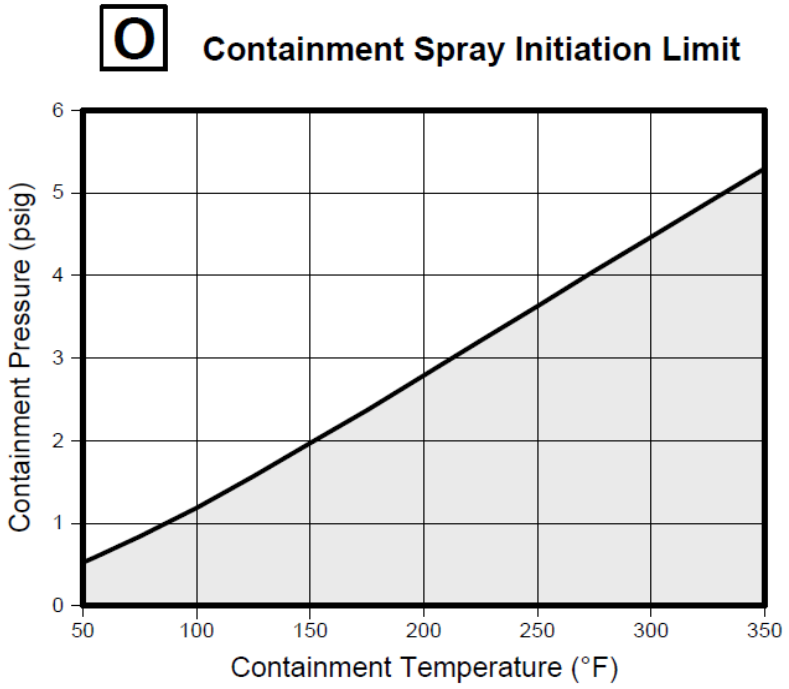
- 97% Reactor Power.
- LPCS is out of service for maintenance.

0100 - the plant experiences a LOCA. The following plant conditions exist:

- All Control Rods are fully inserted.
- Reactor Pressure is 400 psig.
- Reactor Water Level is -90 inches on Wide Range and slowly rising.
- The Reserve Auxiliary Transformer has locked out.
- Div 1 AND Div 2 DGs are running; Div 3 DG failed to start.
- RCIC is injecting.
- RHR 'A' is aligned for LPCI injection.
- RHR 'B' is aligned for Suppression Pool Cooling.
- Suppression Pool Temperature is 102°F and slowly lowering.
- Containment Pressure is 3.0 psig and slowly rising.
- Containment Temperature is 180°F and slowly rising.

0102 - RHR 'A' pump trips.

Given figure O below, which of the following actions should be taken NEXT?



A. Maintain Suppression Pool Cooling.

B. Initiate Feedwater Leakage Control System (FWLCS).

C. Shutdown Suppression Pool Cooling and Initiate CNMT Spray.

D. Shutdown Suppression Pool Cooling and Initiate LPCI Injection.

Answer: C

Answer Explanation

C is correct:

Based on plant conditions provided in the question stem, actions in EOP-1 RPV CONTROL and multiple legs of EOP-6 PRIMARY CONTAINMENT CONTROL are applicable and should be executed as follows:

- EOP-6 Suppression Pool Temperature Leg - with Suppression Pool Temperature > 95°F - EOP-6 requires all available pool cooling to be started. This action is modified by a note that states, "Do not use RHR pumps you need for core cooling or containment spray".
- EOP-6 Containment Temperature and Drywell/Containment Pressure legs - with containment pressure vs. containment temperature in the 'OK to SPRAY' region of Figure O - EOP-6 directs starting containment sprays. This action is modified by a note that states, "Do not use RHR pumps you need for core cooling".
- EOP-1 RPV Control Level Leg - requires using preferred and alternate injection systems as necessary to hold RPV Level above TAF (-162").

With Containment Pressure in the "OK to Spray" region of Figure O, RHR 'B' should be diverted from Suppression Pool Cooling to Containment Spray based on the actions directed in the Containment Temperature leg and the note in the Suppression Pool Temperature leg discussed above.

In addition, with RPV pressure at 400 psig (greater than the discharge head of RHR Pump 'A'), and RPV level at -90 inches and rising, it can be determined that RHR 'A' is not needed for core cooling, and should therefore be realigned to the Containment Spray mode.

Based on all the provided information, the correct actions to be taken next would be to shutdown suppression pool cooling and initiate CNMT spray.

A is incorrect but plausible if the candidate fails to recognize that plant conditions require initiation of CNMT spray while correctly recognizing that RHR B is not required to be used for LPCI injection.

B is incorrect but plausible if the candidate believes the entry conditions for CPS 4001.02 AUTOMATIC ISOLATION have been met, attempting to carry out subsequent actions (which include starting the Feedwater Leakage Control System). The Feedwater Leakage Control System is required to be initiated when a DBA LOCA signature has been identified (RPV level below Level 1 (-145.5") and High DW pressure (>1.68 psig) with RPV pressure < 330 psig. Since these conditions have not been met, initiating the Feedwater Leakage Control System should not be performed.

D is incorrect but plausible if the candidate fails to recognize that RHR B is not required to be used for LPCI injection and chooses to prioritize it above the required initiation of CNMT spray. OP-CL-101-111-1001 STRATEGIES FOR SUCCESSFUL TRANSIENT MITIGATION, Section 6.C.3 Alignment of Systems Needed For Adequate Core Cooling provides additional guidance on the use of RPV injection sources. It states, "Re-alignment of RHR pumps is not required if there is a HIGH degree of certainty that RPV level will remain above TAF during the event (i.e., RCIC is able to maintain greater than TAF, but not greater than -100 inches". As stated above, with RPV pressure above the discharge head of RHR Pump 'B' and RPV level at -90" and rising, RHR 'B' is not needed for core cooling.

KA Justification - this question meets the KA because the candidate must interpret procedure steps based on plant conditions and select the appropriate procedure steps to execute.

Cog Level Justification - this is a high cog question written at the application level. The examinee has to analyze plant conditions, apply knowledge of plant procedures and a provided reference to determine the appropriate action to be taken next.

SRO Justification - This question is linked to 10CFR55.43(b)(5), since the candidate must assess facility conditions and select the appropriate procedure during normal, abnormal and emergency situations. Specifically, the question involves the assessment of plant conditions as presented and based on procedural interpretation, select the steps of a procedure with which to proceed.

Question 13 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1098227
User-Defined ID:	CL-ILT-1098227
Cross Reference Number:	
Topic:	0000 - Plant conditions are as follows: 97% Reactor Power. LPCS is out of service for maintenance
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3312.01 Rev. 45b • CPS 4002.01 Rev. 17a • CPS 4401.01 Rev. 29 • CPS 4402.01 Rev. 29 • OP-CL-101-111-1001 Rev. 10
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor “b” to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 203000 RHR/LPCI Injection **Category / KA Statement:** 2.1.20 Ability to interpret and execute procedure steps. **RO Value:** 4.6 **SRO Value:** 4.6 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q13/88 203000 2.1.20

14 **ID: 1097882** **Points: 1.00**

A Station Blackout has occurred from rated power.

4160V Busses 1A1, 1B1, AND 1C1 are deenergized.

EOP-1 RPV Control AND EOP-6 Primary Containment Control have been entered.

Current plant conditions are as follows:

Parameter	Value	Trend
Suppression Pool temperature	107°F	Rising
Reactor pressure	490 psig	Lowering
Reactor Water Level	42" (narrow range)	Rising
Suppression Pool level	19' 8"	Rising
RCIC Room Temp	180°F	Rising

Under these conditions, which of the following actions should be directed with the highest priority?

Defeat the...

A. RCIC Level 8 Isolation interlocks.

B. RCIC Suction Transfer interlocks.

C. Low RCIC Steam Supply Pressure Isolation interlocks.

D. RCIC Group 5 and 6 high area temperature isolations.

Answer: D

Answer Explanation

D is correct - with the conditions provided in the stem (SBO with 4160V Bus 1A1, 1B1, and 1C1 deenergized), the only injection source available is RCIC. Per CPS 4200.01 Loss of AC Power step 6.2 SBO: Technical Bases Summary, RCIC Leak Detection logic is bypassed to prevent a RCIC turbine trip due to the loss of RCIC Pump Room cooling (initiates a Group 5 and 6 CRVICS isolation) during SBO conditions, and to prevent an inadvertent isolation when power is restored.

A is incorrect but plausible:

The Level 8 shutdown of RCIC causes 1E51-F045 RCIC Turb Stm Supp Shutoff Valve and 1E51-F013 RCIC Pump Disch To Rx Outbd Isol Valve to close. Performing section 3.4 of 4410.00C001 Defeating RCIC Interlocks defeats the Level 8 shutdown of RCIC, and is authorized by EOP-1 to maintain RPV level and pressure within the prescribed bands.

The examinee may select this response based on the reactor water level value and trend provided in the stem. This distracter is incorrect because the actions taken in CPS 4200.01 Loss of AC Power to preserve RCIC as an injection source during SBO conditions take priority over the actions prescribed by EOP-1 RPV Control which permits defeating RCIC interlocks (Level 8 Isolation, High Suppression Pool Level Suction Transfer, and Low RCIC Steam Supply Pressure Isolation) by performing 4410.00C001, whereas the SBO procedure requires bypassing RCIC Leak Detection isolations to prevent a trip of the RCIC turbine due to high room temperature caused by the loss of room cooling.

B is incorrect but plausible - Section 3.2 of CPS 4410.00C001 provides instructions for defeating the RCIC Suction Transfer interlocks which will prevent RCIC suction from automatically transferring to the suppression pool during high suppression pool water level conditions. This distracter is incorrect because during SBO conditions, the preferred RCIC suction source is the suppression pool to maintain the RCIC storage tank as a reserve supply of cool water for cooling the RCIC lube oil, thereby extending the survivability duration of the event beyond 4 hours. This distracter is plausible with the suppression pool level value and trend provided in the stem and because EOP-1 authorizes performance of 4410.00C001.

C is incorrect but plausible:

Section 3.3 of 4410.00C001 provides instructions for defeating the low RCIC Steam Supply Pressure Isolation interlock, which allows RCIC to run at RPV pressures < 60 psig. This distracter is incorrect with the RPV pressure value provided in the stem.

In addition, the actions taken in CPS 4200.01 Loss of AC Power to preserve RCIC as an injection source during SBO conditions take priority over the actions prescribed by EOP-1 RPV Control which permits defeating the RCIC Steam Supply Pressure Isolation interlocks, whereas the SBO procedure requires bypassing RCIC Leak Detection isolations to prevent a trip of the RCIC turbine due to high room temperature caused by the loss of room cooling.

This distracter is plausible with the lowering RPV pressure trend provided in the stem and because EOP-1 authorizes performance of 4410.00C001.

KA Justification - this question meets the KA because the examinee has to exhibit knowledge of the mitigation strategies for operating the RCIC system during SBO conditions.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the conditions in the stem, and then prioritize actions based on that analysis.

SRO Justification - This question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 14 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097882
User-Defined ID:	CL-ILT-1097882
Cross Reference Number:	
Topic:	A Station Blackout has occurred from rated power. 4160V Busses 1A1, 1B1, AND 1C1 are deenergized.
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4200.01 Rev. 23c • CPS 4410.00C001 Rev. 5a • CPS 4401.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 217000 Reactor Core Isolation Cooling System **Category / KA Statement:** 2.4.9 Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies. **RO Value:** 3.8 **SRO Value:** 4.2 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q14/89 217000 2.4.9

15 **ID: 1098334** **Points: 1.00**

The plant is operating at full power.

On the previous shift, annunciator 5062-6C TROUBLE DIESEL GEN 1C alarmed. The Area Operator reported that the MCR annunciator was due to a '125 VDC GROUND' locked in on the Diesel Generator 1C local panel. Electrical Maintenance was dispatched to conduct ground isolation using portable test equipment. NO circuit breakers were repositioned.

The Electrical Maintenance Supervisor has just reported to you that the ground has been isolated to 125 VDC MCC 1C (1E22-S001C), Circuit 20 - 'B' RR Pump Breaker 4B control power and that the breaker will NOT function.

The following are excerpts from ITS 3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation, ITS 3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation, and ITS 3.8.9 Distribution Systems - Operating.

3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation		
Condition	Required Action	Completion Time
A. One or more Functions with one required channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation		
Condition	Required Action	Completion Time
A. One Function with ATWS-RPT trip capability not maintained in one trip system.	A.1 Restore ATWS-RPT trip capability.	72 hours

3.8.9 Distribution Systems - Operating		
Condition	Required Action	Completion Time
E. One or more Division 3 or 4 AC, DC, or uninterruptible AC bus electrical power distribution subsystems inoperable.	E.1 Declare High Pressure Core Spray System inoperable.	

For the conditions provided in the stem, ITS LCO Action(s) associated with ITS _____ must be entered.

A. 3.3.4.1 Condition A ONLY

B. 3.3.4.2 Condition A ONLY

C. 3.3.4.1 Condition A AND 3.8.9 Condition E ONLY

D. 3.3.4.2 Condition A AND 3.8.9 Condition E ONLY

Answer: A

Answer Explanation

A is correct - The ground on the 125 VDC MCC 1C (1E22-S001C) was isolated to Circuit 20 - 'B' RR Pump Breaker 4B control power. The bases for 3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation describes the EOC-RPT instrumentation as being comprised of "... fast acting circuit breakers that interrupt the fast speed power supply to each of the recirculation pump motors". IAW CPS 5003.01, Annunciator 5003-1M RECIRC PMP B MTR BRKR TRIP, the 'B' RR Pump Breaker 4B, on a trip of its logic relay, would not only trip the 4B breaker OPEN, but the associated 5B breaker would trip OPEN and the 'B' RR Pump would shift to SLOW speed. IAW CPS 4201.01C003 LOSS OF 125VDC MCC 1C (DG CT/PT CUBICLE 1E22-S001C), on a loss of control power to the 'B' RR Pump Breaker 4B, the 5B breaker would again trip OPEN. Based on the location of the reported ground, the operation of the 4B breaker is suspect and the EOC-RPT function as well. The CRS should enter Condition A of 3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation.

B is incorrect but plausible if the examinee incorrectly believes that the ATWS-RPT trip incorporates the 'B' RR Pump Breaker 4B. IAW CPS 5008.01, Annunciator 5008-1L ALTERNATE ROD INSERTION SYSTEM 2 INITIATED, the ATWS-RPT trip causes the LFMG breakers 1B and 2B to trip OPEN followed by the 5B breaker tripping OPEN.

C is incorrect but plausible if the examinee correctly recognizes that the 4B breaker is suspect and the CRS should enter Condition A of 3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation but incorrectly believes that the operability of the Division 3 DC electrical power distribution subsystem is in question. IAW CPS 3503.01P001 BATTERY AND DC DISTRIBUTION (DC) GROUND ISOLATION, "CPS uses an Ungrounded DC System, therefore a single grounded component will only impact that piece of equipment, and not the entire DC system or any other component fed by the DC system.

D is incorrect but plausible if the examinee incorrectly believes that the ATWS-RPT trip incorporates the 'B' RR Pump Breaker 4B while also incorrectly believing that the operability of the Division 3 DC electrical power distribution subsystem is also in question.

KA Justification: This question meets the (b) portion of the KA to use procedures (ITS) to correct, control or mitigate the consequences of those abnormal conditions or operations. The (a) portion of the KA to predict the impacts is implied. A specific question on impact would be lower cognitive level and RO level of knowledge. Scope limited IAW ES-401 D.2. Select and Develop Questions.

Cog Level Justification - this question is a high cog question written at the analysis and comprehension level. The examinee has to interpret the indications provided in the stem of the question and then determine the correct procedure (ITS) to mitigate the consequences.

SRO Justification - This question is linked to 10CFR55.43(b)(5), since the candidate must assess facility conditions and select the appropriate procedure (ITS) during normal, abnormal and emergency situations. Specifically, the question involves the assessment of plant conditions as presented and then selecting the section of a procedure (ITS) with which to proceed. The question cannot be answered solely using the ≤ 1 hour ITS action statement. The question does however require knowledge of ITS bases to determine operability and subsequent entry conditions.

Question 15 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1098334
User-Defined ID:	CL-ILT-1098334
Cross Reference Number:	
Topic:	The plant is operating at full power. On the previous shift, annunciator 5062-6C TROUBLE DIESEL G
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• ITS 3.3.4.1 Amendment 149 • ITS 3.3.4.2 Amendment 153 • ITS 3.8.9 Amendment 187 • CPS 3503.01P001 Rev. 1 • CPS 4201.01C003 Rev. 1 • CPS 5003.01 Rev. 34e • CPS 5008.01 Rev. 27
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPR)
KA Data	
KA Number / System Name: 263000 DC Electrical Distribution **Category / KA Statement:** A.2.01 Ability to (a) predict the impacts of the following on the DC ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Grounds **RO Value:** 2.8 **SRO Value:** 3.2 **Tier:** 2 **RO Group:** 1 **SRO Group:** 1 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q15/90 263000 A2.01

16 **ID: 1098105** **Points: 1.00**

The plant was operating at rated thermal power when annunciator 5065-6F SEC CNMT AREA HIGH TEMP was received.

The 'B' RO reports that 1H13-P678 recorder 1TR-CM326 point 16 (RWCU Pump Room B) reads 142°F and is rising at ~2°F/min.

The 'C' Area Operator reports a leak in the 'B' RT Pump Room by visual observation.

THEN, an overcurrent condition causes a loss of the 4160V 1B1 bus.

Assuming NO operator actions have been taken, based on these conditions:

- Power has been lost to the _____(1)_____ RWCU system containment isolation valves.
- (2) Should an emergency event FU1 be declared?

Component	Description
1G33-F001	RWCU Pump Suction Inboard Isol Valve
1G33-F040	RWCU Return Line Inboard Isol Valve
1G33-F053	RWCU Pump Disch Inboard Isol Valve
1G33-F004	RWCU Pump Suction Outboard Isol Valve
1G33-F039	RWCU Return Line Outboard Isol Valve
1G33-F054	RWCU Pump Disch Outboard Isol Valve

<table>
<tr><td colspan="2">FU1 ANY Loss or ANY Potential Loss of Containment</td></tr>
<tr><td colspan="2">CT - Containment</td></tr>
<tr><td>Loss</td><td>Potential Loss</td></tr>
<tr><td>1. a. Failure of isolation valves in any one line to close.
AND
b. Direct downstream pathway to the environment exists after a primary containment isolation signal.
OR
2. Intentional venting/purging of Primary Containment per EOPs or SAMGs due to accident conditions.
OR
3. UNISOLABLE primary system leakage outside containment resulting in EITHER:
• Secondary Containment area temperature > EOP-8, Maximum Safe operating levels.
OR
• Secondary Containment area radiation level > EOP-8, Maximum Safe operating levels.</td><td>None</td></tr>
</table>

A. (1) inboard
(2) NO

B. (1) outboard
(2) NO

C. (1) inboard

(2) yes

D. (1) outboard
(2) yes

Answer: A

Answer Explanation

A is correct:

Per CPS 3303.01E001 REACTOR WATER CLEANUP ELECTRICAL LINEUP, the RWCU containment OUTBOARD isolation valves (1G33-F004, F039, and F054) are powered from AB MCC 1A3. The INBOARD isolation valves (1G33-F001, F040, and F053) are powered from AB MCC 1B3. A loss of 4160V Bus 1B1 will deenergize AB MCC 1B3 and result in a loss of power to the INBOARD isolation valves.

Per CPS 4001.02C001 AUTOMATIC ISOLATION CHECKLIST, the Group 4 RWCU isolation setpoint for high RWCU Pump Room Temperature is 186.5°F; the automatic isolation setpoint has not yet been reached.

Per CPS 4406.01 Secondary Containment Control Table T, the max safe operating temperature for RWCU Pump Room B (point 16 on 1TR-CM326 point 16) is 200°F. The setpoint for annunciator 5065-6F Sec Cnmt Area High Temp is 104°F for point 16 on 1TR-CM326. The Sec Cnmt High High Temperature alarm (5065-5F) is 200°F. Based on these indications, temperatures in the 'B' RWCU Pump Room have not yet exceeded max safe temperature limits.

Therefore, the threshold value for FU1 on loss of the containment barrier has not been exceeded. The primary containment barrier is intact. FU1 should not be declared.

B is incorrect but plausible if the candidate fails to recall that 1G33-F004, 1G33-F039, and 1G33-F054 are powered from AB MCC 1A3 and are NOT affected by deenergizing 4160V Bus 1B1 but correctly recognizes that the containment barrier is intact and that FU1 should not be declared.

C is incorrect but plausible if the candidate correctly determines that 1G33-F001, 1G33-F040, and 1G33-F053 are powered from AB MCC 1B3 and are affected by deenergizing 4160V Bus 1B1 but incorrectly believes that the containment barrier has been lost and that FU1 should be declared based on the indications provided in the stem.

D is incorrect but plausible if the candidate fails to recall that 1G33-F004, 1G33-F039, and 1G33-F054 are powered from AB MCC 1A3 and are NOT affected by deenergizing 4160V Bus 1B1 while also incorrectly believing that the containment barrier has been lost and that FU1 should be declared based on the indications provided in the stem.

KA Justification - this question meets the KA because the candidate must select the correct impact of the abnormal condition presented (AC failure) to answer the question. The (b) portion of the KA (use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations) is not included in the question as permitted by ES-401 D.2.a.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze conditions provided in the question stem and then predict the outcome.

SRO Justification - Part (1) of this question can be answered with RO knowledge. However, part (2) of this question is linked to 10CFR55.43(b)(5), since the candidate must assess facility conditions and determine the status of the primary containment barrier using threshold criteria in EP-AA-1003 Radiological Emergency Plan Annex for Clinton Station.

Question 16 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1098105
User-Defined ID:	CL-ILT-1098105
Cross Reference Number:	
Topic:	The plant was operating at rated thermal power when annunciator 5065-6F SEC CNMT AREA HIGH TEMP wa
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 4001.01 Rev. 11 CPS 4001.02 Rev. 17a CPS 4001.02C001 Rev. 15e CPS 3303.01E001 Rev. 13b CPS 4406.01 Rev. 29
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	New
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 204000 Reactor Water Cleanup System **Category / KA Statement:** A.2.06 Ability to (a) predict the impacts of the following on the REACTOR WATER CLEANUP SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. failure **RO Value:** 2.5 **SRO Value:** 2.6 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.5 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q16/91 204000 A2.06

17 **ID: 1104544** **Points: 1.00**

To meet the minimum requirements for a control rod to be considered OPERABLE, _____(1)_____ channel(s) of rod position indication must be OPERABLE.

In Modes 1 or 2, if a scram accumulator for a withdrawn control rod is found at 0 psig, ITS _____(2)_____ must be immediately entered.

A. (1) both
(2) 3.1.5 Control Rod Scram Accumulators ONLY

B. (1) a single
(2) 3.1.5 Control Rod Scram Accumulators ONLY

C. (1) both
(2) 3.1.5 Control Rod Scram Accumulators AND 3.1.3 Control Rod Operability

D. (1) a single
(2) 3.1.5 Control Rod Scram Accumulators AND 3.1.3 Control Rod Operability

Answer: B

Answer Explanation

B is correct:

Per B3.1.3 Control Rod Operability, SR 3.1.3.1 - The position of each control rod must be determined, to ensure adequate information on control rod position is available to the operator for determining control rod OPERABILITY and controlling rod patterns. Control rod position may be determined by the use of OPERABLE position indicators, by moving control rods to a position with an OPERABLE indicator, or by the use of other appropriate methods.

CPS 3304.02 Rod Control and Information System (RC&IS) provides step instructions for substituting rod positions for a defective reed switch and for verifying rod position during control rod movement with substitute data entered.

ITS SR 3.1.5.1 requires each control rod scram accumulator pressure to be greater than or equal to 1520 psig. With the scram accumulator pressure at 0 psig, ITS 3.1.5 must be immediately entered.

A is incorrect but plausible if the examinee believes that both PIP channels have to be operable to meet LCO 3.1.3. Many ITS LCOs require a "minimum" number of channels to be operable that correlates with the number of channels available. For LCO 3.1.3 however, the LCO is met when control rod position can be determined, which is the case with a single operable position indication channel.

C is incorrect but plausible if the examinee believes that both PIP channels have to be operable as discussed in distracter A, and also incorrectly believes that LCO 3.1.3 must be immediately entered if a control rod scram accumulator is found depressurized. Per ITS 3.1.5, a single inoperable scram accumulator allows the condition to exist for 8 hours before the control rod has to be declared inoperable.

D is incorrect but plausible if the examinee correctly recalls that a single position indication channel satisfies the requirements of ITS SR 3.1.3.1, but incorrectly believes that LCO 3.1.3 must be immediately entered if a control rod scram accumulator is found depressurized. Per ITS 3.1.5, a single inoperable scram accumulator allows the condition to exist for 8 hours before the control rod has to be declared inoperable.

KA Justification - this question meets the KA because the examinee has to demonstrate knowledge of the bases for ITS 3.1.3 Control Rod Operability to answer the question. Specifically, the examinee has to know what the ITS bases requirements are for control rod position indication as it pertains to control rod operability.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall information contained in the ITS Bases to answer the question.

SRO Justification - This question is linked to 10CFR55.43(b)(2), Facility operating limitations in the technical specifications and their bases. The SRO is responsible for having knowledge of TS bases that are required to analyze TS required actions and terminology. The bases for ITS 3.1.3 outlines the requirements for control rod position indication to determine operability of the control rods.

Question 17 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1104544
User-Defined ID:	CL-ILT-1104544
Cross Reference Number:	
Topic:	To meet the minimum requirements for a control rod to be considered OPERABLE, _____(1)_____ chann
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• ITS 3.1.3 Amendment No. 95 • ITS 3.1.5 Amendment No. 95 • ITS B3.1.3 Rev. No. 14-2
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	ITS B3.1.3
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: 214000 Rod Position Information System **Category / KA Statement:** 2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. **RO Value:** 3.2 **SRO Value:** 4.2 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 41.5 / 41.7 **10CFR55-43 (SRO) Data**: 43.2	

Associated objective(s):

SRO Q17/92 214000 2.2.25

18 **ID: 1097966** **Points: 1.00**

The plant was operating at power with parameters as follows:

- 2697 MWth
- 90% Rod Line
- 66.5 Mlbh core flow

RR FCV ‘B’ drifted closed (no apparent cause). Immediate operator actions were taken to stop the transient and stabilize the plant.

Current plant parameters are as follows:

- Reactor power at 2415 MWTh and steady
- Total core flow at 55.8 Mlbm/hr and steady
- 'A' RR loop flow is 33.4 Mlbh
- 'B' RR loop flow is 22.6 Mlbh
- Reactor operation is confirmed to be below the MELLLA limit and outside the Controlled Entry Region.

(1) What is the impact of operating the Reactor Coolant Recirculation System under these conditions?

(2) To mitigate this condition, the CRS should direct the 'A' RO to SHUT the 'A' Reactor Recirc Pump FCV until the 'A' recirculation loop jet pump flow is at a MAXIMUM of ...

A. (1) unacceptable flow coastdown and core response during a design basis LOCA
(2) 26.8 Mlbh.

B. (1) unacceptable flow coastdown and core response during a design basis LOCA
(2) 31.0 Mlbh.

C. (1) non-conservative APRM flow biased simulated thermal power setpoints
(2) 26.8 Mlbh.

D. (1) non-conservative APRM flow biased simulated thermal power setpoints
(2) 31.0 Mlbh.

Answer: B

Answer Explanation

B is correct: In accordance with ITS 3.4.1 Recirculation Loops Operating and its associated bases, the operation of the Reactor Coolant Recirculation System is an initial condition assumed in the design basis loss of coolant accident (LOCA). The analyses assume that both loops are operating at the same flow prior to the accident. The LOCA analysis was reviewed for the case with a flow mismatch between the two loops with the pipe break assumed to be in the loop with the higher flow. A small mismatch was determined to be acceptable based on engineering judgment. However, outside that limit, the flow coastdown and core response are potentially more severe.

The SRO would have 2 hours to restore recirculation loop jet pump flow mismatch within the limits of ≤ 10% of rated core flow (8.45 mlbh) when operating at < 70% rated core flow (59.15 mlbh) or one recirculation loop must be shut down. Since the 'B' FCV is locked out, 'A' FCV must be SHUT until the 'A' recirculation loop jet pump flow mismatch is at a MAXIMUM of 31.0 Mlbh.

A is incorrect but plausible if the candidate were to recognize that the flow mismatch between the two loops would cause an unacceptable flow coastdown and core response during a design bases LOCA but incorrectly selects a minimum acceptable mismatch of 5% (correct at ≥ 70% of rated core flow).

C is incorrect but plausible if the candidate incorrectly believes that the APRM flow biased simulated thermal power setpoints are considered non-conservative based on flow mismatch when this is only a concern with only one recirculation loop in service (reference 3.3.1.1 RPS Instrumentation bases) while also incorrectly selecting a minimum acceptable mismatch of 5% (correct at ≥ 70% of rated core flow).

D is incorrect but plausible if the candidate incorrectly believes that the APRM flow biased simulated thermal power setpoints are considered non-conservative based on flow mismatch when this is only a concern with only one recirculation loop in service (reference 3.3.1.1 RPS Instrumentation bases) while correctly recognizing that the 'A' FCV must be SHUT until the 'A' recirculation loop jet pump flow mismatch is at a MAXIMUM of 31.0 Mlbh.

KA Justification - this question meets the KA because the candidate must select the correct impact of the abnormal condition presented (Recirculation loop jet pump flow mismatch not within limits) and then select the correct response to mitigate the abnormal condition.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze plant condition before and after an event then use knowledge to predict an impact based on the event and determine the correct actions to mitigate the event.

SRO Justification - This question is linked to 10CFR55.43(b)(2), since the candidate must use the facility operating limitations in the technical specifications and their bases. Specifically, the question involves technical specifications and the knowledge of the technical specification bases is required to analyze technical specification required actions and terminology.

Question 18 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097966
User-Defined ID:	CL-ILT-1097966
Cross Reference Number:	
Topic:	The plant was operating at power with parameters as follows: 2697 MWth 90% Rod Line 66.5 Mlbh cor
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	ITS 3.4.1b ITS 3.3.1.1b
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	New
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 202002 Recirculation Flow Control **Category / KA Statement:** A.2.09 Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation flow mismatch: Plant-Specific **RO Value:** 3.1 **SRO Value:** 3.3 **Tier:** 2 **RO Group:** 2 **SRO Group:** 2 **10CFR55-41 (RO) Data:** 4.1.5 **10CFR55-43 (SRO) Data**: 43.2/5	

Associated objective(s):

SRO Q18/93 202002 A2.09

19 **ID: 1097368** **Points: 1.00**

The unit is operating at rated power.

The lower retention element fails on an in service Condensate Polisher.

A Reactor Coolant Chemistry sample that was taken 72 hours ago had the following results:

- Chlorides = 0.21 ppb
- Conductivity = 0.42 uS/cm
- pH = 6.1

A sample just taken has the following results:

- Chlorides = 0.34 ppb
- Conductivity = 1.05 uS/cm
- pH = 5.8

What is/are the required action(s) for these conditions?

A. Be in at least MODE 3 within 12 hours.

B. Be in at least MODE 2 within the next 6 hours.

C. Restore the chloride concentration to within the limit within 24 hours.

D. Return conductivity to less than Action Level 2 within 24 hours or initiate an orderly plant shutdown to establish cold shutdown conditions within the next 16 hours.

Answer: D

Answer Explanation

D is correct:

- Per CY-AB-120-100 Table 3a, conductivity > 1.0 microS/cm but < 5.0 microS/cm exceeds the Action Level 2 threshold.

- Per CPS 4010.02 Plant Chemistry step 4.4, for a confirmed Action Level 2 reading, return the reading to below the Action Level 2 as soon as practicable but within 24 hours. If the parameter has exceeded Action Level 2 for > 24 hours, then initiate an orderly plant shutdown to establish cold shutdown conditions within 16 hours.

A is incorrect but plausible. ORM 3.3.1.1 Action c. and 3.3.1.2 requires the plant to be placed in Mode 3 within 12 hours if conductivity exceeds specified limits. The candidate may select this response if he/she incorrectly reads ORM 2.3.1.

B is incorrect but plausible. The candidate may select this response if he/she incorrectly believes that you must be in at least MODE 2 within the next 6 hours. This would be applicable if "the conductivity, chloride concentration, or pH exceeding the limit specified in Table 3.3.1-1 for more than 72 hours during one continuous time interval or with the conductivity and chloride concentration exceeding the limit specified in Table 3.3.1-1, for more than 336 hours per year - there is no indication that the limits have been exceeded for that amount of time.

C is incorrect but plausible. The candidate may select this response if he/she incorrectly believes that you must restore the chloride concentration to within the limit within 24 hours. This would be applicable if the Chloride level were greater than the level 1 limit. It is not above the limit. Plausible if the candidate misreads the chart and applies the conductivity limit to Chlorides.

KA Justification - this question meets the KA because the examinee must have knowledge of the primary plant chemistry limits to determine required actions.

Cog Level Justification - this is a high cog question written at the analysis level. The examinee has to analyze the conditions in the stem and then determine required actions based on that analysis using the provided references.

SRO Justification - This question is linked to 10CFR55.43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and abnormal situations. The question presents a plant condition that the SRO must analyze and then determine required actions to place the plant into an acceptable condition.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 19 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097368
User-Defined ID:	CL-ILT-1097368
Cross Reference Number:	
Topic:	The unit is operating at rated power. The lower retention element fails on an in service Condensa
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 4010.02 Rev. 8 • ORM 2.3.1 Rev. 76 • CY-AB-120-100 Rev. 15
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	CPS ILT 10-1 NRC Exam
Question Source: (i.e. New, Bank, Modified)	Bank - Duplicate of CL-LC-9055 and CL-ILT-N11083
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added plausibility statements to the answer explanations. Added KA, Cog level, and SRO only justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	• CPS 4010.02 (all) • CY-AB-120-100 (all) • ORM 2.3.1
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPR)
KA Data	
KA Number / System Name: 2.1 Conduct of Operations **Category / KA Statement:** 2.1.34 Knowledge of primary and secondary plant chemistry limits. **RO Value:** 2.7 **SRO Value:** 3.5 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

Associated objective(s):

SRO Q19/94 2.1.34

20 **ID: 1097866** **Points: 1.00**

Assume Div 2 NSPS inverter is currently operating on its preferred source.

Then, the Normal Feed circuit breaker at 120VAC NSPS Bus B Normal/Maintenance Bypass Feed Panel (1RP18J) trips open.

Using E02-1RP99-102 and applicable ITS LCOs, determine:

(1) the correct status of NSPS 120VAC Distribution Panel B, and

(2) the associated LCO action.

A. (1) deenergized
(2) 3.8.9 A.1

B. (1) deenergized
(2) 3.8.9 B.1

C. (1) remains energized
(2) 3.8.9 A.1

D. (1) remains energized
(2) 3.8.9 B.1

Answer: B

Answer Explanation

B is correct - using E02-1RP99-102 Schematic Diagram Reactor Protection System NSPS Power Distribution (Div 2), you can determine that the Normal Feed circuit breaker at 120VAC NSPS Bus B Normal/Maintenance Bypass Feed Panel (1RP18J) separates the Div 2 NSPS inverter and the Div 2 NSPS 120VAC distribution panel. Therefore, if the Normal Feed circuit breaker were to open, the Div 2 NSPS 120VAC distribution panel would deenergize. In this deenergized condition, the Div 2 uninterruptible AC bus cannot pass SR 3.8.9.1 (Verify correct breaker alignments and voltage to required AC, DC, and uninterruptible AC bus electrical power distribution subsystems), requiring entry into 3.8.9 Condition B. 3.8.9 RA B.1 requires restoration of Div 2 uninterruptible AC bus distribution subsystems to OPERABLE status within 8 hours and 16 hours from discovery of failure to meet LCO.

A is incorrect but plausible if the examinee recognizes that the Div 2 NSPS 120VAC distribution panel would deenergize but incorrectly selects condition statement 3.8.9 A.1 because the NSPS bus is 120VAC.

C is incorrect but plausible if the examinee believes that the inverter can maintain power to the Div 2 NSPS 120VAC distribution panel via the parallel path through the Maintenance Bypass circuit breaker. During normal operation, this circuit breaker is OPEN. C is also incorrect but plausible if the examinee incorrectly determines that condition statement 3.8.9 A.1 should be entered because the NSPS bus is 120VAC.

D is incorrect but plausible if the examinee believes that the inverter can maintain power to the Div 2 NSPS 120VAC distribution panel via the parallel path through the Maintenance Bypass circuit breaker, but correctly identifies that the Div 2 NSPS Inverter is INOPERABLE and requires entry into LCO 3.8.9 B.1.

KA Justification - this question meets the KA because the examinee has to analyze the conditions in the stem, and then use selected drawings and technical specifications to determine the expected configuration of the equipment and its affect on the plant.

Cog Level Justification - this is a high cog question written at the application/analysis level. The examinee has to solve a problem using knowledge and supplied CPS references.

SRO Justification - this question is linked to 10CFR55.43(b)(2) Facility operating limitations in the facility license.

Question 20 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097866
User-Defined ID:	CL-ILT-1097866
Cross Reference Number:	
Topic:	Assume Div 2 NSPS inverter is currently operating on its preferred source. Then, the Normal Feed
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 3509.01 Rev. 21 • E02-1RP99-102 Rev.U • ITS 3.8.7 Amendment 187 • ITS 3.8.9 Amendment 95
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage.
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	• E02-1RP99-102 • ITS 3.8.7 with 1 hour or less ITS action and completion time entries removed. • ITS 3.8.9 with 1 hour or less ITS action and completion time entries removed.
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	High (3-SPK/SPR)
KA Data	
KA Number / System Name: 2.2 Equipment Control **Category / KA Statement:** 2.2.15 Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. **RO Value:** 3.9 **SRO Value:** 4.3 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.3	

Associated objective(s):

SRO Q20/95 2.2.15

21 **ID: 1098464** **Points: 1.00**

Below is an excerpt from EP-AA-1003:

FG1 Loss of ANY two barriers AND Loss or Potential Loss of third barrier	FS1 Loss or Potential Loss of ANY two barriers.	FA1 ANY Loss or ANY Potential Loss of either Fuel Clad or RCS.	FU1 ANY Loss or ANY Potential Loss of Containment.

Sub-Category	FC - Fuel Clad		RC – Reactor Coolant System		CT - Containment	
	Loss	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**
4. RCS Leak Rate →	None	None	1. UNISOLABLE Main Steam Line (MSL), Feedwater, RWCU or RCIC line break. **OR** 2 Emergency RPV Depressurization is required.	3. RCS leakage **> 50 gpm** inside the drywell or containment. **OR** 4. UNISOLABLE primary system leakage outside containment resulting in **EITHER:** • Secondary Containment area temperature > EOP-8 Maximum Normal operating levels. **OR** • Secondary Containment radiation level > EOP-8 Maximum Normal operating levels.	None	None
5. Pri Cont Rad Monitoring	1. Drywell radiation monitor reading **> 260 R/hr (> 2.60 E+02 R/hr)**. **OR** 2. Containment radiation monitor reading > **41.3 R/hr (> 4.13E+01 R/hr)**.	None	1. Drywell radiation monitor reading **> 100 R/hr**. **OR** 2. Containment radiation monitor reading **> 33 R/hr.**	None	None	1. Drywell radiation monitor reading **> 590 R/hr (> 5.90 E+02 R/hr)**. **OR** 2. Containment radiation monitor reading **> 97 R/hr (> 9.70E+01 R/hr)**.

Consider 4 separate scenarios, each originating with the unit operating at rated power, when a LOCA occurred resulting in a reactor scram.

As the Shift Emergency Director, which of the following scenarios would require a Protective Action Recommendation (PAR) to be made?

Scenario #	DW Rad Monitor reading (Rem/hr)	Cnmt Rad Monitor reading (Rem/hr)	RCS leakage (RF Flow) (GPM)
W	600	67	Pegged high
X	275	100	49
Y	120	40	Pegged high
Z	95	38	45

A. Scenarios W ONLY

B. Scenarios W AND X ONLY

C. Scenarios W, X, AND Y ONLY

D. Scenarios W, X, Y AND Z

Answer: B

Answer Explanation

B is correct

- Per EP-AA-1003 FG1, a loss of ANY two barriers AND Loss or Potential Loss of the third barrier is the threshold for a General Emergency. Protective Action Recommendations (PARs) are issued at the General Emergency classification.
- For scenario W, DW radiation levels at 600 rem per hour represent a loss of two of the barriers (FC and RC) and a potential loss of Cnmt.
- For scenario X, Cnmt radiation levels at 100 rem per hour represent a loss of two of the barriers (FC and RC) and a potential loss of Cnmt.

A is incorrect but plausible if the examinee recognizes that scenario W requires classification at the General Emergency level but fails to recognize that scenario X also requires classification at the General Emergency level.

C is incorrect but plausible if the examinee incorrectly believes that scenario Y requires classification at the General Emergency level. The parameters given in the stem require classification at the Site Area Emergency level due to a loss of FC & RC (FS1) and do not require issuing PARs.

D is incorrect but plausible if the examinee incorrectly believes that scenario Z requires classification at the General Emergency level. The parameters given in the stem require classification at the Alert level due to a loss of RC (FA1).

KA justification - this question meets the KA because the examinee is required to have knowledge of radiation monitoring systems in the DW and Containment in order to answer this question.

Cog Level Justification - this is a high cog question written at the application level. The examinee has to analyze plant conditions, apply knowledge of plant procedures and a provided reference to determine if a Protective Action Recommendation (PAR) would need to be made.

SRO – This question is linked to 10CFR55.43(b)(4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions and 10CFR55.43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations. Specifically, this question requires the candidate to recognize radiation hazards in an abnormal situation and using knowledge of the Emergency Plan Classification process determine the correct application of Protective Action Recommendations (PARS).

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 21 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1098464
User-Defined ID:	CL-ILT-1098464
Cross Reference Number:	
Topic:	Below is an excerpt from EP-AA-1003: FG1 Loss of ANY two barriers AND Loss or Potential Loss of t
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	EP-AA-1003 Rev. 24
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	Modified from 883572
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Changed conditions in the stem such that one of the three distractors in the original question became the correct answer.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	EP-AA-1003
LORT	
PRA: (i.e. Yes or No or #)	Yes
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPK)
KA Data	
KA Number / System Name: 2.3 Radiation Control **Category / KA Statement:** 2.3.5 Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. **RO Value:** 2.9 **SRO Value:** 2.9 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.11 & 41.12 **10CFR55-43 (SRO) Data**: 43.4	

Associated objective(s):

SRO Q21/96 2.3.5

22 **ID: 1097806** **Points: 1.00**

At 0900, the plant was operating at rated power when TWO of the smoke detectors in Fire Zone F-1b were declared INOPERABLE.

Which ONE of the following describes the required action?

A. A fire watch must be established by 1000 to perform hourly inspections of the zone.

B. A fire watch must be established by 1000 to perform inspections of the zone every 8 hours.

C. Restore BOTH of these detectors to an OPERABLE status within 14 days; otherwise, establish a fire watch to inspect the zone hourly.

D. Restore AT LEAST ONE of these detectors to an OPERABLE status within 14 days; otherwise, have a fire watch inspect the zone hourly.

Answer: A

Answer Explanation

A is correct:

Per CPS 1893.01, step 8.1.1, whenever a fire protection function is deemed NON-FUNCTIONAL, or thought to be NON-FUNCTIONAL, Appendix A shall be consulted for the required interim measures to compensate for the NON-FUNCTIONAL system.

CPS 1893.01 Appendix A page 20 states that as a minimum, the fire detection instrumentation for each fire detection zone listed in Appendix D shall be FUNCTIONAL whenever equipment protected by the fire detection instrument is required to be OPERABLE. Since Fire Zone F-1B contains HPCS system components, and HPCS is required to be operable in Mode 1 per ITS 3.5.1, these detectors are required to be OPERABLE.

CPS 1893.01 Appendix D page 38 states that Fire Zone F-1b contains 3 Function A smoke detectors. Of these 3 detectors, 2 are inoperable as stated in the stem.

CPS 1893.01 Appendix A page 21 states that with more than 1/2 of the Function A fire detection instruments in any fire zone non-functional, then within 1 hour establish a fire watch to patrol at least once per hour for instruments located outside the containment or drywell. Since the detectors were declared inoperable at 0900, the hourly fire watch must be established by 1000.

B is incorrect but plausible if the examinee misreads the compensatory measures on Appendix A page 21 and determines that fire watch tours are required every 8 hours. The 8 hour inspections are required for instruments located in the containment. Hourly fire watch inspections are required for instruments located outside the containment.

C is incorrect but plausible if the examinee applies the compensatory measures for conditions where less than 1/2 of the total Function A fire detection instruments are inoperable. For Fire Zone F-1b, there are three total Function A instruments. The 9.a compensatory measure applies if only 1 of the instruments was inoperable.

D is incorrect but plausible if the examinee applies the compensatory measures for conditions where less than 1/2 of the total Function A fire detection instruments are inoperable. For Fire Zone F-1b, there are three total Function A instruments. The 9.a compensatory measure applies if only 1 of the instruments was inoperable.

KA Justification - this question meets the KA because the examinee has to use fire protection procedure CPS 1983.01 Fire Detection Impairment Reporting to determine compensatory measures for inoperable smoke detectors to answer the question.

Cog Level Justification - this is a high cog question written at the analysis and application level. The examinee has to analyze the conditions in the stem and then determine required actions using a reference.

SRO Justification - This question is linked to 10CFR55.43(b)(5), Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Also linked to 10CFR55.43(b)(1) Conditions and limitations in the facility license.

Question 22 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	1097806
User-Defined ID:	CL-ILT-1097806
Cross Reference Number:	
Topic:	At 0900, the plant was operating at rated power when TWO of the smoke detectors in Fire Zone F-1b
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	CPS 1893.01 Rev. 20c
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC Exam usage
Question Source: (i.e. New, Bank, Modified)	Bank - duplicate of CL-ILT-6052
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Added General Data table. Revised answer explanation section - added distracter plausibility statements. Added KA, Cog Level, and SRO only justification statements.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CPS 1893.01 in it's entirety
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPR)
KA Data	
KA Number / System Name: 2.4 Emergency Procedures / Plan **Category / KA Statement:** 2.4.25 Knowledge of fire protection procedures. **RO Value:** 3.3 **SRO Value:** 3.7 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.5	

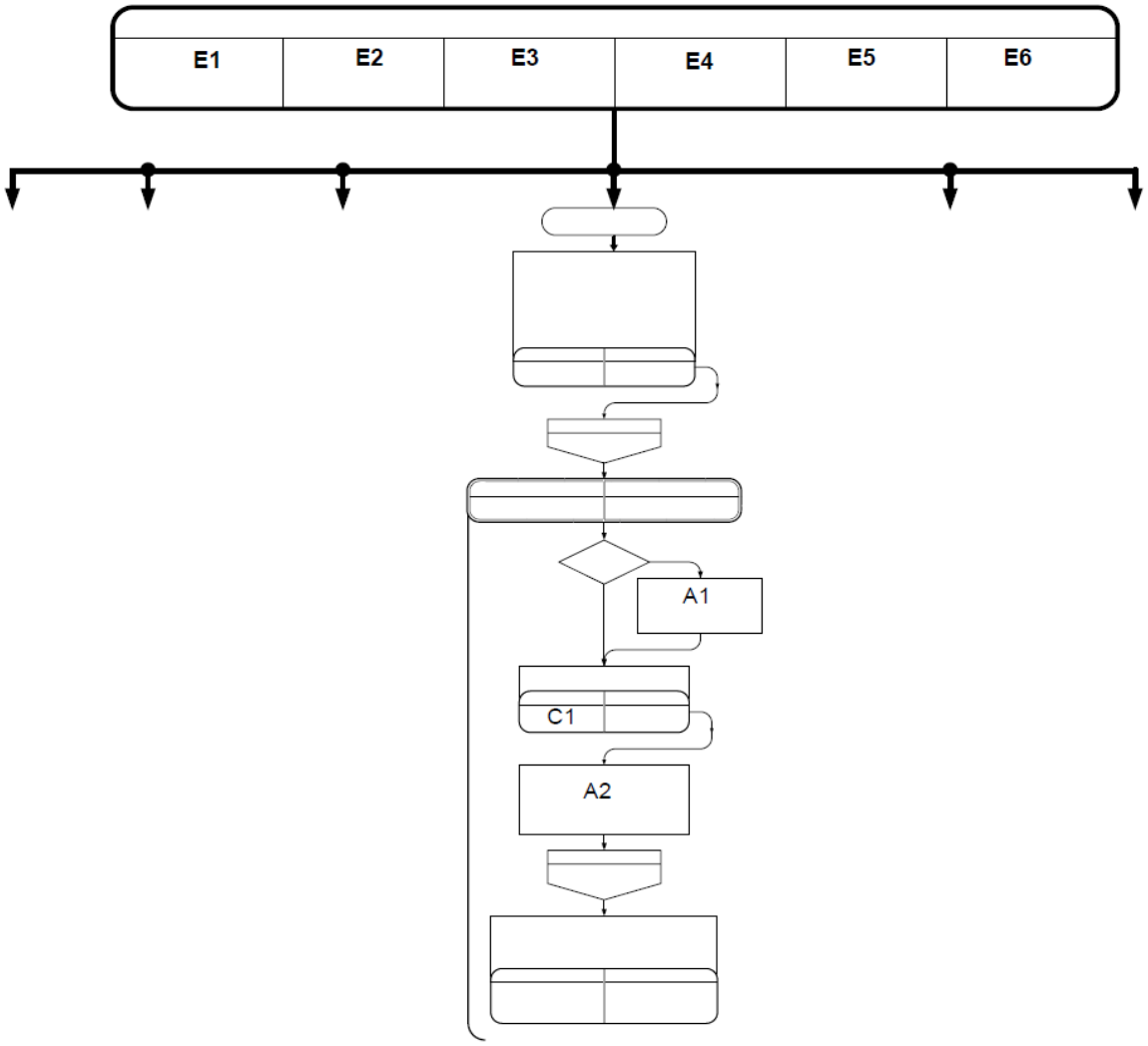
Associated objective(s):

SRO Q22/97 2.4.25

23 **ID: 1110093** **Points: 1.00**

A transient has occurred resulting in exceeding entry condition E1 on the generic EOP flowchart shown below.

Conditions have been met for A1, but A1 actions have NOT yet been taken.



If the conditions in C1 are exceeded, the CRS will direct the Reactor Operators to perform action _____(1)_____ NEXT.

Given these conditions, if entry condition E3 is exceeded, re-entry into the EOP _____(2)_____ required.

A. (1) A1
(2) is

B. (1) A2
(2) is

C. (1) A1
(2) is NOT

D. (1) A2
(2) is NOT

Answer: A

Answer Explanation

A is correct:

Per OP-CL-101-111-1001 Strategies For Successful Transient Mitigation, step 6.B.4) When executing a leg of the EOPs, all steps **must be followed in order** to allow the use of all of the mitigating systems and their effectiveness assessed, even if a blowdown parameter is currently exceeded. As an example, the Containment Pressure leg must be executed, including establishing Containment Sprays, if available, prior to determining if a blowdown is required due to exceeding the Pressure Suppression Pressure (PSP) limit. After Containment Sprays are initiated (valves fully open), then check PSP. If Containment Pressure is below the PSP limit, then blow down is not required.

Per CPS 1005.09 Emergency Operating Procedure (EOP) and Severe Accident Guideline (SAG) Program, section 8.13.3.3, an EOP shall be reentered upon each receipt of an entry condition.

B is incorrect but plausible if the examinee incorrectly believes that actions must be performed when a condition parameter is exceeded regardless of the status of the preceeding EOP actions.

C is incorrect but plausible if the examinee incorrectly believes that once an EOP has been entered and executed, re-entry is not required if additional entry conditions are received.

D is incorrect but plausible if the examinee incorrectly believes that once an EOP has been entered and executed, re-entry is not required if additional entry conditions are received, and also believes that actions must be performed when a condition parameter is exceeded regardless of the status of the preceeding EOP actions.

KA Justification - this question meets the KA because the examinee has to demonstrate the ability to direct the correct action to be taken by a reactor operator during execution of EOPs to answer the question.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall the procedural actions required to execute the EOPs.

SRO Justification - This question is linked to SRO only task 100509.07 Execute EOP Decision Symbols.

Question 23 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1110093
User-Defined ID:	CL-ILT-1110093
Cross Reference Number:	
Topic:	A transient has occurred resulting in exceeding entry condition E1 on the generic EOP flowchart sh
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CPS 1005.09 Rev. 9a • OP-CL-101-111-1001 Rev. 10
Justification for Non SRO CFR Link:	Question is linked to SRO only task 100509.07 Execute EOP Decision Symbols.
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No previous NRC exam usage
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	New question
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Memory (1-P)
KA Data	
KA Number / System Name: Conduct of Operations **Category / KA Statement:** 2.1.9 Ability to direct personnel activities inside the control room. **RO Value:** 2.9 **SRO Value:** 4.5 **Tier:** 3 **RO Group:** NA **SRO Group:** NA **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: NA	

Associated objective(s):

SRO Q23/98 2.1.09

24 **ID: 1098522** **Points: 1.00**

The plant is at 90% power with Residual Heat Removal (RHR) Loop 'A' in Suppression Pool Cooling.

Effluents from this pathway are released to the ___(1)___.

THEN, the Division 1 Shutdown Service Water (SX) Effluent Radiation Monitor (1RIX-PR038) fails LOW.

(2) From the following, choose the ONE action that is required and why?

A. (1) Seal Well
(2) Collect and analyze grab samples at least once per 12 hours

B. (1) Ultimate Heat Sink (UHS)
(2) Collect and analyze grab samples at least once per 12 hours

C. (1) Seal Well
(2) record the issue in the Potential LCO/Mode Restraint log in ESOMs ONLY

D. (1) Ultimate Heat Sink (UHS)
(2) record the issue in the Potential LCO/Mode Restraint log in ESOMs ONLY

Answer: B

Answer Explanation

B is correct: Per CY-CL-170-301 CPS Unit 1 ODCM Table 2.7-1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION, 1RIX-PR038 would be required to be operable during this time. With PR038 failed low the monitor would be considered INOP. Remedial Requirement #2 states that If Division 1 Shutdown Service Water (SX) Effluent Radiation Monitor (1RIX-PR038) becomes inoperable, effluent releases via this pathway may continue provided that at least once per 12 hours grab samples are collected and analyzed. Per section 2.3.4 SX Effluent PRM Setpoints, this action will prevent an unmonitored release to the Ultimate Heat Sink (UHS).

A is incorrect but plausible if the candidate selects the correct remedial requirement but fails to correctly identify the radioactive release path.

C is incorrect but plausible if the candidate fails to identify that applicability note (c) applies; 1PR038 is required to be OPERABLE with RHR Suppression Pool Cooling in service.

D is incorrect but plausible if the candidate fails to identify that applicability note (c) applies; 1PR038 is required to be OPERABLE with RHR Suppression Pool Cooling in service and that Remedial Requirement 2.b actions must be performed while correctly identifying the radioactive release path.

KA Justification - this question meets the KA because the candidate must utilize knowledge of radiological safety procedures pertaining to licensed operator duties (ODCM) such as response to radiation monitor alarms.

Cog Level Justification - this is a high cog question written at the application level. The examinee has to apply plant conditions presented in the stem to the provided reference to determine the correct (remedial) requirements.

SRO Justification - Part 1 of this question (selection of release paths) is RO level of knowledge. Part 2 of the question is linked to 10CFR55.43(b)(4), Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 24 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	0.00
System ID:	1098522
User-Defined ID:	CL-ILT-988810
Cross Reference Number:	CPS QUESTIONS TRANSFER 2-2
Topic:	The plant is at 90% power with Residual Heat Removal (RHR) Loop `A? in Suppression Pool Cooling.
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	• CY-CL-170-301 Rev. 23 • CPS 3315.03 Rev. 9
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	No NRC Exam Usage
Question Source: (i.e. New, Bank, Modified)	Bank
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	Improved explanation. Provided KA, Cog and SRO justifications.
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	CY-CL-170-301, Section 2.7.1
Excluded Reference: (i.e. Ensure ON-## not provided)	CY-CL-170-301, Section 2.3.3 & 2.3.4
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Higher (3-SPR)
KA Data	
KA Number / System Name: 2.3 Radiation Control **Category / KA Statement:** 2.3.13 Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. **RO Value:** 3.4 **SRO Value:** 3.8 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** 41.12 **10CFR55-43 (SRO) Data**: 43.4	

Associated objective(s):

SRO Q24/99 2.3.13

25 **ID: 1097889** **Points: 1.00**

Operations needs to place one valve for the Turbine Lube Oil system in a DIFFERENT position than its normal valve lineup to isolate a small leak.

- The leak is NOT threatening to the continued operation of the unit.
- This task will NOT have an affect on UFSAR described design functions and NO emergency or equipment damage will result.
- NO approved procedure exists for the evolution.

Which of the following documentation (if any) is required to support the immediate re-positioning of the valve?

A. Degraded Equipment Log (DEL)

B. Adverse Condition Monitoring Plan (ACMP)

C. Craft Capability Item. NO additional documentation required.

D. Equipment Status Tag (EST) / Abnormal Component Positioning Sheet (ACPS)

Answer: D

Answer Explanation

D is correct: Per OP-AA-108-101 CONTROL OF EQUIPMENT AND SYSTEM STATUS, for situations, excluding routine operation, where a component, system or structure is required to be placed in a position differing from its normal line-up, the alignment must be done utilizing an Abnormal Component Positioning Sheet (ACPS). The ACPS will document proper evaluation, performance and restoration of the alignment, ensuring plant configuration control is maintained.

A is incorrect but plausible if the candidate fails to recall that the Degraded Equipment Log (DEL) is used to track inoperable and degraded Technical Specification related equipment IAW OP-AA-108-104 TECHNICAL SPECIFICATION COMPLIANCE. The system in question does not meet this criteria.

B is incorrect but plausible if the candidate fails to recall that the Adverse Condition Monitoring Plan (ACMP) is used to address plant conditions in which one or more parameters are outside normal operating bands and thus significantly reduce plant operating margin. The situation in question does not meet this criteria.

C is incorrect but plausible if the candidate fails to recall that even though some activities fall under the controls of OP-CL-108-101-1001 GENERAL EQUIPMENT OPERATING REQUIREMENTS Attachment 1 CRAFT CAPABILITY ITEMS and therefore do not require a procedure, the activity in question is not on the list.

KA Justification - this question meets the KA because the candidate must have knowledge of the procedures and process for controlling equipment configuration and status.

Cog Level Justification - this is a low cog question written at the memory level. The examinee has to recall facts and apply them to the specific situation.

SRO Justification - This question is linked to 10CFR55.43(b)(3), (Facility licensee procedures required to obtain authority for design and operating changes in the facility). The candidate must have knowledge of the processes for changing the plant configuration and the method of documentation.

EXAMINATION ANSWER KEY

ILT 14-1 NRC Exam - Approval Version - SRO

Question 25 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	1
Difficulty:	0.00
System ID:	1097889
User-Defined ID:	CL-ILT-SYSTEM ID #
Cross Reference Number:	
Topic:	Operations needs to place one valve for the Turbine Lube Oil system in a DIFFERENT position than i
Num Field 1:	
Num Field 2:	
Text Field:	

Comments:

General Data	
Technical Reference with Revision Number:	OP-AA-108-101 Rev. 11 OP-AA-108-104 Rev. 1 OP-CL-108-101-1001 Rev. 10
Justification for Non SRO CFR Link:	NA
Question History: (i.e. LGS NRC-05, OYS CERT-04)	New
Question Source: (i.e. New, Bank, Modified)	New
Low KA Justification (if required):	NA
Revision History: Revision History: (i.e. Modified distractor "b" to make plausible based on OTPS review)	None
ILT	
Supplied Ref (If appropriate): (i.e. ABN-##)	None
Excluded Reference: (i.e. Ensure ON-## not provided)	None
LORT	
PRA: (i.e. Yes or No or #)	No
LORT Question Section: (i.e, A-Systems or B-Procedures)	NA
General Information	
Question Level (RO/SRO)	SRO
Station	Clinton
Cognitive Level	Low
KA Data	
KA Number / System Name: 2.2 Equipment Control **Category / KA Statement:** 2.2.14 Knowledge of the process for controlling equipment configuration or status. **RO Value:** 3.9 **SRO Value:** 4.3 **Tier:** 3 **RO Group:** N/A **SRO Group:** N/A **10CFR55-41 (RO) Data:** 41.10 **10CFR55-43 (SRO) Data**: 43.3	

Associated objective(s):

SRO Q25/100 2.2.14