RO
Written

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	001AK3.01	
	Importance Rating	3.2	4.3

Proposed Question: 1/1

A power ascension is in progress. The plant is presently at 80% power with control bank D at 180 steps. For no apparent reason, bank D starts stepping out continuously. The reactor operator takes manual control and rod motion stops but he receives an "urgent failure" alarm when he attempts to drive rods in. Bank D is now stationary at 187 steps. Which one of the following actions is appropriate in accordance with AR-C-30, "Rod Control Urgent Failure Rod Stop?"

A. Control Tavg with boration/dilution/turbine load adjustments, notify the Operations Manager.

B. Attempt to control Bank D rods with individual bank select.

C. Reduce reactor power to < 75% RTP within 2 hours.

D. Trip the reactor if rod control cannot be regained within 2 hours or if Tavg exceeds the band of 547-561 degrees F.

Proposed Answer: A

Technical Reference(s): AR-C-30, AP-RCC.1 "Continuous Control Rod Withdrawal"

Proposed references to be provided to applicants during examination: None

Learning Objective:
001 Control Rod Drive System AK3.Knowledge of the reasons for the following responses as they apply to the Continuous Rod Withdrawal: (CFR: 41.5,41.10 / 45.6 / 45.13) AK3.01 Manually driving rods into position that existed before start of casualty.

Question Source:	Bank #	X (C000.0255)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____
10 CFR Part 55 Content:	55.41	5, 10
	55.43	____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	003AK2.05	
	Importance Rating	2.5	2.8

Proposed Question: 3/2

During a plant load increase, with reactor power at 48%, control bank C group 1 rod G-7 drops. Prior to the drop it was at 230 steps. While restoring the rod, control rod urgent failure occurs. Which one of the following explains why the alarm actuated?

A. All bank C group 2 rods lift coils de-energized.

B. All other bank C group 1 rods lift coils de-energized.

C. Group C rod moving with group D rods withdrawn.

D. The step counter of the pulse to analog (P/A) converter was not reset to 0.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective:
APE: 003 Dropped Control Rod AK2. Knowledge of the interrelations between the Dropped Control Rod and the following: (CFR 41.7 / 45.7) AK2.05 Control rod drive power supplies and logic circuits.

Question Source:	Bank #	X (B001.0010)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	7
	55.43	____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	011EK2.02	
	Importance Rating	2.6	2.7

Proposed Question: 5/3

The plant has experienced a large break LOCA. What is the reason for the caution in ES 1.3, "Transfer to Cold Leg Recirculation," to stop the SI pumps if RCS pressure is greater than SI pump shutoff head?

A. To prevent the SI pumps from injecting radioactive water into the RWST, causing a release to the auxiliary building.

B. The SI pump recirculation valves are closed when the SI system is aligned for high head recirculation.

C. The SI pump suction valves from the discharge of the RHR pumps are interlocked so that they will not open when RCS pressure is too high.

D. To provide adequate flow to the containment spray pumps while RCS pressure is relatively high.

Proposed Answer: B

Technical Reference(s): Background information ES-1.3 (Attach if not previously provided)

Learning Objective: _____ (As available)
EPE: 011 Large Break LOCA EK2 Knowledge of the interrelations between the Large Break LOCA and the following: (CFR 41.7 / 45.7) EK2.02 Pumps.

Question Source:		
	Bank #	
	Modified Bank #	X (INPO bank 2971)
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	015AK2.07	
	Importance Rating	2.9	2.9

Proposed Question: 6/4

The plant is operating at 100% power when the 1B RCP standpipe high level alarm (B-4) comes in. RCP parameters indicate the following:

- RCP 1B No. 1 seal leakoff flow is 0.24 gpm and steady
- RCP 1B No. 1 seal differential pressure is greater than 400 psid
- RCP 1B No. 1 seal outlet temperature is 155 degrees F. and steady

Which of the following failures could lead to these indications?

A. #2 seal failed closed.

B. #2 seal failed open.

C. #1 seal failed closed.

D. #1 seal failed open.

Proposed Answer: B

Technical Reference(s): AP-RCP.1 (Attach if not previously provided)

Learning Objective: _____ (As available)
APE: 015 Reactor Coolant Pump (RCP) Malfunctions AK2. Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: (CFR 41.7 / 45.7) AK2.07 RCP seals.

Question Source:	Bank #	X (B003.0002)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	040AA1.01	
	Importance Rating	4.6	4.6

Proposed Question: 9/5

A massive failure in the plant's secondary system results in one steam generator (S/G) being faulted due to a steam break outside containment and the other suffering a tube rupture. Which of the following actions should be taken for cooling down the RCS?

A. The S/G with the tube rupture shall be used for cooldown and the faulted S/G shall be isolated to prevent uncontrolled cooldown of the RCS.

B. The faulted S/G shall be used for cooldown and the S/G with the tube rupture shall be isolated to minimize radiological releases.

C. Both S/Gs should be used equally for cooldown to minimize the adverse effects associated with both casualties.

D. Isolate both S/Gs and initiate feed and bleed of the RCS using the SI system.

Proposed Answer: B

Technical Reference(s): Background information E-2, LP REP02C

Learning Objective: _____ (As available)
APE: 040 Steam Line Rupture AA1. Ability to operate and / or monitor the following as they apply to the Steam Line Rupture: (CFR 41.7 / 45.5 / 45.6) AA1.01Manual and automatic ESFAS initiation

Question Source:		
	Bank #	X (C000.0945)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	057AA1.01	
	Importance Rating	3.7	3.7

Proposed Question: 11/6

Which of the following describes the operation of Inverter 1A when the 125 VDC supply from DC distribution panel 1A is interrupted? Static transfer switch 1A:

A. Must be manually transferred to the alternate supply transformer, but will automatically transfer back to the inverter when 125 VDC is restored.

B. Must be manually transferred to the alternate supply transformer, and must be manually transferred back to the inverter when 125 VDC is restored.

C. Will automatically transfer to the alternate supply transformer, but must be manually transferred back to the inverter when 125 VDC is restored.

D. Will automatically transfer to the alternate supply transformer, and will automatically transfer back to the inverter when 125 VDC is restored.

Proposed Answer: C

Technical Reference(s): RGE-9, Training System Description, LP R0901C

Learning Objective: _____ (As available)
APE: 057 Loss of Vital AC Electrical Instrument Bus AA1. Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: (CFR 41.7 / 45.5 / 45.6) AA1.01 Manual inverter swapping.

Question Source:	Bank #	X (INPO Bank 1172)
	Modified Bank #	_____
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	068AK3.02	
	Importance Rating	3.7	4.1

Proposed Question: 13/7

The operating crew discovers toxic gas in the Control Room requiring the evacuation of the shift. The operators implement AP-CR.1, "Control Room Inaccessibility," and verify that the turbine stop valves are closed. Which ONE of the following explains the basis for this step?

A. To ensure that the turbine is off line before departure from the control room since there is no turbine trip capability outside the control room.

B. To prevent a low pressure safety injection, since the plant would cool down quickly and operators would not be able to operate charging pumps locally for some time.

C. To prevent the uncontrolled cooldown of the RCS due to continued steam flow to the main turbine.

D. To ensure that steam generator feed flow can be adequately controlled through use of the AFW pumps at the local operating panels.

Proposed Answer: C

Technical Reference(s): AP-CR.1

Learning Objective: _____ (As available)
AK3. Knowledge of the reasons for the following responses as they apply to the Control Room Evacuation: (CFR 41.5,41.10 / 45.6 / 45.13) AK3.02 System response to turbine trip.

Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	5, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	069AK3.01	
	Importance Rating	3.8	4.2

Proposed Question: 14/8

Given the following plant conditions:

- The plant had been operating at 100% power for 350 days
- The plant tripped due to a LOCA in containment
- Containment temperature is 190 degrees F.
- Containment pressure is 29 psig.

The operators enter FR-Z.1, "Response to High Containment Pressure," based on an Orange path. This procedure directs actions to:

A. Ensure appropriate containment penetrations are isolated and limit containment internal pressure.

B. Mitigate the consequences of exceeding the containment design pressure of 60 psig.

C. Take manual control of containment spray pumps to conserve RWST water inventory.

D. Mitigate the hazard of hydrogen detonation by reducing containment hydrogen concentration.

Proposed Answer: A

Technical Reference(s): LP RFRZ1C, FR-Z.1

Learning Objective: _____ (As available)
APE: 069 Loss of Containment Integrity AK3. Knowledge of the reasons for the following responses as they apply to the Loss of Containment Integrity: (CFR 41.5,41.10 / 45.6 / 45.13)
AK3.01 Guidance contained in EOP for loss of containment integrity.

Question Source:	Bank #	
	Modified Bank #	
	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	5, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	E01EK1.2	
	Importance Rating	3.1	3.5

Proposed Question: 16/9

Which of the following statements explains when an operator might enter ES-0.0, "Rediagnosis."

A. When directed to by any Foldout Page.

B. Only when a procedure transition directs the operator to ES-0.0.

C. To determine or confirm the most appropriate post-accident recovery procedure.

D. When the TSC makes a recommendation to enter ES-0.0.

Proposed Answer: C

Technical Reference(s): E-0, ES-0.0, Background information ES-0.0

Proposed references to be provided to applicants during examination: None

Learning Objective: LP RES00C, LO 1.3(C)
E01 Rediagnosis EK1Knowledge of the operational implications of the following concepts as they apply to the (Reactor Trip or Safety Injection/Rediagnosis) (CFR:41.8 / 41.10 / 45.3) EK1.2 Normal, abnormal and emergency operating procedures associated with Reactor Trip or Safety Injection/Rediagnosis.

Question Source:		
	Bank #	X (C000.0756)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	8, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	E02EK3.1	
	Importance Rating	3.3	3.6

Proposed Question: 17/10

ES-1.1, "SI Termination," is being performed. Normal letdown has just been established in accordance with Step 15. The following conditions exist:

- Containment pressure - 5 psig
- Containment radiation - 72 mrem/hr
- RCS pressure - 1240 psig and decreasing slowly
- Core exit Tcs - 540 degrees F.
- Pressurizer level - 42% and decreasing slowly

Which ONE of the following is required next?

A. Adjust charging pump speed as necessary.

B. Control pressurizer heaters and spray to stabilize RCS pressure.

C. Control steam dump and total feed flow as necessary to stabilize RCS temperature.

D. Manually operate SI pumps as necessary and go to E-1, "Loss of Reactor or Secondary Coolant," Step 1.

Proposed Answer: D

Technical Reference(s): ES-1.1

Proposed references to be provided to applicants during examination: ES-1.1, Steps 1-15; Fig. 1.0 Minimum Subcooling

Learning Objective: _____ (As available)
E02 SI Termination EK3. Knowledge of the reasons for the following responses as they apply to the SI Termination (CFR: 41.5 / 41.10, 45.6, 45.13) EK3.1 Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

Question Source:		
	Bank #	X (B000.0333)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

17/10

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5, 10
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	E02EA1.2	
	Importance Rating	3.6	3.8

Proposed Question: 18/11

Core exit thermocouples (CETs) are used for indication of subcooling along with other parameters for determination of SI termination criteria. What is the reason for using CETs?

A. Only indication of accurate temperature indication during natural circulation.

B. Only indication still operable during loss of coolant accidents.

C. Only indication of temperature using environmentally qualified indication.

D. Only indication of conditions of hottest point in RCS that is not as susceptible to single loop effects.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E02 SI Termination EA1. Ability to operate and / or monitor the following as they apply to the SI Termination (CFR: 41.7 / 45.5 / 45.6) EA1.2 Operating behavior characteristics of the facility.

Question Source:		
	Bank #	X (C002.0119)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E07EK1.3	
	Importance Rating	3.2	3.6

Proposed Question: 20/12

If responding to voids in the reactor vessel using FR-I.3, one of the mitigating strategies is to start a RCP. Which one of the following statements describes why this is done? RCP operation will:

A. Sweep voids out of the upper head and circulate them to the SG where they can be condensed.

B. Break up the large single void into many very small voids which can then be condensed in the coolant stream.

C. Initially cause a pressure surge through the RCS which will condense the voids.

D. Force cooling flow into the upper head and should condense any steam in the upper head.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E07 Saturated Core Cooling EK1.Knowledge of the operational implications of the following concepts as they apply to the (Saturated Core Cooling) (CFR: 41.8 / 41.10, 45.3)
EK1.3 Annunciators and conditions indicating signals, and remedial actions associated with the Saturated Core Cooling.

Question Source:		
	Bank #	X (C000.0854)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	8, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E08EA1.1	
	Importance Rating	3.8	3.8

Proposed Question: 21/13

While responding to a small-break LOCA, the control room operators determine that a red path exists on the integrity status tree. They check for possible sources of an excessive RCS cooldown and then check if SI can be terminated. Current subcooling does not support SI termination, but it does support the starting of an RCP. None are currently running. Which of the following explains how RCP operation under these conditions will decrease the likelihood of pressurized thermal shock?

A. Adds pump heat to the cold reactor coolant and thereby decreases the thermal stress.

B. Raises RCS pressure which reduces SI injection flow and thereby decreases the thermal stress.

C. Forces SI injection to the loops rather than the core and thereby decreases the thermal stress.

D. Mixes the cold incoming SI water and the warm reactor coolant and thereby decreases the thermal stress.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E08 Pressurized Thermal Shock EA1. Ability to operate and / or monitor the following as they apply to the Pressurized Thermal Shock (CFR:41.7 / 45.5 / 45.6) EA1.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Question Source:	Bank #	X (B000.0262)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E09EK1.1	
	Importance Rating	3.0	3.4

Proposed Question: 22/14

Which of the items below describes how to increase natural circulation flow?

A. Decrease RCS subcooling to increase RCS - S/G delta-T.

B. Increase pressurizer auxiliary spray to promote RCS - pressurizer mixing, and thus increase RCS - S/G delta-T.

C. Increase S/G ARV setpoint to a higher pressure, thus increasing the RCS - S/G delta-T.

D. Decrease S/G ARV setpoint to a lower pressure, thus increasing the RCS - S/G delta-T.

Proposed Answer: D

Technical Reference(s): ES-0.2

Learning Objective: _____ (As available)
E09 Natural Circulation Operations EK1. Knowledge of the operational implications of the following concepts as they apply to the Natural Circulation Operations (CFR: 41.8 / 41.10, 45.3)
EK1.1 Components, capacity, and function of emergency systems.

Question Source:		
	Bank #	
	Modified Bank #	X (B000.0020)
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	8, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E09EK2.1	
	Importance Rating	3.2	3.4

Proposed Question: 23/15

While performing ES-0.2, "Natural Circulation Cooldown," the Head Control Operator notices pressurizer level increasing rapidly. This is an indication of what occurrence?

A. The RCS is heating up due to decay heat.

B. SI has initiated and is injecting into the RCS.

C. Reactor vessel head water temperature has reached saturation and a steam bubble is forming in the head.

D. S/G inventory has decreased to the point that the secondary heat sink is degraded.

Proposed Answer: C

Technical Reference(s): ES-0.2

Proposed references to be provided to applicants during examination: Fig-3.0, Nat Circ C/D With Shroud Fans

Learning Objective: _____ (As available)
E09 Natural Circulation Operations EK2. Knowledge of the interrelations between the Natural Circulation Operations and the following: (CFR: 41.7 / 45.7) EK2.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Question Source:		
	Bank #	
	Modified Bank #	
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E14EK1.2	
	Importance Rating	3.2	3.7

Proposed Question: 24/16

Given the following plant conditions:

- A small break LOCA inside containment has occurred with concurrent loss of offsite power
- SI has been manually initiated
- After the sequencing of safeguards equipment, none of the containment recirculation cooling fans (CRFCs) have started
- Attempts to start the CRFCs manually are unsuccessful

Which ONE of the following states the effect that the loss of these cooling fans have on steam generator level indication? Indicated S/G levels will be:

A. Unaffected by the given conditions.

B. Lower than actual level.

C. Higher than actual level.

D. Not able to be determined.

Proposed Answer: C

Learning Objective: _____ (As available)
E14 High Containment Pressure EK1. Knowledge of the operational implications of the following concepts as they apply to the High Containment Pressure (CFR: 41.8 / 41.10, 45.3)
EK1.2 Normal, abnormal and emergency operating procedures associated with High Containment Pressure.

Question Source:	Bank #	X (C000.1018)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	8, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	007EK2.02	
	Importance Rating	2.6	2.8

Proposed Question: 25/17

An automatic reactor trip signal on Train B of the reactor protection system will open reactor trip and bypass breakers by energizing the shunt trip coil on trip breaker B, de-energizing the UV coil on trip breaker B, and performing which ONE of the following:

A. De-energizing the UV coil on bypass breaker A.

B. Energizing the shunt trip on bypass breaker B.

C. Energizing the shunt trip on bypass breaker A.

D. Energizing the shunt trip on bypass breaker B and de-energizing the UV coil on bypass breaker B.

Proposed Answer: A

Technical Reference(s): RPS System Description

Learning Objective: _____ (As available)
EPE: 007 Reactor Trip EK2 Knowledge of the interrelations between a reactor trip and the following: (CFR 41.7 / 45.7) EK2.02 Breakers, relays and disconnects.

Question Source:	Bank #	X (INPO 4260)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	008G2.1.30	
	Importance Rating	3.9	3.4

Proposed Question: 26/18

A reactor trip and safety injection have occurred from a normal 100% lineup. Pressurizer PORV PCV-430 is closed, PORV PCV-431C is open and will not close. Pressurizer pressure is 1500 psig and decreasing. Pressurizer spray valve PCV-431A is open, spray valve PCV-431B is closed. Which ONE of the following actions is required for these conditions per EOP E-0?

A. Stop both RCPs and close both PORV block valves.

B. Stop both RCPs and close PORV PCV-431C block valve.

C. Stop 1A RCP and close PORV PCV-431C block valve.

D. Stop 1A RCP and close both PORV block valves.

Proposed Answer: C

Technical Reference(s): E-0

Learning Objective: _____ (As available)
APE: 008 Pressurizer (PZR) Vapor Space Accident 2.1.30 Ability to locate and operate components, including local controls.

Question Source:	Bank #	X (INPO Bank 2710)
	Modified Bank #	
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	10
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	009EK1.01	
	Importance Rating	4.2	4.7

Proposed Question: 27/19

During a small break LOCA on a cold leg, a condition is reached where the vessel level continues to decrease below the hot leg penetrations and boiling in the core is the means of transporting the core heat to the steam bubble in the reactor vessel plenum and hot legs. A fixed pressure differential exists between the core and the break and is maintained by the loop seal. Since full natural circulation is impeded, what is the heat removal mechanism for the RCS?

A. Slug flow via the cold legs through the loop seal and flashing across the cold leg break.

B. Partial natural circulation flow characterized by liquid pulses flowing from the cold leg over the steam generator U-tubes and into the hot legs.

C. Condensation of vapor in the vessel head, which is cooled by fans in the containment, and draining back to the core.

D. Condensation of vapor from the bubble at the hot leg side of the steam generator U-tubes, which then drains back to the core via the hot legs.

Proposed Answer: D

Technical Reference(s): Background information E-1

Learning Objective: _____ (As available)
009 Small Break LOCA K1 Knowledge of the operational implications of the following concepts as they apply to the small break LOCA: EK1.01 Natural circulation and cooling, including reflux boiling.

Question Source:	Bank #	X (INPO Bank 3478)
	Modified Bank #	
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	8, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	009EK2.03	
	Importance Rating	3.0	3.3

Proposed Question: 28/20

Assume the plant has just experienced a small break LOCA and is in the process of performing a natural circulation cooldown. Which of the following is NOT an indication of natural circulation cooling in accordance with Attachment NC to the EOPs?

A. S/G levels - stable or increasing

B. RCS hot leg temperatures - stable or decreasing

C. RCS cold leg temperatures - at saturation temperature for S/G pressure

D. Core exit thermocouples - stable or decreasing

Proposed Answer: A

Technical Reference(s): EOP Attachment NC

Learning Objective: _____ (As available)
009 Small Break LOCA K2 Knowledge of the interrelations between the small break LOCA and the following: EK2.03 S/Gs

Question Source:
Bank # X (C000.0931)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	2
	K/A #	027AK2.03	
	Importance Rating	2.6	2.8

Proposed Question: 30/21

The plant is at 94% power on coastdown at EOL. The following annunciators alarm almost simultaneously:

- F-18, PRZR Safety Valve Outlet High Temperature, 145 degrees F.
- AA-13, PRZR Safety Valve Position
- F-10, PRZR Low Pressure, 2185 psig

Shortly thereafter, the HCO reports PRZR pressure has stabilized at 2150 psig, with full heaters on and spray valves closed. What is(are) the next major action(s) the operators must take to correct this condition in accordance with AP-PRZR.1, "Abnormal Pressurizer Pressure?"

A. Trip the reactor, trip the associated RCP, and go to E-0, "Reactor Trip or Safety Injection."

B. Close both PORV block valves one at a time and check to see if relief line temperature decreases.

C. Verify RCS leakage is within ITS limits and check PRT indications.

D. Restore the inoperable relief valve to operable within 1 hour or close the associated block valve.

Proposed Answer: C

Technical Reference(s): AP-PRZR.1

Proposed references to be provided to applicants during examination: AP-PRZR.1

Learning Objective: _____ (As available)
APE: 027 Pressurizer Pressure Control System (PZR PCS) Malfunction
AK2. Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: (CFR 41.7/ 45.7) AK2.03 Controllers and positioners.

Question Source:		
	Bank #	X (B010.0022)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

30/21

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	033AA1.03	
	Importance Rating	3.0	3.2

Proposed Question: 31/22

Operators were performing a reactor shutdown. Reactor power was at 5% when the intermediate range channel N36 failed high. Which of the following statements describes how this failure affects the reactor shutdown and subsequent operation of the Nuclear Instrumentation System?

A. The reactor will trip on high IR flux, and source range NI's will have to be manually re-energized.

B. The reactor will trip on high IR flux, and source range NI's will re-energize when N35 reaches the proper setpoint.

C. The reactor will not trip, and source range NI's will have to be manually re-energized.

D. The reactor will not trip, and source range NI's will re-energize when N35 reaches the proper setpoint.

Proposed Answer: A

Technical Reference(s): NIS System Description

Learning Objective: _____ (As available)
APE: 033 Loss of Intermediate Range Nuclear Instrumentation AA1. Ability to operate and/or monitor the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: (CFR 41.7 / 45.5 / 45.6) AA1.03 Manual restoration of power.

Question Source:		
	Bank #	X (INPO Bank 2823)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge ____
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 7
	55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	037AK3.08	
	Importance Rating	4.1	4.3

Proposed Question: 33/23

What is the basis for the RCP trip criteria of E-3 "Steam Generator Tube Rupture?"

A. To minimize coolant loss from the ruptured tube.

B. To minimize heat transfer to the ruptured S/G.

C. To prevent damage to the RCPs from loss of seal differential pressure.

D. To maintain RCPs in service if possible, but trip them if required by two phase flow separation/core uncovery considerations.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
APE: 037 Steam Generator (S/G) Tube Leak AK3. Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Leak: (CFR 41.5,41.10 / 45.6 / 45.13)
AK3.08 Criteria for securing RCP.

Question Source:	Bank #	X (C000.0896)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	5, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	038EK1.04	
	Importance Rating	3.1	3.3

Proposed Question: 34/24

During a natural circulation cooldown following a LOCA event, RCS inventory depletion continues, causing steam voids to form in the steam generator U-tubes. If the operators are unable to restore forced circulation, how will natural circulation (NC) be affected over the remaining course of the event?

A. NC will stop, reflux boiling will adequately remove decay heat until enough inventory is lost, then inadequate core cooling may occur.

B. NC will stop, all effective means of decay heat removal will be lost, and extensive core damage will soon occur.

C. NC will stop, but reflux boiling will adequately remove decay heat for as long as necessary, provided all control rods fully entered the core.

D. NC will decrease, but enough flow will continue to provide adequate decay heat removal for as long as necessary.

Proposed Answer: A

Technical Reference(s): _____

Learning Objective: _____ (As available)
EPE: 038 Steam Generator Tube Rupture (SGTR) EK1 Knowledge of the operational implications of the following concepts as they apply to the SGTR: (CFR 41.8 /41.10 / 45.3). EK1.04 Reflux boiling.

Question Source:	Bank #	X (INPO Bank 5543)
	Modified Bank #	_____
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	8, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	3	2
	K/A #	065AA1.02	
	Importance Rating	2.6	2.8

Proposed Question: 36/25

The plant is at 100% power steady state with normal Service Air and Instrument Air System lineups.

- Service Air Compressor is in standby
- C Instrument Air Compressor running
- A & B Instrument Air Compressors in "Auto" but not running

The following event then occurs. The Instrument Air header fails in the auxiliary building but is isolated within minutes by closing valve V-7350, IA to auxiliary building. Which one of the following correctly states the effect on continued plant operation assuming 3 to 4 days is required for repairs?

A. Repair time is irrelevant, the plant should have already tripped. Actions per E-0, "Reactor Trip or Safety Injection" should be taking place.

B. The plant will have to be shutdown because it has lost the ability for spray additive (sodium hydroxide) on the containment spray system.

C. The plant will have to be shut down because this event results in a loss of RCS inventory control, i.e., normal CVCS and excess letdown.

D. The plant can continue to operate at full power with charging pump suction manually aligned to RWST.

Proposed Answer: C

Technical Reference(s): LP RAP10C, AP-IA.1

Learning Objective: _____ (As available)
APE: 065 Loss of Instrument Air AA1. Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air: (CFR 41.7 / 45.5 /45.6) AA1.02 Components served by instrument air to minimize drain on system.

Question Source:		
	Bank #	X (B078.0014)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

36/25

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	E11EK3.3	
	Importance Rating	3.8	3.8

Proposed Question: 38/26

An un-isolable LOCA outside containment has occurred, and the control room operators have entered ECA-1.1, "Loss of Emergency Coolant Recirculation," because the leak cannot be isolated. The STA notes that some of the steps of ECA-1.1 do not appear to apply to present plant conditions. Specifically, he states that the steps to establish containment spray and containment cooler operation (Steps 5 & 7) do not make sense because containment conditions are normal. What operator actions are required?

A. Verify that the containment is not challenged and obtain management approval to continue with the procedure in effect.

B. Bypass the steps in question. EOP steps are performed at the discretion of the operator, who must exercise his judgment.

C. Hold at the step in effect until plant management and engineering staff can assess the impact of performing Steps 5 & 7 under these conditions.

D. Perform all procedure steps. Although they are not pertinent to current conditions, there are no directions indicating that they should be bypassed.

Proposed Answer: D
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
E11 Loss of Emergency Coolant Recirculation EK3. Knowledge of the reasons for the following responses as they apply to the (Loss of Emergency Coolant Recirculation) (CFR: 41.5 / 41.10, 45.6, 45.13) EK3.3 Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.

Question Source:	Bank #	X (B000.0280)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	5, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	E16EK3.2	
	Importance Rating	2.9	3.3

Proposed Question: 39/27

Which one of the following statements describes the major mitigating strategy of FR-Z.3, "Response to High Containment Radiation Level?"

A. The post-accident charcoal filters are checked to be in service (or placed in service) to reduce radiation levels.

B. Containment mini-purge (or purge) is initiated to reduce radiation levels.

C. The containment auxiliary charcoal filter system is placed in service to reduce radiation levels.

D. Containment spray is checked to be in service (or initiated) to reduce containment iodine levels.

Proposed Answer: A

Technical Reference(s): _____

Learning Objective: _____ (As available)
E16 High Containment Radiation EK3. Knowledge of the reasons for the following responses as they apply to the (High Containment Radiation) (CFR:41.5 / 41.10, 45.6, 45.13) EK3.2 Normal, abnormal and emergency operating procedures associated with (High Containment Radiation).

Question Source:	Bank #	X (C000.0861)
	Modified Bank #	_____
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	5, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	E16EA1.1	
	Importance Rating	3.1	3.2

Proposed Question: 40/28 (Common K/A, RO only)

The following plant conditions exist with the unit in Mode 2:

- A LOCA has occurred and the operators responded using the EOP network
- Containment radiation levels are 2.3E4 R/hr and the operators entered FR-Z.3, "Response to High Containment Radiation Level"
- CVI valve status lights are BRIGHT
- The HCO reports that the control room emergency return fan is not running

Given these conditions, what is the primary concern of the operators regarding FR-Z.3?

A. Prevent a release from the containment.

B. Ensure containment atmosphere filtration is in service.

C. Ensure control room emergency ventilation is in Mode F.

D. Ensure containment spray is in service for containment heat removal.

Proposed Answer: B

Technical Reference(s): FR-Z.3, LP FR-Z.3, Containment Ventilation Trng. System Desc.

Learning Objective: _____ (As available)
E16 High Containment Radiation EA1. Ability to operate and / or monitor the following as they apply to the (High Containment Radiation) (CFR: 41.7 / 45.5 / 45.6) EA1.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Question Source:	Bank #	
	Modified Bank #	X (INPO Bank 4851)
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	7
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	3	3
	K/A #	028AK2.03	
	Importance Rating	2.6	2.9

Proposed Question: 42/29

The plant is at 100% power. All control systems are in a normal/automatic lineup. The controlling PRZR level transmitter , LT428, sticks at 50% level. Assuming no operator action, what effect will this failure have on the PRZR level control system and the CVCS system when power is reduced to 30%?

A. Charging and letdown will remain balanced and maintain level at 49%.

B. Charging flow will increase causing level to increase to the trip setpoint.

C. Charging flow will decrease causing level to decrease until letdown is isolated and heaters are tripped.

D. Charging flow will increase until the flow signal error equals the level signal error and will control at a slightly higher level.

Proposed Answer: C

Technical Reference(s): _____

Learning Objective: _____ (As available)
APE: 028 Pressurizer (PZR) Level Control Malfunction AK2. Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: (CFR 41.7 / 45.7)
AK2.03 Controllers and positioners.

Question Source:	Bank #	X (B010.0026)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	001K1.04	
	Importance Rating	3.2	3.4

Proposed Question: 44/30

A narrow range T-hot RTD failed high at power. Which one of the following switch manipulations must be done to restore all rod motion capability?

A. In the RIL rack place the Delta-T Defeat switch to the position corresponding to the failed channel.

B. In the steam dump rack place the Tavg Defeat switch to the position corresponding to the failed channel.

C. Place the Overpower Rod Stop switch to the position corresponding to the failed channel.

D. Place both the Delta-T Defeat and the Tavg Defeat switches to the position corresponding to the failed channel.

Proposed Answer: B

Technical Reference(s): _____

Learning Objective: _____ (As available)
System: 001 Control Rod Drive System K1Knowledge of the physical connections and/or cause -effect relationships between the CRDS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.04 RCS.

Question Source:	Bank #	X (C016.0083)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____
10 CFR Part 55 Content:	55.41	2 to 9
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	003K3.04	
	Importance Rating	3.9	4.2

Proposed Question: 45/31

Given the following plant conditions:

- Unit start-up in progress per O-1.2, "Plant Startup From Hot Shutdown to Full Load"
- Reactor power is 20%
- Generator ready to synchronize to the grid
- "A" RCP trips

Which one of the following is correct based on the above plant conditions?

A. The reactor will remain at power because power is greater than permissive P-7.

B. The reactor will remain at power because power is less than permissive P-8.

C. The reactor will trip because power is greater than permissive P-7.

D. The reactor will trip because power is less than permissive P-8.

Proposed Answer: B

Technical Reference(s): _____

Learning Objective: _____ (As available)
003 Reactor Coolant Pump System (RCPS) K3 Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: (CFR: 41.7 / 45.6) K3.04 RPS.

Question Source:	Bank #	X (C012.0062)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	003A1.05	
	Importance Rating	3.4	3.5

Proposed Question: 46/32

For a trip of "A" Reactor Coolant Pump below P-8, which of the following correctly describes the effect on the "A" S/G level immediately after the trip? "A" S/G level:

A. Decreases to follow the new programmed level for the lower value of turbine impulse chamber pressure.

B. Increases in response to a higher steam flow as sensed from a lower steam pressure.

C. Decreases due to the density increase of the water in the downcomer being cooled by colder RCS water.

D. Increases due to an increased steam flow to compensate for a lower enthalpy rise across the U-tubes.

Proposed Answer: C

Technical Reference(s): _____

Learning Objective: _____ (As available)
003 Reactor Coolant Pump System (RCPS) A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: (CFR: 41.5 /45.5) A1.05 RCS flow.

Question Source:	Bank #	X (C331.0217)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	X
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	004K5.14	
	Importance Rating	2.5	2.9

Proposed Question: 47/33

Control room operators are preparing to purge the pressurizer steam space to the VCT, to vent non-condensable gases from the RCS. What precaution is required to ensure effective reactivity control?

A. The VCT should be vented during the purge to ensure that the steam does not add positive reactivity.

B. The Rod Control System should be placed in "manual" control since excessive rod motion may occur from boron concentrating in the VCT.

C. The RCS must be periodically sampled to ensure that it is not diluted below SDM limits.

D. Operators should secure pressurizer heaters to minimize the concentration of boron in the pressurizer water volume.

Proposed Answer: C

Technical Reference(s): S-3.3K Pressurizer Steam Space Purge to the VCT

Learning Objective: _____ (As available)
004 Chemical and Volume Control System (CVCS) K5 Knowledge of the operational implications of the following concepts as they apply to the CVCS: (CFR:41.5/45.7) K5.14 Reduction process of gas concentration in RCS: vent-accumulated non-condensable gases from PZR bubble space, depressurized during cooldown or by alternately heating and cooling (spray) within allowed pressure band (drive more gas out of solution).

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	004A1.05	
	Importance Rating	2.9	3.2

Proposed Question: 48/34

The plant is at 6% power during reactor startup near the end of the operating cycle. Operators are warming the steam lines by bypassing the MSIVs. The 1A feed regulating valve fails and slowly drifts open, increasing feed water flow to the 1A S/G. How does reactor power and the CVCS system initially respond to this transient ?

A. Power increases and charging flow increases.

B. Power increases and charging flow decreases.

C. Power decreases and charging flow increases.

D. Power decreases and charging flow decreases.

Proposed Answer: A

Technical Reference(s): _____

Learning Objective: _____ (As available)
System 004 Chemical and Volume Control System. A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: (CFR: 41.5/45.5) A1.05 S/G pressure and level.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	013K2.01	
	Importance Rating	3.6	3.8

Proposed Question: 49/35

The plant is at 100% power during normal operations. Procedure PT-12.1, "Emergency Diesel Generator 1A" is being conducted. The 1A D/G has been loaded to 1975 KW for the past 20 minutes, supplying both busses 14 and 18, when an SI signal occurs. Which ONE of the following describes the actions that the operator must take with regard to 1A D/G and the associated breakers?

A. 1) Verify Bus 14 D/G breaker closed.
2) Adjust 1A D/G voltage to 480 volts using the manual rheostat.
3) When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ.

B. 1) Pull stop the Bus 18 D/G breaker.
2) Open the Bus 18 normal feed breaker.
3) Adjust 1A D/G voltage to 480 volts using the manual rheostat.
4) When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ.

C. 1) Adjust 1A D/G voltage to 480 volts using the manual rheostat.
2) When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ.

D. 1) Verify Bus 14 D/G breaker is closed.
2) Verify Bus 14 loads sequence on as necessary.

Proposed Answer: C

Learning Objective: _____ (As available)
013 Engineered Safety Features Actuation System (ESFAS) K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.01 ESFAS/safeguards equipment control.

Question Source:	Bank #	X (B064.0011)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	013K6.01	
	Importance Rating	2.7	3.1

Proposed Question: 50/36

The plant experienced a small break LOCA. On SI initiation, the "B" SI pump fails to start and cannot be manually started. Which of the following statements describes the response of the "C" SI pump discharge valves? Assume normal initial equipment alignment for power operations.

A. MOV-871A will close, MOV-871B will remain open.

B. MOV-871A and B will remain open.

C. MOV-871B will open, MOV-871A will remain closed.

D. MOV-871B will close, MOV-871A will remain open.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
013 Engineered Safety Features Actuation System (ESFAS). K6 Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: (CFR: 41.7 / 45.5 to 45.8) K6.01 Sensors and detectors.

Question Source:		
	Bank #	X (C006.0081)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	1
	K/A #	014K3.02	
	Importance Rating	2.5	2.8

Proposed Question: 51/37

During normal 100% power operations, the control room CRT screen for MRPI control rod indication fails. What operator actions are required due to this failure?

A. Be in Mode 2 with keff < 1 within 6 hours (LCO 3.03).

B. Verify rod position by movable incores once per 8 hours or reduce power to < 50% in 8 hours.

C. Reduce power to < 50% within 8 hours and be in mode 2 with keff < 1 in the following 6 hours.

D. Monitor rod position using PPCS.

Proposed Answer: D

Proposed references to be provided to applicants during examination: TS 3.1.7

Learning Objective: _____ (As available)
014 Rod Position Indication System (RPIS) K3 Knowledge of the effect that a loss or malfunction of the RPIS will have on the following: (CFR: 41.7 / 45.6) K3.02 Plant computer.

Question Source:		
	Bank #	X (B001.0015)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	017A2.01	
	Importance Rating	3.1	3.5

Proposed Question: 52/38

A core exit thermocouple on Train A has developed a short circuit and is not available for temperature monitoring. How would the control room operators determine this condition and what are the required actions, if any?

A. An Alarm Message on the Dataliner for CET Channel A; submit a report in 30 days for the inoperable channel.

B. An Individual Point Temperature and Status message on the Dataliner; no action is necessary.

C. An Alarm Message on the Dataliner for CET Channel A; no action is necessary.

D. An Individual Point Temperature and Status message on the Dataliner; submit a report in 30 days for the inoperable channel.

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
017 In-Core Temperature Monitor System (ITM) A2 Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5) A2.01 Thermocouple open and short circuits.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	022A4.04	
	Importance Rating	3.1	3.2

Proposed Question: 54/39

Following a LOCA, the operators are attempting to align CNMT spray for recirculation. RHR suction valves from CNMT sump B are open (MOVs 850 A&B, 851 A&B). Which ONE of the following states the conditions that must be met to open MOVs 857A, 857B, and 857C from the Main Control Board?

A. MOVs 897 AND 898 (SI Recirc) must be closed.

B. MOV 897 OR 898 (SI Recirc) must be closed
AND
MOVs 825A and 825B (SI pump suction valves) must be closed.

C. MOVs 897 AND 898 (SI Recirc) must be closed
AND
MOVs 896A and 896B (RWST to SI/CNMT spray) must be closed.

D. MOV 897 OR 898 (SI Recirc) must be closed
AND
MOV 896A or 896B (RWST to SI/CNMT spray) must be closed.

Proposed Answer: D

Technical Reference(s): System Description, CS System

Learning Objective: _____ (As available)
022 Containment Cooling System (CCS) A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.04 Valves in the CCS.

Question Source:
Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	1
	K/A #	026K4.05	
	Importance Rating	2.8	3.3

Proposed Question: 56/40

Which ONE of the following is used to ensure that the CNMT spray nozzles do not become clogged with debris during recirculation?

A. CNMT is inspected to ensure that no loose material exists which could plug the nozzles.

B. A combination of CNMT inspection and screens in sump B prevent debris from entering the system.

C. Strainers at the CNMt spray pump suction prevent debris from entering the spray nozzles.

D. Strainers at the RHR suction in sump B and at the CNMT spray pump suction prevent debris from entering the spray nozzles.

Proposed Answer: B

Technical Reference(s): TS 3.5.2 & 3.6.6, CS System Description

Learning Objective: _____ (As available)
026 Containment Spray System (CSS) K4 Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.05 Prevention of material from clogging nozzles during recirculation.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	059K4.16	
	Importance Rating	3.1	3.2

Proposed Question: 57/41

Which one of the following will result in an automatic trip of a main feedwater pump?

A. Pressurizer pressure of 1750 psig.

B. High S/G water level of 85%

C. Feedwater suction pressure less than 185 psig.

D. Reactor trip.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
059 Main Feedwater (MFW) System K4 Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.16 Automatic trips for MFW pumps.

Question Source:	Bank #	X (INPO Bank 5383)
	Modified Bank #	
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	059A2.05	
	Importance Rating	3.1	3.4

Proposed Question: 58/42

A plant startup from hot shutdown to full load was in progress. The intermediate and low power range trips have been blocked and the turbine is accelerating to synchronous speed. A leak develops at the running MFW pump discharge and the pump trips. Which ONE of the following actions are required per AP-FW.1, "Partial or Complete Loss of Main Feedwater,"in addition to starting all 3 AFW pumps and verifying flow?

A. Decrease power rapidly to less than 8%.

B. Verify turbine trip and go to AP-TURB.1, "Turbine Trip Without Reactor Trip Required."

C. Reduce reactor power to less than 2% and continue with AP-FW.1.

D. Enter E-0, "Reactor Trip or Safety Injection."

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
059 Main Feedwater (MFW) System A2 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13) A2.05 Rupture in MFW suction or discharge line.

Question Source:		
	Bank #	X (B000.0379)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	1
	K/A #	063K2.01	
	Importance Rating	2.9	3.1

Proposed Question: 59/43

Which one of the following is correct regarding the relationship between the AC and DC distribution systems?

A. The DC distribution system is the normal power supply (via the inverters) to all the AC Instrument Busses.

B. The DC distribution system has no direct connection to the AC distribution system, per the power source separation requirements of Tech Specs.

C. The DC distribution system, via the battery chargers, is used to provide the backup power supply to inverters 1A and 1B.

D. The DC distribution system is the normal power supply (via the inverters) to two of the AC Instrument Busses.

Proposed Answer: D

Technical Reference(s): LP R0901C, Inst Bus and DC Power Supply System

Learning Objective: _____ (As available)
063 D.C. Electrical Distribution K2 Knowledge of bus power supplies to the following: (CFR:41.7)
K2.01 Major DC loads.

Question Source:		
	Bank #	X (C063.0042)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	068A3.02	
	Importance Rating	3.6	3.6

Proposed Question: 60/44

Which ONE of the following process radiation monitors would automatically isolate or terminate a release if its alarm setpoint were reached?

A. RM-21: Turbine, Service, and AVT Building Retention Tank.

B. RM-20A: Spent Fuel Pit HX Service Water.

C. RM-13: Auxiliary Building Particulate.

D. RM-10A: CNMT Vent Iodine.

Proposed Answer: A

Technical Reference(s): RMS System Description

Learning Objective: _____ (As available)
068 Liquid Radwaste System (LRS) A3 Ability to monitor automatic operation of the Liquid Radwaste System including: (CFR: 41.7 / 45.5) A3.02 Automatic isolation.

Question Source: Bank # X (B068.0001)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis ____

10 CFR Part 55 Content: 55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	072K5.02	
	Importance Rating	2.5	3.2

Proposed Question: 61/45

The area radiation monitoring system provides _____ alarm(s) to plant personnel so that any personnel in the vicinity can _____ .

A. Visual and audible; identify and report the area of increased radiation levels.

B. Visual and audible; vacate the area of increased radiation levels.

C. Visual; vacate the area of increased radiation levels.

D. Audible; vacate the area of increased radiation levels.

Proposed Answer: B

Technical Reference(s): RMS System Description

Learning Objective: _____ (As available)
072 Area Radiation Monitoring (ARM) System K5 Knowledge of the operational implications of the following concepts as they apply to the ARM system: (CFR: 41.5 / 45.7) K5.02 Radiation intensity changes with source distance.

Question Source:
Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 5
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	072A3.01	
	Importance Rating	2.9	3.1

Proposed Question: 62/46

Given the following information:

- The plant is shut down for a forced outage
- RCS Tavg = 547 deg F.
- Pressurizer pressure = 2220 psig
- A containment ventilation mini-purge is in progress to improve containment air quality

Which one of the following conditions will cause the containment mini-purge isolation dampers (AOV-7445, 7478, 7970, 7971) to automatically close?

A. A fire breaks out in the charcoal filter bank at the suction of the charcoal filter fans.

B. The containment gas monitor R-12 goes into alarm.

C. The HCO manually starts containment spray pump 1A on recirc for a surveillance test.

D. Containment recirc fan 1B trips on overload.

Proposed Answer: B

Technical Reference(s): LP R2201C, Containment, Auxiliary and Control Bldg Ventilation Systems

Learning Objective: _____ (As available)
072 Area Radiation Monitoring (ARM) System A3 Ability to monitor automatic operation of the ARM system, including: (CFR: 41.7 / 45.5) A3.01 Changes in ventilation alignment.

Question Source: Bank # X (C029.0030)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	002K5.09	
	Importance Rating	3.7	4.2

Proposed Question: 63/47

Which one of the following explains the basis for the caution that pressurizer heaters should be restored within 1 hour of initiation of natural circulation?

A. Ambient losses could decrease PRZR pressure to the reactor trip setpoint.

B. Ambient losses could decrease PRZR pressure to the SI setpoint.

C. Ambient losses could decrease RCS to saturation.

D. Tech Specs require cooldown to < 350 degrees if the heaters are not restored in one hour.

Proposed Answer: C

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
002 Reactor Coolant System (RCS) K5 Knowledge of the operational implications of the following concepts as they apply to the RCS: (CFR: 41.5/ 45.7) K5.09 Relationship of pressure and temperature for water saturation and sub-cooling conditions.

Question Source:	Bank #	X (C000.0279)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	002K6.03	
	Importance Rating	3.1	3.6

Proposed Question: 64/48

Describe what occurs in the RVLIS if SI pumps or RHR pumps are running.

A. T-Cold input to RVLIS disabled and CETs are used for specific gravity calculation and density compensation.

B. RCP flow function generator is provided a delta-pressure input to compensate for additional head of RHR or SI pumps.

C. RCP delta-pressure signal is removed from RVLIS calculation.

D. Uses only RCS pressure as input for all density calculations.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
002 Reactor Coolant System (RCS) K6 Knowledge of the effect of a loss or malfunction on the following RCS components: (CFR: 41.7 / 45.7) K6.03 Reactor vessel level indication.

Question Source:		
	Bank #	X (C016.0130)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	010K2.01	
	Importance Rating	3.0	3.4

Proposed Question: 66/49

Which statement is correct concerning pressurizer heater power supplies when a safety injection signal is generated?

A. Both the proportional and backup heaters are on 480V safeguard busses, both are stripped from their respective busses on an SI, and both may be manually started when SI termination criteria have been met.

B. Both the proportional and backup heaters are on 480V safeguard busses, both are stripped from their respective busses on an SI, and both may be manually started when the SI signal is reset.

C. Both the proportional and backup heaters are on 480V safeguard busses, both are stripped from their respective busses on an SI, but only the proportional heaters are sequenced back onto the bus. The backup heaters may be manually started when the SI signal is reset.

D. The proportional heaters are on a 480V safeguard bus, the backup heaters are on a 480V non-safeguard bus; the proportional heaters are sequenced back onto the safeguard bus, the backup heaters may be manually restarted when the SI signal is reset.

Proposed Answer: B

Technical Reference(s): 480V Distribution System Description

Learning Objective: _____ (As available)
010 Pressurizer Pressure Control System (PZR PCS) K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.01 PZR heaters.

Question Source:	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	012A2.05	
	Importance Rating	3.1	3.2

Proposed Question: 67/50

Which one of the following explains the rod stop signal(s) that would occur if a NIS Power Range upper detector fails high with reactor power initially at 98%, and what is the operators' response?

A. OP Delta-T would be within 1.71 degrees F. of setpoint on 1/4 channels preventing AUTO outward motion only; restore AFD to target band within 15 minutes.

B. OT Delta-T would be within 1.71 degrees F. of setpoint on 1/4 channels preventing MANUAL outward motion only; restore AFD to target band within 15 minutes.

C. Power Range at 103% on 1/4 channels would prevent AUTO and MANUAL outward motion; enter ER-NIS.3, "PR Malfunction."

D. Power Range at 103% on 1/4 channels would prevent AUTO outward motion only; enter ER-NIS.3, "PR Malfunction."

Proposed Answer: C

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
012 Reactor Protection System A2 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5) A2.05 Faulty or erratic operation of detectors and function generators.

Question Source:		
	Bank #	X (B012.0002)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	029A1.02	
	Importance Rating	3.4	3.4

Proposed Question: 68/51

The plant is in Mode 5 with the Containment Shutdown Purge System in operation. What automatic actions will take place if there is a containment vent radiation monitor alarm?

A. Purge supply and exhaust containment isolation valves close in 2 seconds, all purge supply and exhaust fans trip, containment recirculation fan coolers 1A and 1C align for charcoal filtration.

B. Purge supply and exhaust containment isolation valves close in 2 seconds, all purge supply and exhaust fans trip.

C. Purge supply containment isolation valve closes in 2 seconds, purge supply fans trip, purge exhaust re-aligns through the charcoal filters.

D. Purge supply containment isolation valve closes in 2 seconds, purge supply fans trip, purge exhaust re-aligns through the charcoal filters, containment recirculation fan coolers 1A and 1C align for charcoal filtration.

Proposed Answer: B

Technical Reference(s): RGE-22 Containment Ventilation System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
029 Containment Purge System (CPS) A1 Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the Containment Purge System controls including: (CFR: 41.5 / 45.5) A1.02 Radiation levels.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	5
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	033A1.02	
	Importance Rating	2.8	3.3

Proposed Question: 69/52

Which one of the following is true concerning process radiation monitors RM-20A and RM-20B?

A. The monitors alarm locally and cause no automatic actions.

B. The monitors monitor service water from the outlet of the spent fuel pit heat exchangers to warn of a potential release to the auxiliary building.

C. The monitors have different background levels and different setpoints due to different flow capacities.

D. The monitors are redundant to the spent fuel pit low level alarm since a large heat exchanger leak is necessary to alarm the monitors.

Proposed Answer: C

Technical Reference(s): RMS and Spent Fuel Pool Cooling System Descriptions

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
033 Spent Fuel Pool Cooling System (SFPCS) A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Spent Fuel Pool Cooling System operating the controls including: (CFR: 41.5 / 45.5) A1.02 Radiation monitoring systems

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	035K5.01	
	Importance Rating	3.4	3.9

Proposed Question: 70/53

The plant is operating normally at 100% power. A single steam dump valve fails open. Which one of the following describes the initial plant response with no operator action?

A. The MSIVs will shut on high steamline flow.

B. T-avg decreases, reactor power increases but remains below trip setpoint.

C. The reactor will trip on OP delta T in approximately 5 minutes followed by low pressurizer pressure SI a minute or so later.

D. Turbine load decreases as available steam bypasses to the condenser; reactor power is unchanged.

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
035 Steam Generator System (S/GS) K5 Knowledge of operational implications of the following concepts as the apply to the S/GS: (CFR: 41.5 / 45.7) K5.01 Effect of secondary parameters, pressure, and temperature on reactivity.

Question Source:		
	Bank #	X (C331.0216)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	039K1.04	
	Importance Rating	3.1	3.1

Proposed Question: 71/54

With respect to the inherent stability of the plant, the expression "Reactor power follows steam demand," is sometimes used. Which one of the following statements explains this principle with respect to a steam flow increase?

A. Increased heat transfer out of the primary will cause Tavg to decrease adding positive reactivity causing reactor power to increase.

B. Increased heat transfer out of the primary will cause Tavg to decrease adding negative reactivity causing reactor power to increase.

C. Increased heat transfer out of the primary will cause Tavg to increase adding positive reactivity causing reactor power to increase.

D. Increased heat transfer out of the primary will cause Tavg to increase adding negative reactivity causing reactor power to increase.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
039 Main and Reheat Steam System (MRSS) K1Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.04 RCS temperature monitoring and control.

Question Source:		
	Bank #	X (C331.0001)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge _____
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 2
	55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	073K3.01	
	Importance Rating	3.6	4.2

Proposed Question: 73/55

During operation at hot shutdown conditions, R-19 "S/G blowdown monitor" fails. Assuming blowdown is aligned for discharge to the lake and S/G secondary activity is 0.02 uc/gm, what actions must be taken?

A. Releases may continue provided that grab samples are analyzed for isotopic concentrations every 24 hours. Restore R-19 to service within 30 days.

B. Releases may continue provided that grab samples are analyzed for isotopic concentrations every 8 hours. Restore R-19 to service within 30 days.

C. None. Releases may continue provided R-21 "retention tank monitor" is in service.

D. Terminate the release by closing the S/G blowdown valves. Releases may not be continued until R-19 is restored to service.

Proposed Answer: B

Technical Reference(s): ODCM Section 3.1

Proposed references to be provided to applicants during examination: ODCM Sect. 3.1

Learning Objective: _____ (As available)
073 Process Radiation Monitoring (PRM) System K3 Knowledge of the effect that a loss or malfunction of the PRM system will have on the following: (CFR: 41.7 / 45.6) K3.01 Radioactive effluent releases.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	075A4.01	
	Importance Rating	3.2	3.2

Proposed Question: 74/56

The operators are swapping running service water pumps. After starting the "A" pump and then stopping the "B" pump, the following conditions exist:

- Service water header "A" pressure prior to swapping pumps - 60 psig
- Service water header "A" pressure after swapping pumps - 43 psig
- "B" service water pump rotating slowly in the reverse direction
- "A" service water pump operating normally
- "C" service water pump operating normally
- "D" service water pump operating normally

Which ONE of the following action(s) shall be performed?

A. Isolate the "A" service water pump; restart the "B" service water pump.

B. Isolate the "B" service water pump and declare it inoperable.

C. Initiate a plant shutdown in accordance with O-2.1, "Normal Shutdown to Hot Shutdown."

D. Trip the reactor and enter EOP E-0.

Proposed Answer: B

Technical Reference(s): SWS System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: 075 Circulating Water System A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 /45.5 to 45.8) A4.01 Emergency/essential SWS pumps.

Question Source:	Bank #	X	(C076.0032)
	Modified Bank #		(Note changes or attach parent)
	New		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis	X	
10 CFR Part 55 Content:	55.41	7	
	55.43		

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	079K4.01	
	Importance Rating	2.9	3.2

Proposed Question: 75/57

The unit is at cold shutdown for maintenance on a RCP. The following conditions exist:

- The "A" RCP is on hold for seal repair
- The "C" instrument and service air compressors are both OOS
- Instrument air compressors "A" and "B" are running with local control in "constant run"
- The diesel air compressor is aligned to service air per T-2F, "Backup Air Supply"

Subsequently, annunciator H-16, "Instrument Air Comp," alarms followed by H-8, "Instrument Air Lo Press 100 psig." A MCB check reveals that the "B" instrument air compressor has tripped and instrument air header pressure is at 95 psig and slowly decreasing. Assuming no operator action and header pressure continues to slowly decrease, which one of the following describes the instrument and service air system response?

A. The "A" instrument air compressor will load at 90 psig and should return instrument air header pressure to normal.

B. The "B" instrument air compressor will restart as soon as compressor temperatures return to normal and instrument air pressure should return to normal.

C. The service air crosstie valve AOV-5251 should open and supply the instrument air header with backup air.

D. Instrument air header pressure will continue to decrease until the containment instrument air isolation valve AOV-5392 automatically closes.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
079 Station Air System (SAS) K4 Knowledge of SAS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.01 Cross-connect with IAS.

Question Source:		
	Bank #	X (B078.0013)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

75/57

Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	079A2.01	
	Importance Rating	2.9	3.2

Proposed Question: 76/58

Given the following conditions:

- A loss of all AC power has occurred
- Both diesel generators failed to start
- ER-ELEC.5, "Security Diesel Feed to Bus 13," is being used to supply bus 13 from the security diesel generator
- Diesel air compressor is OOS

Which ONE of the following describes the purpose for supplying power to bus 13?

A. The service air compressor is started on bus 13 so service air can be cross-connected with instrument air which will be used to allow control of the TDAFW pump.

B. The service air compressor is started on bus 13 so service air can be cross-connected with instrument air which will be used to isolate RCP seal return.

C. A reactor compartment cooling fan can be started to provide cooling to the source range NIS detectors.

D. The instrument air compressor is started to allow control of the TDAFW pump.

Proposed Answer: B

Learning Objective: _____ (As available)
079 Station Air System (SAS) A2 Ability to (a) predict the impacts of the following malfunctions or operations on the SAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 /43.5/ 45.3 / 45.13) A2.01 Cross-connection with IAS.

Question Source:		
	Bank #	X (B079.0001)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	086K1.02	
	Importance Rating	2.7	3.2

Proposed Question: 77/59

The plant has experienced a loss of all AC power and the CRF has entered ECA-0.0, "Loss of All AC Power." Operators have verified that power was restored to bus 17, but only one service water pump properly restarted on that bus. Bus 18 is de-energized as a result of an unknown electrical fault. What actions shall operators take to ensure adequate cooling to both emergency diesel generators (EDGs)?

A. One service water pump is adequate cooling for both EDGs; post an auxiliary operator to monitor EDG temperatures.

B. Secure the operating service water pump and enter ER-D/G.2, "Alternate Cooling for Emergency D/Gs."

C. Manually close the breaker to energize bus 18 from the 1A EDG and start a service water pump on that bus.

D. Enter ER-D/G.2, "Alternate Cooling for Emergency D/Gs," and provide alternate cooling to the 1A EDG.

Proposed Answer: D

Technical Reference(s): ER-D/G.2, SWS System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
086 Fire Protection System (FPS) K1 Knowledge of the physical connections and/or cause-effect relationships between the Fire Protection System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.02 Raw service water.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	2-9
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	086A3.01	
	Importance Rating	2.9	3.3

Proposed Question: 78/60

The following plant conditions exist:

- Fire protection suppression systems have actuated for a transformer fire.
- Fire header pressure has remained above 90 psig.

What fire system pump(s) is(are) expected to be running?

A. The motor-driven pump

B. The diesel-driven pump

C. Both the motor-driven and diesel-driven pumps

D. Neither the motor-driven nor the diesel-driven pump

Proposed Answer: C

Technical Reference(s): Fire Protection System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
086 Fire Protection System (FPS) A3 Ability to monitor automatic operation of the Fire Protection System including: (CFR: 41.7 / 45.5) A3.01 Starting mechanisms of fire water pumps

Question Source:		
	Bank #	X (C086.0007)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	3	2
	K/A #	103K3.01	
	Importance Rating	3.3	3.7

Proposed Question: 79/61

The plant is in Mode 6 and core alterations are in progress. Which ONE of the following conditions will result in a loss of containment integrity?

A. Operation of an operable Containment Purge and Exhaust System.

B. Movement of maintenance personnel through the personnel air lock doors.

C. The equipment hatch removed and a closure plate installed that restricts air flow from containment.

D. The "A" S/G secondary manways removed and the associated atmospheric relief valve removed for maintenance.

Proposed Answer: D

Technical Reference(s): O-15.2 Containment Integrity

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
103 Containment System K3 Knowledge of the effect that a loss or malfunction of the containment system will have on the following: (CFR: 41.7 / 45.6) K3.01 Loss of containment integrity under shutdown conditions.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	3	3
	K/A #	005K6.03	
	Importance Rating	2.5	2.6

Proposed Question: 80/62

The plant is in Mode 6 with the vessel head installed. Mid-loop operations are in progress. The S/G hot and cold leg manways are removed. S/G nozzle dams are installed on the hot legs but not on the cold legs. No vents are open in the RCS. The plant experiences a loss of RHR cooling. Which one of the following will occur as a long-term result of this event if no operator actions are taken?

A. Steam formation in the upper head will depress vessel level and displace water out the S/G cold leg nozzles.

B. Steam formation in the hot legs will cause erroneous reactor vessel level indication.

C. Steam formation in the upper head will increase pressure enough to blow out one or more S/G hot leg nozzle dams.

D. Steam formation in the cold legs and resultant steam expansion will displace water out the S/G hot leg manways.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
005 Residual Heat Removal System (RHRS) K6 Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: (CFR: 41.7 / 45.7) K6.03 RHR heat exchanger.

Question Source:		
	Bank #	X (INPO Bank 9241)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge _____
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 7
	55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	3	3
	K/A #	041A3.03	
	Importance Rating	2.7	2.8

Proposed Question: 81/63

The plant is operating at full power with the Steam Dump Mode Selector Switch in AUTO and control rods in MANUAL, when a step load decrease of 15% occurs. Which statement below is correct with regard to operation of the condenser steam dump valves for these conditions?

A. Steam dumps will modulate open if the temperature error exceeds 6 deg F.

B. No action will occur because the load rejection controller has not armed.

C. Steam dump valve groups A & B will immediately go full open to match T-avg with T-ref.

D. All steam dump valve groups will go full open to reduce T-avg to match T-ref.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
041 Steam Dump System (SDS) and Turbine Bypass Control A3 Ability to monitor automatic operation of the SDS, including: (CFR: 41.7 / 45.5) A3.03 Steam flow.

Question Source:		
	Bank #	X (C041.0019)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	3	3
	K/A #	076K2.01	
	Importance Rating	2.7	2.7

Proposed Question: 83/64

Which ONE of the following statements describes how the service water (SW) system responds to an undervoltage condition on bus 17/18 (No SI signal present)?

A. Selected SW pump starts immediately after diesel generator supply breaker closes.

B. Selected SW pump starts immediately after the normal supply breaker to bus 17 or 18 opens.

C. Selected SW pump starts 40 seconds after bus 17 or 18 diesel generator supply breaker closes.

D. Selected SW pump starts 40 seconds after the normal supply breaker to bus 17 or 18 opens.

Proposed Answer: C

Technical Reference(s): SWS System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
076 Service Water System (SWS) K2 Knowledge of bus power supplies to the following: (41.7)
K2.01 Service water.

Question Source:		
	Bank #	X (C076.0019)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	1	1
	K/A #	G2.1.31	
	Importance Rating	4.2	3.9

Proposed Question: 85/65

Given the following conditions:

- The plant is at 100% reactor power
- Service water (SW) pumps 'A' and 'D' are in service
- SW pump 'B' is out of service for routine maintenance
- SW pumps 'C' and 'D' are selected for Auto Start

The plant sustains a loss of offsite power and a SI signal. What service water MCB indications would the operators expect to see if all equipment functioned as designed?

A. 12 SW isolation MOVs close after the D/Gs re-energize busses 14 and 16; SW pump 'C' starts 15 seconds after the D/Gs re-energize busses 17 and 18. No other SW pumps auto start.

B. 12 SW isolation MOVs close after the D/Gs re-energize busses 14 and 16; SW pumps 'C' and 'D' start 15 and 17 seconds respectively after the D/Gs re-energize busses 17 and 18.

C. Two AOVs fail open in the containment recirculation fan cooler return line; SW pump 'C' starts 15 seconds after the D/Gs re-energize busses 17 and 18. No other SW pumps auto start.

D. Two AOVs fail closed in the containment recirculation fan cooler return line; SW pumps 'C' and 'D' start 15 and 17 seconds respectively after the D/Gs re-energize busses 17 and 18.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.1.31 Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup. (CFR: 45.12)

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

85/65

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis __X__

10 CFR Part 55 Content: 55.41 __7__
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	1	1
	K/A #	G2.1.33	
	Importance Rating	3.4	4.0

Proposed Question: 86/66

The plant power level is being increased following repairs to 'A' main feed pump. Present power level is 93%. The 100% Delta-I target is -1%. The control operator initiates an excessive dilution resulting in auto insertion of control rods. The channels of Delta-Flux are observed to be -7%, -6.9%, -6.7%, and -6.9%. Which ONE of the following is the correct action for this condition?

A. Start boration to improve AFD but no LCO action statement is applicable.

B. Restore AFD to target band within 15 minutes or be < 90% power in the following 15 minutes.

C. Restore AFD to target band or be < 90% power in 15 minutes.

D. Restore AFD to target band or be < 90% power in 15 minutes and < 50% power in the following 30 minutes.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (CFR: 43.2 / 43.3 /45.3)

Question Source:	Bank #	X (C000.0708)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	____
	55.43	2, 3

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	2	2
	K/A #	G2.2.23	
	Importance Rating	2.6	3.8

Proposed Question: 88/67

The plant is at 100% power. 'A' MDAFW pump was declared inoperable at 0700 on 12/10. 'B' MDAFW pump was declared inoperable at 0700 on 12/12. Which ONE of the following is the date/time at which TS action statement 3.7.5G must be entered?

A. At 0700 on 12/13.

B. At 0700 on 12/15.

C. At 0700 on 12/17.

D. At 0700 on 12/19.

Proposed Answer: B

Explanation (Optional):Different question for RO to reduce difficulty.

Technical Reference(s): TS 3.7.5

Proposed references to be provided to applicants during examination: TS 3.7.5

Learning Objective: _____ (As available)
2.2.23 Ability to track limiting conditions for operations.

Question Source: Bank # X (B300.0056)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	2	2
	K/A #	G2.2.34	
	Importance Rating	2.8	3.2

Proposed Question: 92/68

The plant has been at steady state 100% power for two days following a refueling outage. With control rods in AUTO the "Control Banks Lo Limit" alarm is received, accompanied by inward rod motion. Which ONE of the following is the cause of this plant response?

A. Dilutions have over-compensated for xenon burnout.

B. An unsaturated standby mixed bed ion exchanger was placed in service.

C. PRZR back-up heaters were turned to equalize the boron concentration in response to a routine chemistry sample (PRZR - 840 ppm, RCS - 820 ppm).

D. A steam dump valve to the condenser was reported leaking excessively by the seat.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.2.34 Knowledge of the process for determining the internal and external effects on core reactivity (CFR: 43.6).

Question Source:		
	Bank #	X (B320.0049)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	6

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	3	3
	K/A #	G2.3.1	
	Importance Rating	2.6	3.0

Proposed Question: 93/69

An operator received the following radiation exposure at Ginna during the year. The exposure record until the last day of the year is:

- Deep Dose Equivalent (DDE) 275 mrem
- Lens Dose Equivalent (LDE) 15 mrem
- Committed Effective Dose Equivalent (CEDE) 120 mrem
- Shallow Dose Equivalent (SDE) 25 mrem
- Committed Dose Equivalent (CDE) 25 mrem

On the last day of the year the individual was requested to work in an area where the known radiation dose rate is 280 mrem/hr. If the worker takes 15 minutes in that radiation field to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

A. 345 mrem.

B. 465 mrem.

C. 515 mrem.

D. 530 mrem.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements. (CFR: 41.12/ 43.4/45.9 / 45.10).

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	12
	55.43	4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	3	3
	K/A #	G2.3.11	
	Importance Rating	2.7	3.2

Proposed Question: 96/70

Given the following:

- A gas decay tank release is in progress
- The auxiliary building filter switch is in the OUT position
- The 1A and 1B auxiliary building supply fans trip

Which ONE of the following statements is correct concerning the gas release?

A. It may continue with the above given conditions.

B. It must be manually terminated.

C. It is automatically terminated by RCV-14 closing.

D. It is automatically terminated by the gas decay tank pump tripping.

Proposed Answer: A
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.11 Ability to control radiation releases (CFR: 45.9 / 45.10).

Question Source: Bank # X (C029.0032)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10
55.43 4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	4	4
	K/A #	G2.4.23	
	Importance Rating	2.8	3.8

Proposed Question: 99/71

In many of the emergency procedures requiring a RCS depressurization (i.e., E-3, ES-1.2, FR-P.1, etc.), one of the requirements to stop the depressurization is pressurizer level. Which ONE of the following explains why high pressurizer level is a criterion for stopping a RCS depressurization? This pressurizer level ensures:

A. That pressurizer level is an accurate indication of RCS inventory.

B. Sufficient inventory to accommodate the collapse of an upper head steam bubble.

C. An adequate steam bubble for effective pressure control.

D. The RCS is water-solid when allowance is made for post-accident transmitter errors.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.4.23 Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations (CFR: 41.10 / 45.13).

Question Source:		
	Bank #	X (B000.0326)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	10
	55.43	_____

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	026AA2.04	
Importance Rating	2.5	

Proposed Question: -/72

While operating at 100% power, both component cooling water (CCW) pumps have tripped. The shift has been attempting to recover the CCW pumps for approximately one minute. What is the correct procedure action with respect to the reactor coolant pumps (RCPs)?

A. Ensure charging pumps are running and seal injection is increased to both RCPs.

B. Immediately trip the RCPs, then trip the reactor.

C. If any RCP motor bearing reaches 200 deg F, trip the reactor and trip the affected RCP(s).

D. If annunciator A-31, "CCW System Lo Flow," is lit, immediately trip the reactor and then the RCPs.

Proposed Answer: C

Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
APE: 026 Loss of Component Cooling Water (CCW) AA2. Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: (CFR:43.5 / 45.13) AA2.04 The normal values and upper limits for the temperatures of the components cooled by CCW.

Question Source:
Bank # X (B000.0882)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 10
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	040AA2.03	
	Importance Rating	4.6	

Proposed Question: -/73

Given the following:

- A reactor trip, SI, and main steam line isolation have all occurred
- RCS pressure is1820 psig and decreasing rapidly
- RCS temperature is 525 deg F and decreasing rapidly
- Containment humidity is increasing
- Secondary radiation level is normal
- Containment pressure is 2.1 psig and increasing
- Containment radiation level is normal

These conditions are indicative of a:

A. Small break LOCA.

B. Large break LOCA.

C. Faulted steam generator.

D. Steam generator tube rupture.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
APE: 040 Steam Line Rupture AA2. Ability to determine and interpret the following as they apply to the Steam Line Rupture: (CFR: 43.5 / 45.13) AA2.03 Difference between steam line rupture and LOCA.

Question Source:	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X (BV 2001 #16)
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	5
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	067AA2.10	
	Importance Rating	2.9	

Proposed Question: -/74

The plant is operating at 100% power. Performance Monitoring has just informed the Shift Supervisor that the "A" Diesel Generator Room Sprinkler System (S-12) has failed its PT. With respect to fire system operability, what are the limits for operation?

A. "A" Diesel Generator Room fire detection system is still operable. Place backup suppression equipment in the area AND repair within seven (7) days.

B. Establish a continuous fire watch with backup suppression equipment within one hour AND restore affected system to operable status within 14 days.

C. Establish an hourly fire watch with backup suppression equipment AND restore affected system to operable status within 14 days.

D. Perform a fire watch inspection of the affected area within one (1) hour AND every hour thereafter, AND place backup suppression equipment in the affected area within six (6) hours.

Proposed Answer: B

Technical Reference(s): _____

Proposed references to be provided to applicants during examination: TRM 3.7.2

Learning Objective: _____ (As available)
APE 067: Plant fire on site AA2. Ability to determine and interpret the following as they apply to the Plant Fire on Site: (CFR: 43.5 / 45.13) AA2.10 Time limit of long-term-breathing air system for control room.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	8
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	068G2.1.2	
	Importance Rating	3.0	

Proposed Question: -/75

Which ONE of the following explains the difference in intent between AP-CR.1, "Control Room Inaccessibility," and ER-Fire.1,"Alternative Shutdown for Control Complex Fire?"

A. AP-CR.1 borates to the HZP xenon-free boron concentration and maintains hot shutdown until the control room is habitable. ER-Fire.1 borates via MOV-856 and provides guidance to achieve cold shutdown.

B. AP-CR.1 borates to cold shutdown boron concentration and maintains cold shutdown until the control room is habitable. ER-Fire.1 borates via V-358 and provides guidance to achieve cold shutdown.

C. AP-CR.1 borates to the HZP xenon-free boron concentration and maintains cold shutdown until the control room is habitable. ER-Fire.1 borates via MOV-856 and provides guidance to achieve cold shutdown.

D. AP-CR.1 borates to cold shutdown boron concentration and maintains hot shutdown until the control room is habitable. ER-Fire.1 borates via V-358 and provides guidance to achieve cold shutdown.

Proposed Answer: D
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
APE: 068 Control Room Evacuation 2.1.2 Knowledge of operator responsibilities during all modes of plant operation. (CFR: 41.10 / 45.13)

Question Source:		
	Bank #	X (B000.0318)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	069G2.2.25	
	Importance Rating	2.5	

Proposed Question: -/76

Which ONE of the following is the basis for limiting containment pressure to less than or equal to 1.0 psig?

A. Ensures that any radioactive releases during the design basis LOCA will not exceed the 10 CFR 100 dose limits at the site boundary.

B. Ensures that the maximum peak containment internal pressure during a design basis accident will not exceed the containment design pressure.

C. Operation with containment pressure outside the limits of this LCO violates an initial condition assumed in the Offsite Dose Calculation Manual.

D. Operation within the limits of this LCO ensures that for consecutive design basis accidents, containment leakage will be within the design limits assumed in the accident analysis.

Proposed Answer: B
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
APE: 069 Loss of Containment Integrity 2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (CFR: 43.2)

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	9
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	029EA2.05	
	Importance Rating	3.4	

Proposed Question: -/77

Given the following:

- Crew has entered FR-S.1, "Response to Reactor Restart/ATWS"
- Emergency boration via MOV-350 is not working (MOV jammed)
- One charging pump and one boric acid pump are running

Given these conditions, which ONE of the following states the next method to be used to establish boric acid injection?

A. Open manual boration valve V-356.

B. Open the bypass around MOV-350.

C. Open the blender outlet to the charging pump suction (FCV-110B).

D. Initiate the "normal boration" flowpath.

Proposed Answer: D
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: FR-S.1 Steps 1-6

Learning Objective: _____ (As available)
EPE: 029 Anticipated Transient Without Scram (ATWS) EA2 Ability to determine or interpret the following as they apply to a ATWS: (CFR 43.5 / 45.13) EA2.05 System component valve position indications.

Question Source:		
	Bank #	X (C000.1016)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	6-8
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	3	
	K/A #	E15EA2.2	
	Importance Rating	2.9	

Proposed Question: -/78

Which ONE of the following statements describes the containment conditions if FR-Z.2, "Response to Containment Flooding," is entered? A water level greater than the design basis flood level indicates that:

A. Water from one of the stored water sources (RWST, accumulators, etc.) has been introduced into the containment sump.

B. Water from a natural disaster (severe thunderstorm, tornado, etc.) has been introduced into the containment sump.

C. Water volumes other than stored water sources (RWST, accumulators, etc.) have been introduced into the containment sump.

D. Water from the RCS (LOCA) has been introduced into the containment sump.

Proposed Answer: C
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
E15 Containment Flooding EA2. Ability to determine and interpret the following as they apply to the Containment Flooding (CFR: 43.5 / 45.13) EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Question Source:		
	Bank #	X (C000.0862)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	9-10
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	____
	Group #	1	___
	K/A #	001G2.4.4	_____
	Importance Rating	4.0	____

Proposed Question: -/79

During steady state operation at 100% reactor power, the Control Operator receives alarm C-22 "Rod Withdrawal Bank D High" with no known changes in parameters other than T-avg increasing, due to outward rod motion. What is the appropriate action in accordance with AP-RCC.1, "Continuous Control Rod Withdrawal/Insertion"?

A. Trip the reactor and go to E-0, "Reactor Trip or Safety Injection."

B. Place rods in manual, verify rods stopped moving, then trip the reactor and go to E-0.

C. Place rods in manual, verify rods stopped moving, then continue with AP-RCC.1.

D. Place rods in manual, if rods continue to move then do not trip the reactor, and continue with AP-RCC.1.

Proposed Answer: C
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
System: 001 Control Rod Drive System 2.4.4 Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. (CFR: 41.10 / 43.2 / 45.6)

Question Source:		
	Bank #	X (B001.0008)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	10
	55.43	____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	015G2.1.14	
	Importance Rating	2.5	

Proposed Question: -/80

Assume the plant is doing a reactor startup and is at 5% power when intermediate range (IR) channel N-35 failed high. Which ONE of the following explains the plant response, if any, and why?

A. Reactor trip since both the setpoint and coincidence requirements would be satisfied and no block conditions exist.

B. No effect since it takes a 2/2 coincidence for a trip.

C. No effect since IR trips would be blocked by this time during startup.

D. Reactor trip since both the setpoint and coincidence requirements would be satisfied and P-10 permissive conditions exist.

Proposed Answer: A
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
System: 015 Nuclear Instrumentation System (NIS) 2.1.14 Knowledge of system status criteria which require the notification of plant personnel. (CFR: 43.5 / 45.12)

Question Source:		
	Bank #	X (C015.0053)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	____
	Group #	1	___
	K/A #	017A4.01	____
	Importance Rating	3.8	____

Proposed Question: -/81

Given the following:

- The operators are responding to an event in accordance with FR-C.1, "Response To Inadequate Core Cooling," Step 23, "Check if RCPs Should Be Started."
- All RCPs are stopped and available; however, support systems have not been verified.
- All S/G NR water levels are 33%
- The HCO noted that there are three CETs indicating greater than 1200 deg F. and the following CET indications are displayed on the CET Display Panel:

CET Channel A	CET Channel B
CH A Avg 1185 deg F	CH B Avg 1192 deg F
High 1202 deg F H6	High 1204 deg F E10
Low 1172 deg F C11	Low 1182 deg F G4

Which ONE of the following actions is required to be performed?

A. Enter SACRG-1, "Severe Accident Control Room Guideline Initial Response," Step 1.

B. Depressurize all S/Gs to atmospheric pressure.

C. Start a RCP after verifying that an idle RCS cooling loop is available.

D. Start a RCP in both idle RCS cooling loops.

Proposed Answer: B
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: FR-C.1 pages 14-15

Learning Objective: _____ (As available)
017 In-Core Temperature Monitor System (ITM) A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.01 Actual in-core temperatures.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X (BV 2001 #59)

-181

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022K3.01	
	Importance Rating	2.9	

Proposed Question: -/82

The plant has experienced a LOCA, followed by an automatic SI initiation and containment spray actuation. The following conditions exist:

- 1D CRFC out of service for maintenance
- Containment pressure = 40 psig
- RHR pumps are in standby
- The normal supply breaker to Bus 16 opened due to an unknown bus fault

Which ONE of the following correctly describes plant conditions with regard to containment cooling?

A. There is adequate equipment available to maintain the containment peak pressure and temperature below design limits.

B. The containment peak pressure and temperature limits could be exceeded if 1D CRFC cannot be restored.

C. Operators should start an additional service water pump on Bus 14 to ensure adequate cooling water to operating CRFCs.

D. The CRF should check to see if containment spray pumps can be stopped to minimize the spraying of equipment in containment.

Proposed Answer: B
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
022 Containment Cooling System (CCS) K3 Knowledge of the effect that a loss or malfunction of the CCS will have on the following: (CFR: 41.7 / 45.6) K3.01Containment equipment subject to damage by high or low temperature, humidity, and pressure.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

-/82

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061K2.01	
	Importance Rating	3.2	

Proposed Question: -/83

Given the following plant conditions:

- Loss of all AC power has occurred
- Neither motor-driven AFW pump (MDAFP) is available

Which ONE of the following statements is true regarding the turbine-driven AFW pump (TDAFP)?

A. The TDAFP discharge MOV fails "as-is" on a loss of AC, and DC control power must be removed to operate the valve locally.

B. The TDAFP discharge AOVs fail open and must be operated locally.

C. The TDAFP steam admission valves are AC-powered and must be operated locally.

D. The DC-driven lube oil pump will have to be manually started and the TDAFP trip/throttle valve reset to start the pump.

Proposed Answer: B
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
061 Auxiliary/Emergency Feedwater (AFW) System K2 Knowledge of bus power supplies to the following: K2.01 AFW system MOVs.

Question Source:		
	Bank #	X (C061.0033)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061G2.1.23	
	Importance Rating	3.9	

Proposed Question: -/84

Procedure ER-AFW.1, "Alternate Water Supply To the AFW Pumps," provides for alternate sources of water to the S/Gs. Which of the following lists these sources in their proper order, from most to least preferred?

A. Service water, city fire water, any source of condensate grade water.

B. Service water, any source of condensate grade water, city fire water.

C. Any source of condensate grade water, service water, city fire water.

D. Any source of condensate grade water, city fire water, service water.

Proposed Answer: C
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
061 Auxiliary / Emergency Feedwater (AFW) System 2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. (CFR: 45.2 / 45.6)

Question Source:		
	Bank #	X (C061.0026)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	068K6.10	
	Importance Rating	2.5	

Proposed Question: -/85

At 0138, during a release of the 'A' monitor tank, R-18 alarms at 6.7E5 cpm. The HCO determined from the R-18 recorder that the monitor alarm setpoint was improperly set and that the R-18 reading had exceeded the alarm setpoint from the start of the release at 0010 until the spike which resulted in release termination. What are the HCO's actions for this situation?

A. Increase circulating water flow for maximum dilution, flush the R-18 detector with deionized water, refer to S-4.1U.

B. Verify RCV-018 closed, reset R-18 to correct setpoint, restart release.

C. Increase circulating water flow for maximum dilution, flush the R-18 detector with deionized water, refer to EPIP 1-0.

D. Verify RCV-018 closed, re-sample the 'A' monitor tank, notify SS to refer to EPIP 1-0 and O-9.3.

Proposed Answer: D
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: AR-RMS-18

Learning Objective: _____ (As available)
068 Liquid Radwaste System (LRS) K6 Knowledge of the effect of a loss or malfunction on the following will have on the Liquid Radwaste System: (CFR:41.7 / 45.7) K6.10 Radiation monitors.

Question Source:	Bank #	
	Modified Bank #	X (B068.0002)
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	071K1.05	
	Importance Rating	2.7	

Proposed Question: -/86

The plant is operating at 100% power when a faulty gas decay tank relief valve fails, causing an unplanned, monitored release of radioactivity. What information is obtained directly from the Main Weather (Meteorological) Tower in this situation for use in emergency dose assessment?

A. Wind speed and direction.

B. Atmospheric stability and radioactive plume travel times.

C. Wind direction and radioactive plume dispersion.

D. Wind speed, wind direction and affected emergency response planning areas.

Proposed Answer: A
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
071 Waste Gas Disposal System (WGDS) K1 Knowledge of the physical connections and/or cause-effect relationships between the Waste Gas Disposal System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.05 Meteorological tower.

Question Source:	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	9
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	071K4.06	
	Importance Rating	2.7	

Proposed Question: -/87

For a leaking waste gas decay tank relief valve, which RMS monitor will be the first to respond?

A. R-14A, Plant Vent High Range Effluent, Channel 9.

B. R-13, Auxiliary Building Particulate.

C. R-35, PASS Panel Wide Range Area Monitor.

D. R-14, Auxiliary Building Noble Gas.

Proposed Answer: D
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
071 Waste Gas Disposal System (WGDS) K4 Knowledge of design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.06 Sampling and monitoring of waste gas release tanks.

Question Source:		
	Bank #	X (C072.0019)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	___
	Group #	2	___
	K/A #	011A4.04	___
	Importance Rating	3.2	___

Proposed Question: -/88

Given the following conditions:

- Reactor power is 50%
- Pressurizer level is 43%
- Pressurizer level selector switch is in the normal position (428/427)

The operators receive the following alarms:

- A-4, "Regen HX Outlet Hi Temp"
- F-4, "Pressurizer Level Deviation"
- F-28, "Pressurizer High Level Channel Alert"

What malfunction caused these alarms and what are the operators' actions in response to the alarms?

A. LT-428 Pressurizer level failed high; take manual control of charging to increase charging pump speed, select alternate level channel for control.

B. LT-428 Pressurizer level failed high; take manual control of charging to reduce charging pump speed, verify backup heaters on.

C. LT-428 Pressurizer level failed low; take manual control of charging and control pressurizer level, restore letdown.

D. LT-428 Pressurizer level failed low; take manual control of charging and increase charging pump speed, restore proportional and backup heaters.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
011 Pressurizer Level Control System (PZR LCS) A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.04 Transfer of PZR LCS from automatic to manual control.

Question Source: Bank # X (B010.0027)

-/88

Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis __X__

10 CFR Part 55 Content: 55.41 __7__
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	011K6.04	
	Importance Rating	3.1	

Proposed Question: -/89

Given the following information:

- Reactor power = 98%
- Pressurizer level = 49%
- "A" charging pump is running in AUTO
- The Tavg input to pressurizer level has failed low

Which ONE of the following groups of actions describes the indications the Head Control Operator will see? (Assume no operator action)

A. "A" charging pump slows down, backup heaters are energized, pressurizer level begins to decrease, high level deviation alarm actuates.

B. "A" charging pump speeds up, backup heaters are deenergized, pressurizer level begins to increase, low level deviation alarm actuates.

C. "A" charging pump slows down, backup heaters are energized, pressurizer level begins to increase, low level deviation alarm actuates.

D. "A" charging pump speeds up, backup heaters are deenergized, pressurizer level begins to decrease, high level deviation alarm actuates.

Proposed Answer: A
Proposed references to be provided to applicants during examination: None

Learning Objective: 011 Pressurizer Level Control System (PZR LCS) K6 Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: (CFR: 41.7 / 45.7) K6.04 Operation of PZR level controllers.

Question Source:	Bank #	X (C011.0009)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	063G2.1.32	
	Importance Rating	3.4	

Proposed Question: -/90

A plant trip from full power and loss of all AC power has just occurred. How long will the batteries be able to supply adequate voltage to expected DC loads?

A. 2 hours.

B. 4 hours.

C. 8 hours.

D. 12 hours.

Proposed Answer: B
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
063 D.C. Electrical Distribution System 2.1.32 Ability to explain and apply all system limits and precautions. (CFR: 41.10 / 43.2 / 45.12)

Question Source:		
	Bank #	X (C063.0024)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	10
	55.43	2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	3	
	K/A #	007A4.01	
	Importance Rating	2.7	

Proposed Question: -/91

What design feature provides cooling of the PRT following a PORV discharge?

A. Finned heat transfer surface increases ambient losses.

B. CCW flow is automatically initiated to a cooling coil at 140 degrees F.

C. Hot cover gasses can be vented to the waste gas header.

D. Makeup water can be sprayed into the tank.

Proposed Answer: D
Technical Reference(s): PRZR & PRT System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
007 Pressurizer Relief Tank/Quench Tank System (PRTS) A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.01 PRT spray supply valve.

Question Source:		
	Bank #	X (INPO 8315)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	3	
K/A #	007A1.02	
Importance Rating	2.7	

Proposed Question: -/92

Which ONE of the following initially indicates that the PRT rupture disc has ruptured following a pressurizer PORV failing open?

A. PRT temperature increasing.

B. Pressurizer safety relief line temperature decreasing.

C. PRT low level.

D. Pressurizer level decreasing.

Proposed Answer: B
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
007 Pressurizer Relief Tank/Quench Tank System (PRTS) A1Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: (CFR: 41.5/45.5) A1.02 Maintaining quench tank pressure.

Question Source:
Bank # X (INPO 5465)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 5
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	3	
	K/A #	041K4.18	
	Importance Rating	3.4	

Proposed Question: -/93

Which of the following correctly describes the operation of the steam dump system in response to a reactor and turbine trip from full power?

A. Steam dumps modulate open then modulate shut to restore T-avg to 547 degrees F. with no deadband.

B. Steam dumps modulate open then modulate shut to restore T-avg to within a 6-degree F. deadband of 547 degrees F.

C. The first set of steam dumps trip open then all valves modulate to restore T-avg to 547 degrees F. with no deadband.

D. The first set of steam dumps trip open then all valves modulate to restore T-avg to within a 6-degree deadband of 547 degrees F.

Proposed Answer: C
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
041 Steam Dump System (SDS) and Turbine Bypass Control K4 Knowledge of SDS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.18 Turbine trip.

Question Source:		
	Bank #	X (C0410011)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	3	
	K/A #	076k1.16	
	Importance Rating	3.6	

Proposed Question: -/94

Under which ONE of the following conditions will a service water isolation signal be generated?

A. SI signal and emergency diesel generator start.

B. Undervoltage on bus 14 or 16 only.

C. Emergency diesel generator automatic start and undervoltage on bus 14 or 16.

D. SI signal with a normal supply breaker open on bus 14 or 16.

Proposed Answer: D
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
076 Service Water System (SWS) K1 Knowledge of the physical connections and/or cause-effect relationships between the SWS and the following systems: (CFR: 41.2 to 41.9 /45.7 to 45.8) K1.16 ESF.

Question Source:		
	Bank #	X (C076.0002)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	2-9
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	____
	Group #	1	____
	K/A #	G2.1.9	____
	Importance Rating	2.5	____

Proposed Question: -/95

An electrician desires to check the routing of a cable to the Main Control Board (MCB). Which ONE of the following statements describes the authorization requirement(s) needed for the electrician to trace the cable inside the MCB?

A. The job must be authorized by a work request and by use of the Access Authorization Log maintained by the Shift Supervisor.

B. Entry into the MCB must be approved by an on-shift licensed operator.

C. All electrical work inside the MCB requires Shift Supervisor authorization.

D. If other electricians contribute to the work, the HCO must ensure that they sign the Access Authorization Log.

Proposed Answer: C

Technical Reference(s): OPS-CONT-RM-CONDUCT

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.1.9 Ability to direct personnel activities inside the control room. (CFR: 45.5 / 45.12 / 45.13)

Question Source:		
	Bank #	____
	Modified Bank #	X (C310.0240)
	New	____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	10
	55.43	____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.30	
	Importance Rating	3.5	

Proposed Question: -/96

Given the following information:

- Reactor defueling operations are in progress
- The control room received a report that a fuel assembly has slipped come free of the manipulator crane and fallen back onto the core
- Personnel on the refueling phone circuit report that bubbles are rising from the core area.

Which ONE of the following actions shall be performed first by control room operators?

A. Sound the containment evacuation alarm.

B. Dispatch personnel to verify containment integrity is established.

C. Shift the auxiliary building ventilation lineup to place the charcoal filter in service.

D. Notify state and local authorities, and the NRC.

Proposed Answer: A
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.2.30 Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation. (CFR: 45.12)

Question Source:	Bank #	X (C000.0977)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.2	
	Importance Rating	2.5	

Proposed Question: -/97

A scheduled surveillance is required to be performed on a system in a radiation area. All radiological precautions have been taken and a pre-evolution brief has been completed. Using the As Low As Reasonably Achievable (ALARA) guidelines, which ONE of the following is the preferred method for completing this surveillance? (Consider only from the aspect of personnel exposure)

A. One individual performing the surveillance in a 90 mr/hr area for 60 minutes.

B. Two individuals performing the surveillance in a 90 mr/hr area for 35 minutes.

C. One individual installing shielding in a 90 mr/hr area for 30 minutes, then performing the surveillance in a 9 mr/hr area for 60 minutes.

D. Two individuals installing shielding in a 90 mr/hr area for 15 minutes, then both performing the surveillance in a 9 mr/hr area for 35 minutes.

Proposed Answer: C
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.2 Knowledge of facility ALARA program. (CFR: 41.12 /43.4 / 45.9/45.10)

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X (IP3 2001 #40)

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	12
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.10	
	Importance Rating	3.0	

Proposed Question: -/98

Which ONE of the following describes the requirements for the use of Alarm Response (AR) procedures?

A. AR procedures shall be referenced for unexpected alarms except for those determined by the Operations Department to be of a basic nature.

B. AR procedures shall be referenced for every alarm received during normal operations and unexpected alarms during abnormal or emergency events.

C. AR procedures shall be referenced for all unexpected alarms which involve systems with Tech Spec operability requirements.

D. AR procedures need not be referenced if one of the operators verbalizes the alarm to the control room and states whether it is expected or unexpected.

Proposed Answer: A

Technical Reference(s): OPS-MCB-ANNUNCIATORS

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.4.10 Knowledge of annunciator response procedures. (CFR: 41.10 / 43.5 / 45.13)

Question Source:		
	Bank #	X (INPO 9373)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	10
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.17	
	Importance Rating	3.1	

Proposed Question: -/99

Given the following:

- A reactor trip and SI have occurred.
- The operating crew is performing E-0, "Reactor Trip Or Safety Injection," Step 32 - Reset SI (both trains)
- The STA reports a Red Path on F-0.3, "Heat Sink Status Tree"

When performing FR-H.1, "Response To Loss of Secondary Heat Sink," which ONE of the following is used to identify a Hot, Dry steam generator?

A. RCS hot leg temperature > 550 deg F. and wide range S/G level < 5% (25% adverse CNMT).

B. RCS hot leg temperature > 550 deg F. and S/G wide range level < 35" (100" adverse CNMT).

C. RCS hot leg temperature > 520 deg F. and wide range S/G level < 5% (25% adverse CNMT).

D. RCS hot leg temperature > 520 deg F. and S/G has no liquid inventory.

Proposed Answer: B
Technical Reference(s): Background FR-H.1

Proposed references to be provided to applicants during examination: None

Learning Objective:2.4.17 Knowledge of EOP terms and definitions. (CFR: 41.10 / 45.13)

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X (BV 2001 #98)

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.29	
	Importance Rating	2.6	

Proposed Question: -/100

Which ONE of the following describes the notification requirements following an emergency classification? Notify New York State, Wayne and Monroe County within_____ ; notify the NRC within _____ .

A. 15 minutes; 1 hour.

B. 1 hour; 4 hours.

C. 15 minutes; 15 minutes.

D. 1 hour; 1 hour.

Proposed Answer: A
Technical Reference(s): _____

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.4.29 Knowledge of the emergency plan. (CFR: 43.5 / 45.11)

Question Source: Bank # X (C000.0015)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 10
55.43 5

SRO
Written

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	1
K/A #	001AK3.01	
Importance Rating	3.2	4.3

Proposed Question: 1/1

A power ascension is in progress. The plant is presently at 80% power with control bank D at 180 steps. For no apparent reason, bank D starts stepping out continuously. The reactor operator takes manual control and rod motion stops but he receives an "urgent failure" alarm when he attempts to drive rods in. Bank D is now stationary at 187 steps. Which one of the following actions is appropriate in accordance with AR-C-30, "Rod Control Urgent Failure Rod Stop?"

A. Control Tavg with boration/dilution/turbine load adjustments, notify the Operations Manager.

B. Attempt to control Bank D rods with individual bank select.

C. Reduce reactor power to < 75% RTP within 2 hours.

D. Trip the reactor if rod control cannot be regained within 2 hours or if Tavg exceeds the band of 547-561 degrees F.

Proposed Answer: A

Technical Reference(s): AR-C-30, AP-RCC.1 "Continuous Control Rod Withdrawal"

Proposed references to be provided to applicants during examination: None

Learning Objective:
001 Control Rod Drive System AK3.Knowledge of the reasons for the following responses as they apply to the Continuous Rod Withdrawal: (CFR: 41.5,41.10 / 45.6 / 45.13) AK3.01 Manually driving rods into position that existed before start of casualty.

Question Source:
Bank # X (C000.0255)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 5, 10
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	003G2.2.25	
	Importance Rating		4.0

Proposed Question: 2/--

The plant is at 100% power when the following annunciators go into alarm:

- E-28, "Power Range Rod Drop Rod Stop -5%/5 SEC"
- C-14, "Rod Bottom Rod Stop"

Power range nuclear instrumentation appears to be working properly and N-42 indicates 96% power. What actions are required for this event according to the technical specifications and what are the basis for those actions?

A. Verify SDM is within design limits and reduce thermal power to less than or equal to 50% RTP within two hours; adjust thermal power so that excessive local linear heat rates will not occur.

B. Verify SDM is within design limits and reduce thermal power to less than or equal to 75% RTP within two hours; adjust thermal power so that excessive local linear heat rates will not occur.

C. Verify SDM is within design limits and reduce thermal power to less than or equal to 75% RTP within two hours; the safety analysis does not allow rod misalignment of greater than 12 steps.

D. Initiate boration and be in Mode 2 with K_{eff} < 1.0 within six hours; the safety analysis does not allow rod misalignment of greater than 12 steps.

Proposed Answer: B

Technical Reference(s): AR-C-14, AR-E-28, TS

Proposed references to be provided to applicants during examination: TS 3.1.4

Learning Objective:
APE: 003 Dropped Control Rod 2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

2/-

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	003AK2.05	
	Importance Rating	2.5	2.8

Proposed Question: 3/2

During a plant load increase, with reactor power at 48%, control bank C group 1 rod G-7 drops. Prior to the drop it was at 230 steps. While restoring the rod, control rod urgent failure occurs. Which one of the following explains why the alarm actuated?

A. All bank C group 2 rods lift coils de-energized.

B. All other bank C group 1 rods lift coils de-energized.

C. Group C rod moving with group D rods withdrawn.

D. The step counter of the pulse to analog (P/A) converter was not reset to 0.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective:
APE: 003 Dropped Control Rod AK2. Knowledge of the interrelations between the Dropped Control Rod and the following: (CFR 41.7 / 45.7) AK2.05 Control rod drive power supplies and logic circuits.

Question Source:		
	Bank #	X (B001.0010)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	005AA2.01	
	Importance Rating		4.1

Proposed Question: 4/--

The plant is at 95% reactor power with Bank D control rods at 200 steps. Which of the following is a symptom of a stuck control rod and what would be the proper operator response?

A. Excore nuclear instrumentation indicates a quadrant power tilt of 1.2%; perform a manual QPTR to confirm this reading.

B. Excore nuclear instrumentation indicates a quadrant power tilt of 1.2%; perform PT-1, "Rod Control System" to verify that a rod is misaligned.

C. One rod MRPI indicates a 13-step disagreement with its associated group step counter; enter AP-RCC.2, "RCC/RPI Malfunction."

D. One rod MRPI indicates a 13-step disagreement with its associated group step counter; perform PT-1, "Rod Control System" to verify that a rod is misaligned.

Proposed Answer: C

Technical Reference(s): AP-RCC.2 "RCC/RPI Malfunction," LP RAP13C

Learning Objective: RAP132.2C (As available)

APE: 005 Inoperable/Stuck Control Rod AA2. Ability to determine and interpret the following as they apply to the Inoperable /Stuck Control Rod: (CFR: 43.5 / 45.13) AA2.01 Stuck or inoperable rod from in-core and ex-core NIS, in-core or loop temperature measurements.

Question Source:	Bank #	
	Modified Bank #	X (INPO 2747)
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	011EK2.02	
	Importance Rating	2.6	2.7

Proposed Question: 5/3

The plant has experienced a large break LOCA. What is the reason for the caution in ES 1.3, "Transfer to Cold Leg Recirculation," to stop the SI pumps if RCS pressure is greater than SI pump shutoff head?

A. To prevent the SI pumps from injecting radioactive water into the RWST, causing a release to the auxiliary building.

B. The SI pump recirculation valves are closed when the SI system is aligned for high head recirculation.

C. The SI pump suction valves from the discharge of the RHR pumps are interlocked so that they will not open when RCS pressure is too high.

D. To provide adequate flow to the containment spray pumps while RCS pressure is relatively high.

Proposed Answer: B

Technical Reference(s): Background information ES-1.3 (Attach if not previously provided)

Learning Objective: _____ (As available)
EPE: 011 Large Break LOCA EK2 Knowledge of the interrelations between the Large Break LOCA and the following: (CFR 41.7 / 45.7) EK2.02 Pumps.

Question Source:		
	Bank #	
	Modified Bank #	X (INPO bank 2971)
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	015AK2.07	
	Importance Rating	2.9	2.9

Proposed Question: 6/4

The plant is operating at 100% power when the 1B RCP standpipe high level alarm (B-4) comes in. RCP parameters indicate the following:

- RCP 1B No. 1 seal leakoff flow is 0.24 gpm and steady
- RCP 1B No. 1 seal differential pressure is greater than 400 psid
- RCP 1B No. 1 seal outlet temperature is 155 degrees F. and steady

Which of the following failures could lead to these indications?

A. #2 seal failed closed.

B. #2 seal failed open.

C. #1 seal failed closed.

D. #1 seal failed open.

Proposed Answer: B

Technical Reference(s): AP-RCP.1 (Attach if not previously provided)

Learning Objective: _____ (As available)
APE: 015 Reactor Coolant Pump (RCP) Malfunctions AK2. Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: (CFR 41.7 / 45.7) AK2.07 RCP seals.

Question Source:		
	Bank #	X (B003.0002)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	029G2.2.25	
	Importance Rating		3.7

Proposed Question: 7/-

Which ONE of the following describes why the main turbine is tripped during a loss of MFW ATWS condition?

A. To ensure that RCS pressure does not exceed the analyzed maximum.

B. To maximize the effect of moderator temperature coefficient in turning power.

C. To prevent an excessive cooldown of the RCS.

D. To prevent exceeding the DNBR limits on the core.

Proposed Answer: A

Technical Reference(s): Background FR-S.1, LP RFRS1C(S)

Learning Objective: RFRS1C1.3C (As available)
029 Anticipated transient without scram 2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

Question Source:		
	Bank #	
	Modified Bank #	X (INPO Bank 9255)
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	1
	Group #	____	1
	K/A #	040AA2.05	
	Importance Rating	____	4.5

Proposed Question: 8/-

In accordance with E-1, "Loss of Reactor or Secondary Coolant," which ONE of the following groups of parameters is required to be verified, in addition to pressurizer level, prior to terminating SI flow?

A. RCS subcooling, secondary heat sink, and containment pressure.

B. RVLIS level, RCS pressure, and RCS subcooling.

C. Secondary heat sink, containment pressure, and RCS pressure.

D. RCS pressure, RCS subcooling, and secondary heat sink.

Proposed Answer: D

Technical Reference(s): Background ES-1, ES-1.1 (Attach if not previously provided)

Learning Objective: _____ (As available)
APE: 040 Steam Line Rupture AA2. Ability to determine and interpret the following as they apply to the Steam Line Rupture: (CFR: 43.5 / 45.13) AA2.05 When ESFAS systems may be secured.

Question Source:		
	Bank #	X (INPO Bank 2693)
	Modified Bank #	____
	New	____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	040AA1.01	
	Importance Rating	4.6	4.6

Proposed Question: 9/5

A massive failure in the plant's secondary system results in one steam generator (S/G) being faulted due to a steam break outside containment and the other suffering a tube rupture. Which of the following actions should be taken for cooling down the RCS?

A. The S/G with the tube rupture shall be used for cooldown and the faulted S/G shall be isolated to prevent uncontrolled cooldown of the RCS.

B. The faulted S/G shall be used for cooldown and the S/G with the tube rupture shall be isolated to minimize radiological releases.

C. Both S/Gs should be used equally for cooldown to minimize the adverse effects associated with both casualties.

D. Isolate both S/Gs and initiate feed and bleed of the RCS using the SI system.

Proposed Answer: B

Technical Reference(s): Background information E-2, LP REP02C

Learning Objective: _____ (As available)
APE: 040 Steam Line Rupture AA1. Ability to operate and / or monitor the following as they apply to the Steam Line Rupture: (CFR 41.7 / 45.5 / 45.6) AA1.01Manual and automatic ESFAS initiation

Question Source:		
	Bank #	X (C000.0945)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	1
	Group #	____	1
	K/A #	057AA2.03	
	Importance Rating	___	3.9

Proposed Question: 10/-

The plant is operating at 45% power. I&C technicians are performing channel calibrations on PI-429 (pressurizer pressure). The plant experiences a loss of off-site power. What reactor protection system and/or control function(s) is(are) activated from this event, and what are the immediate actions?

A. High pressure reactor trip; enter E-0.

B. Low pressure reactor trip; enter E-0.

C. Loss of pressure control; enter AP-PRZR.1, "Abnormal Pressurizer Pressure."

D. Loss of turbine EH control; enter AP-TURB.1, "Turbine Trip Without Reactor Trip Required."

Proposed Answer: B

Technical Reference(s): LP R0901C, PT-10, RGE-9 System Description

Learning Objective: _____ (As available)

APE: 057 Loss of Vital AC Electrical Instrument Bus AA2. Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: (CFR: 43.5 / 45.13) AA2.03 RPS panel alarm annunciators and trip indicators.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	057AA1.01	
	Importance Rating	3.7	3.7

Proposed Question: 11/6

Which of the following describes the operation of Inverter 1A when the 125 VDC supply from DC distribution panel 1A is interrupted? Static transfer switch 1A:

A. Must be manually transferred to the alternate supply transformer, but will automatically transfer back to the inverter when 125 VDC is restored.

B. Must be manually transferred to the alternate supply transformer, and must be manually transferred back to the inverter when 125 VDC is restored.

C. Will automatically transfer to the alternate supply transformer, but must be manually transferred back to the inverter when 125 VDC is restored.

D. Will automatically transfer to the alternate supply transformer, and will automatically transfer back to the inverter when 125 VDC is restored.

Proposed Answer: C

Technical Reference(s): RGE-9, Training System Description, LP R0901C

Learning Objective: _____ (As available)
APE: 057 Loss of Vital AC Electrical Instrument Bus AA1. Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: (CFR 41.7 / 45.5 / 45.6) AA1.01 Manual inverter swapping.

Question Source: Bank # X (INPO Bank 1172)
Modified Bank # _____
New _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	1
	Group #	____	1
	K/A #	068/2.4.49	
	Importance Rating	____	4.0

Proposed Question: 12/ --

The STA reports black billowy smoke coming from the back panels of the control room. There is no indication of where the smoke is coming from or whether the area is accessible for any fire assessment. The crew attempted to manually trip the reactor and failed. What are the crew's immediate actions for this event in accordance with AP-CR.1, "Control Room Inaccessibility?"

A. Commence emergency boration, verify turbine stop valves closed.

B. Open bus 13 and 15 normal feed breakers and verify rod drive MG sets tripped, verify turbine stop valves closed.

C. Locally trip the reactor and turbine, establish local operating stations.

D. Locally trip the reactor and turbine, evacuate control complex.

Proposed Answer: B

Technical Reference(s): AP-CR.1, ER-FIRE.1

Learning Objective: _____ (As available)
068 Control Room Evacuation 2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Question Source:	Bank #	X (C000.1095)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____
10 CFR Part 55 Content:	55.41	____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	068AK3.02	
	Importance Rating	3.7	4.1

Proposed Question: 13/7

The operating crew discovers toxic gas in the Control Room requiring the evacuation of the shift. The operators implement AP-CR.1, "Control Room Inaccessibility," and verify that the turbine stop valves are closed. Which ONE of the following explains the basis for this step?

A. To ensure that the turbine is off line before departure from the control room since there is no turbine trip capability outside the control room.

B. To prevent a low pressure safety injection, since the plant would cool down quickly and operators would not be able to operate charging pumps locally for some time.

C. To prevent the uncontrolled cooldown of the RCS due to continued steam flow to the main turbine.

D. To ensure that steam generator feed flow can be adequately controlled through use of the AFW pumps at the local operating panels.

Proposed Answer: C

Technical Reference(s): AP-CR.1

Learning Objective: _____ (As available)
AK3. Knowledge of the reasons for the following responses as they apply to the Control Room Evacuation: (CFR 41.5,41.10 / 45.6 / 45.13) AK3.02 System response to turbine trip.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	069AK3.01	
	Importance Rating	3.8	4.2

Proposed Question: 14/8

Given the following plant conditions:

- The plant had been operating at 100% power for 350 days
- The plant tripped due to a LOCA in containment
- Containment temperature is 190 degrees F.
- Containment pressure is 29 psig.

The operators enter FR-Z.1, "Response to High Containment Pressure," based on an Orange path. This procedure directs actions to:

A. Ensure appropriate containment penetrations are isolated and limit containment internal pressure.

B. Mitigate the consequences of exceeding the containment design pressure of 60 psig.

C. Take manual control of containment spray pumps to conserve RWST water inventory.

D. Mitigate the hazard of hydrogen detonation by reducing containment hydrogen concentration.

Proposed Answer: A

Technical Reference(s): LP RFRZ1C, FR-Z.1

Learning Objective: _____ (As available)
APE: 069 Loss of Containment Integrity AK3. Knowledge of the reasons for the following responses as they apply to the Loss of Containment Integrity: (CFR 41.5,41.10 / 45.6 / 45.13)
AK3.01 Guidance contained in EOP for loss of containment integrity.

Question Source:	Bank #	
	Modified Bank #	
	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	5, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	1
	K/A #	E01/2.4.6	
	Importance Rating	___	4.0

Proposed Question: 15/ --

Which ONE of the following describes the mitigation strategy of ES-0.0, "Rediagnosis?"

A. The procedure is entered from E-0 to determine if SI is required, and to determine if there are faulted and/or ruptured steam generators.

B. The procedure is entered after E-0 and after SI to determine which functional restoration procedure is required.

C. The procedure is entered based on operator judgment at any time to confirm the necessity of SI and status of secondary heat sink, and to aid in the selection of the transition emergency procedure.

D. The procedure is entered based on operator judgment after SI, and after E-0 diagnostic steps have been completed, to determine if transition to the correct emergency procedure has been made.

Proposed Answer: D

Technical Reference(s): Background information ES-0.0

Learning Objective: _____ (As available)
E01 Rediagnosis 2.4.6 Knowledge symptom-based EOP mitigation strategies.

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	1
	K/A #	E01EK1.2	
	Importance Rating	___	3.5

Proposed Question: 16/- (common K/A)

During 100% power operations, radiation monitors R-15, R-19 and R-31 suddenly alarmed. A reactor trip was manually activated followed by a safety injection. The reactor coolant pumps were tripped at E-3, step 1 when trip criteria were met. The 'A' S/G pressure and level were noted to be decreasing uncontrollably. The following conditions exist:

- Containment pressure is 12 psig and increasing
- RCS pressure is 1150 psig and decreasing
- PRZR level is 0
- S/G 'A' pressure is 205 psig and decreasing uncontrollably
- S/G 'B' pressure is 960 psig and decreasing slowly
- S/G 'A' level is 0% narrow range
- S/G 'B' level is 22% narrow range
- 'A' T-Cold is 310 deg F. and decreasing slowly

The CRF exits E-3 to ES-0.0, "Rediagnosis," due to the multiple alarms. The STA notes that a yellow path exists on heat sink and integrity. What is the correct procedure to enter from ES-0.0?

A. Go to P-1 on orange path.

B. Stay in E-3, "SGTR," and stop the tube leakage; then go to ECA-3.1.

C. Go to E-2, "Faulted S/G Isolation," to isolate the fault.

D. Go to E-1, "Loss of Primary or Secondary Coolant," since the conditions suggest a LOCA inside containment.

Proposed Answer: C

Technical Reference(s): E-0, ES-0.0, Background information ES-0.0

Learning Objective: _____ (As available)
E01 Rediagnosis EK1Knowledge of the operational implications of the following concepts as they apply to the (Reactor Trip or Safety Injection/Rediagnosis) (CFR:41.8 / 41.10 / 45.3) EK1.2 Normal, abnormal and emergency operating procedures associated with Reactor Trip or Safety Injection/Rediagnosis.

16/-

Question Source:	Bank #	X (B000.0898)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	8, 10
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	E02EK3.1	
	Importance Rating	3.3	3.6

Proposed Question: 17/10

ES-1.1, "SI Termination," is being performed. Normal letdown has just been established in accordance with Step 15. The following conditions exist:

- Containment pressure - 5 psig
- Containment radiation - 72 mrem/hr
- RCS pressure - 1240 psig and decreasing slowly
- Core exit Tcs - 540 degrees F.
- Pressurizer level - 42% and decreasing slowly

Which ONE of the following is required next?

A. Adjust charging pump speed as necessary.

B. Control pressurizer heaters and spray to stabilize RCS pressure.

C. Control steam dump and total feed flow as necessary to stabilize RCS temperature.

D. Manually operate SI pumps as necessary and go to E-1, "Loss of Reactor or Secondary Coolant," Step 1.

Proposed Answer: D

Technical Reference(s): ES-1.1

Proposed references to be provided to applicants during examination: ES-1.1, Steps 1-15; Fig. 1.0 Minimum Subcooling

Learning Objective: _____ (As available)
E02 SI Termination EK3. Knowledge of the reasons for the following responses as they apply to the SI Termination (CFR: 41.5 / 41.10, 45.6, 45.13) EK3.1 Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

Question Source:		
	Bank #	X (B000.0333)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

17/10

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5, 10
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	1
	K/A #	E02EA1.2	
	Importance Rating	3.6	3.8

Proposed Question: 18/11

Core exit thermocouples (CETs) are used for indication of subcooling along with other parameters for determination of SI termination criteria. What is the reason for using CETs?

A. Only indication of accurate temperature indication during natural circulation.

B. Only indication still operable during loss of coolant accidents.

C. Only indication of temperature using environmentally qualified indication.

D. Only indication of conditions of hottest point in RCS that is not as susceptible to single loop effects.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E02 SI Termination EA1. Ability to operate and / or monitor the following as they apply to the SI Termination (CFR: 41.7 / 45.5 / 45.6) EA1.2 Operating behavior characteristics of the facility.

Question Source:		
	Bank #	X (C002.0119)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	1
	K/A #	E04EA2.2	___
	Importance Rating	___	4.2

Proposed Question: 19/--

Following a safety injection from a loss of coolant accident, determine which operator procedural action(s) is(are) required if a LOCA outside of containment cannot be isolated.

A. Transition from E-0 to ECA-1.2, "LOCA Outside Containment," which gives full recovery guidance.

B. Transition from E-0 to ECA-1.2, "LOCA Outside Containment," and when it is determined the LOCA cannot be isolated, transition to ES-1.2, "Post LOCA Cooldown and Depressurization," until RWST<28%, then go to ECA-1.1, "Loss of Emergency Coolant Recirculation."

C. Transition from E-0 to ECA-1.2, "LOCA Outside Containment," and then to ECA-1.1, "Loss of Emergency Coolant Recirculation," when RWST<28%.

D. Transition from E-0 to ECA-1.2, "LOCA Outside Containment," and then to ECA-1.1, "Loss of Emergency Coolant Recirculation," when it is determined that the LOCA cannot be isolated.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E04 LOCA Outside Containment EA2. Ability to determine and interpret the following as they apply to the (LOCA Outside Containment) (CFR: 43.5 /45.13) EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Question Source:		
	Bank #	X (B000.0139)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	___
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	___
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E07EK1.3	
	Importance Rating	3.2	3.6

Proposed Question: 20/12

If responding to voids in the reactor vessel using FR-I.3, one of the mitigating strategies is to start a RCP. Which one of the following statements describes why this is done? RCP operation will:

A. Sweep voids out of the upper head and circulate them to the SG where they can be condensed.

B. Break up the large single void into many very small voids which can then be condensed in the coolant stream.

C. Initially cause a pressure surge through the RCS which will condense the voids.

D. Force cooling flow into the upper head and should condense any steam in the upper head.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E07 Saturated Core Cooling EK1.Knowledge of the operational implications of the following concepts as they apply to the (Saturated Core Cooling) (CFR: 41.8 / 41.10, 45.3)
EK1.3 Annunciators and conditions indicating signals, and remedial actions associated with the Saturated Core Cooling.

Question Source:		
	Bank #	X (C000.0854)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	8, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E08EA1.1	
	Importance Rating	3.8	3.8

Proposed Question: 21/13

While responding to a small-break LOCA, the control room operators determine that a red path exists on the integrity status tree. They check for possible sources of an excessive RCS cooldown and then check if SI can be terminated. Current subcooling does not support SI termination, but it does support the starting of an RCP. None are currently running. Which of the following explains how RCP operation under these conditions will decrease the likelihood of pressurized thermal shock?

A. Adds pump heat to the cold reactor coolant and thereby decreases the thermal stress.

B. Raises RCS pressure which reduces SI injection flow and thereby decreases the thermal stress.

C. Forces SI injection to the loops rather than the core and thereby decreases the thermal stress.

D. Mixes the cold incoming SI water and the warm reactor coolant and thereby decreases the thermal stress.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E08 Pressurized Thermal Shock EA1. Ability to operate and / or monitor the following as they apply to the Pressurized Thermal Shock (CFR:41.7 / 45.5 / 45.6) EA1.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Question Source:	Bank #	X (B000.0262)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E09EK1.1	
	Importance Rating	3.0	3.4

Proposed Question: 22/14

Which of the items below describes how to increase natural circulation flow?

A. Decrease RCS subcooling to increase RCS - S/G delta-T.

B. Increase pressurizer auxiliary spray to promote RCS - pressurizer mixing, and thus increase RCS - S/G delta-T.

C. Increase S/G ARV setpoint to a higher pressure, thus increasing the RCS - S/G delta-T.

D. Decrease S/G ARV setpoint to a lower pressure, thus increasing the RCS - S/G delta-T.

Proposed Answer: D

Technical Reference(s): ES-0.2

Learning Objective: _____ (As available)
E09 Natural Circulation Operations EK1. Knowledge of the operational implications of the following concepts as they apply to the Natural Circulation Operations (CFR: 41.8 / 41.10, 45.3)
EK1.1 Components, capacity, and function of emergency systems.

Question Source:		
	Bank #	
	Modified Bank #	X (B000.0020)
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	8, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	1
	K/A #	E09EK2.1	
	Importance Rating	___	3.4

Proposed Question: 23/- (common K/A)

While performing ES-0.2, "Natural Circulation Cooldown," the Head Control Operator notices pressurizer level increasing rapidly. The following conditions exist:

- Current cooldown rate= 5 degrees F/hr
- RCS temperature= 355 degrees F
- RCS pressure=350 psig
- 2 control rod shroud fans running
- RVLIS level= 100%

What actions are required?

A. Establish maximum reactor vessel head cooling.

B. Manually open one pressurizer PORV to vent the steam void.

C. Re-pressurize the RCS within allowable limits and continue plant cooldown.

D. Reduce the cooldown rate to stay within allowable limits.

Proposed Answer: C

Technical Reference(s): ES-0.2

Proposed references to be provided to applicants during examination: Fig-3.0, Nat Circ C/D With Shroud Fans

Learning Objective: _____ (As available)
E09 Natural Circulation Operations EK2. Knowledge of the interrelations between the Natural Circulation Operations and the following: (CFR: 41.7 / 45.7) EK2.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Question Source:			
	Bank #	___	
	Modified Bank #	X	(B002.0024)
	New	___	

23/-

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	1
	K/A #	E14EK1.2	
	Importance Rating	3.2	3.7

Proposed Question: 24/16

Given the following plant conditions:

- A small break LOCA inside containment has occurred with concurrent loss of offsite power
- SI has been manually initiated
- After the sequencing of safeguards equipment, none of the containment recirculation cooling fans (CRFCs) have started
- Attempts to start the CRFCs manually are unsuccessful

Which ONE of the following states the effect that the loss of these cooling fans have on steam generator level indication? Indicated S/G levels will be:

A. Unaffected by the given conditions.

B. Lower than actual level.

C. Higher than actual level.

D. Not able to be determined.

Proposed Answer: C

Learning Objective: _____ (As available)
E14 High Containment Pressure EK1. Knowledge of the operational implications of the following concepts as they apply to the High Containment Pressure (CFR: 41.8 / 41.10, 45.3)
EK1.2 Normal, abnormal and emergency operating procedures associated with High Containment Pressure.

Question Source:		
	Bank #	X (C000.1018)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	8, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	007EK2.02	
	Importance Rating	2.6	2.8

Proposed Question: 25/17

An automatic reactor trip signal on Train B of the reactor protection system will open reactor trip and bypass breakers by energizing the shunt trip coil on trip breaker B, de-energizing the UV coil on trip breaker B, and performing which ONE of the following:

A. De-energizing the UV coil on bypass breaker A.

B. Energizing the shunt trip on bypass breaker B.

C. Energizing the shunt trip on bypass breaker A.

D. Energizing the shunt trip on bypass breaker B and de-energizing the UV coil on bypass breaker B.

Proposed Answer: A

Technical Reference(s): RPS System Description

Learning Objective: _____ (As available)
EPE: 007 Reactor Trip EK2 Knowledge of the interrelations between a reactor trip and the following: (CFR 41.7 / 45.7) EK2.02 Breakers, relays and disconnects.

Question Source:		
	Bank #	X (INPO 4260)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	008G2.1.30	
	Importance Rating	3.9	3.4

Proposed Question: 26/18

A reactor trip and safety injection have occurred from a normal 100% lineup. Pressurizer PORV PCV-430 is closed, PORV PCV-431C is open and will not close. Pressurizer pressure is 1500 psig and decreasing. Pressurizer spray valve PCV-431A is open, spray valve PCV-431B is closed. Which ONE of the following actions is required for these conditions per EOP E-0?

A. Stop both RCPs and close both PORV block valves.

B. Stop both RCPs and close PORV PCV-431C block valve.

C. Stop 1A RCP and close PORV PCV-431C block valve.

D. Stop 1A RCP and close both PORV block valves.

Proposed Answer: C

Technical Reference(s): E-0

Learning Objective: _____ (As available)
APE: 008 Pressurizer (PZR) Vapor Space Accident 2.1.30 Ability to locate and operate components, including local controls.

Question Source:		
	Bank #	X (INPO Bank 2710)
	Modified Bank #	
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	10
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	009EK1.01	
	Importance Rating	4.2	4.7

Proposed Question: 27/19

During a small break LOCA on a cold leg, a condition is reached where the vessel level continues to decrease below the hot leg penetrations and boiling in the core is the means of transporting the core heat to the steam bubble in the reactor vessel plenum and hot legs. A fixed pressure differential exists between the core and the break and is maintained by the loop seal. Since full natural circulation is impeded, what is the heat removal mechanism for the RCS?

A. Slug flow via the cold legs through the loop seal and flashing across the cold leg break.

B. Partial natural circulation flow characterized by liquid pulses flowing from the cold leg over the steam generator U-tubes and into the hot legs.

C. Condensation of vapor in the vessel head, which is cooled by fans in the containment, and draining back to the core.

D. Condensation of vapor from the bubble at the hot leg side of the steam generator U-tubes, which then drains back to the core via the hot legs.

Proposed Answer: D

Technical Reference(s): Background information E-1

Learning Objective: _____ (As available)
009 Small Break LOCA K1 Knowledge of the operational implications of the following concepts as they apply to the small break LOCA: EK1.01 Natural circulation and cooling, including reflux boiling.

Question Source:	Bank #	X (INPO Bank 3478)
	Modified Bank #	
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	8, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	009EK2.03	
	Importance Rating	3.0	3.3

Proposed Question: 28/20

Assume the plant has just experienced a small break LOCA and is in the process of performing a natural circulation cooldown. Which of the following is NOT an indication of natural circulation cooling in accordance with Attachment NC to the EOPs?

A. S/G levels - stable or increasing

B. RCS hot leg temperatures - stable or decreasing

C. RCS cold leg temperatures - at saturation temperature for S/G pressure

D. Core exit thermocouples - stable or decreasing

Proposed Answer: A

Technical Reference(s): EOP Attachment NC

Learning Objective: _____ (As available)
009 Small Break LOCA K2 Knowledge of the interrelations between the small break LOCA and the following: EK2.03 S/Gs

Question Source:
Bank # X (C000.0931)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	____	1
Group #	____	2
K/A #	027AA2.18	
Importance Rating	____	3.5

Proposed Question: 29/-

Reactor power is 75%, PRZR pressure control selector is in its normal position. Transmitter PT-429 fails low. What are the actions per AP-PRZR.1, "Abnormal Pressurizer Pressure," and what is the operational concern as a result of this failure?

A. Place controller 431K in MANUAL and adjust output to restore PRZR pressure; PORV PCV-430 will not open in AUTO when PRZR pressure increases to its OPEN setpoint.

B. Place controller 431K in MANUAL and adjust output to restore PRZR pressure; neither PORV will open in AUTO when PRZR pressure increases to the OPEN setpoint.

C. Refer to ER-INST.1, "Reactor Protection Bistable Defeat After Instrumentation Loop Failure;" PORV PCV-430 will not open in AUTO when PRZR pressure increases to its OPEN setpoint.

D. Refer to ER-INST.1, "Reactor Protection Bistable Defeat After Instrumentation Loop Failure;" neither PORV will open in AUTO when PRZR pressure increases to the OPEN setpoint.

Proposed Answer: C

Technical Reference(s): LP RIC02C

Learning Objective: _____ (As available)
APE: 027 Pressurizer Pressure Control System (PZR PCS) Malfunction
AA1. Ability to operate and / or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: (CFR 41.7 / 45.5 / 45.6) AA2.18 Operable control channel.

Question Source:
Bank # X (INPO Bank 3486)
Modified Bank # _____
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 7
55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	1	2
	K/A #	027AK2.03	
	Importance Rating	2.6	2.8

Proposed Question: 30/21

The plant is at 94% power on coastdown at EOL. The following annunciators alarm almost simultaneously:

- F-18, PRZR Safety Valve Outlet High Temperature, 145 degrees F.
- AA-13, PRZR Safety Valve Position
- F-10, PRZR Low Pressure, 2185 psig

Shortly thereafter, the HCO reports PRZR pressure has stabilized at 2150 psig, with full heaters on and spray valves closed. What is(are) the next major action(s) the operators must take to correct this condition in accordance with AP-PRZR.1, "Abnormal Pressurizer Pressure?"

A. Trip the reactor, trip the associated RCP, and go to E-0, "Reactor Trip or Safety Injection."

B. Close both PORV block valves one at a time and check to see if relief line temperature decreases.

C. Verify RCS leakage is within ITS limits and check PRT indications.

D. Restore the inoperable relief valve to operable within 1 hour or close the associated block valve.

Proposed Answer: C

Technical Reference(s): AP-PRZR.1

Proposed references to be provided to applicants during examination: AP-PRZR.1

Learning Objective: _____ (As available)
APE: 027 Pressurizer Pressure Control System (PZR PCS) Malfunction
AK2. Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: (CFR 41.7/ 45.7) AK2.03 Controllers and positioners.

Question Source:		
	Bank #	X (B010.0022)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

30/21

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	2
K/A #	033AA1.03	
Importance Rating	3.0	3.2

Proposed Question: 31/22

Operators were performing a reactor shutdown. Reactor power was at 5% when the intermediate range channel N36 failed high. Which of the following statements describes how this failure affects the reactor shutdown and subsequent operation of the Nuclear Instrumentation System?

A. The reactor will trip on high IR flux, and source range NI's will have to be manually re-energized.

B. The reactor will trip on high IR flux, and source range NI's will re-energize when N35 reaches the proper setpoint.

C. The reactor will not trip, and source range NI's will have to be manually re-energized.

D. The reactor will not trip, and source range NI's will re-energize when N35 reaches the proper setpoint.

Proposed Answer: A

Technical Reference(s): NIS System Description

Learning Objective: _____ (As available)
APE: 033 Loss of Intermediate Range Nuclear Instrumentation AA1. Ability to operate and/or monitor the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: (CFR 41.7 / 45.5 / 45.6) AA1.03 Manual restoration of power.

Question Source:
Bank # X (INPO Bank 2823)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	____	1
Group #	____	2
K/A #	037G2.2.22	
Importance Rating	____	4.1

Proposed Question: 32/-

Which one of the following is the basis for the Technical Specification limit for primary-to-secondary leakage through each steam generator?

A. To ensure a minimum amount of secondary water is only briefly released via safety valves and the majority is steamed to the condenser.

B. This amount of leakage produces acceptable offsite doses and tube stresses in the steam line break accident analysis.

C. This amount of leakage can be readily detected by condenser exhaust and S/G blowdown radiation monitors to give early warning of S/G tube leakage.

D. To ensure that S/G tube integrity is maintained in the event of a main steam line rupture or a LOCA.

Proposed Answer: B

Technical Reference(s): TS, E-3

Learning Objective: _____ (As available)
APE: 037 Steam Generator (S/G)Tube Leak 2.2.22 Knowledge of limiting conditions for operations and safety limits.

Question Source:
Bank # _____
Modified Bank # X (INPO Bank 1141)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 _____
55.43 2

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	2
K/A #	037AK3.08	
Importance Rating	4.1	4.3

Proposed Question: 33/23

What is the basis for the RCP trip criteria of E-3 "Steam Generator Tube Rupture?"

A. To minimize coolant loss from the ruptured tube.

B. To minimize heat transfer to the ruptured S/G.

C. To prevent damage to the RCPs from loss of seal differential pressure.

D. To maintain RCPs in service if possible, but trip them if required by two phase flow separation/core uncovery considerations.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
APE: 037 Steam Generator (S/G) Tube Leak AK3. Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Leak: (CFR 41.5,41.10 / 45.6 / 45.13)
AK3.08 Criteria for securing RCP.

Question Source:
Bank # X (C000.0896)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 5, 10
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	038EK1.04	
	Importance Rating	3.1	3.3

Proposed Question: 34/24

During a natural circulation cooldown following a LOCA event, RCS inventory depletion continues, causing steam voids to form in the steam generator U-tubes. If the operators are unable to restore forced circulation, how will natural circulation (NC) be affected over the remaining course of the event?

A. NC will stop, reflux boiling will adequately remove decay heat until enough inventory is lost, then inadequate core cooling may occur.

B. NC will stop, all effective means of decay heat removal will be lost, and extensive core damage will soon occur.

C. NC will stop, but reflux boiling will adequately remove decay heat for as long as necessary, provided all control rods fully entered the core.

D. NC will decrease, but enough flow will continue to provide adequate decay heat removal for as long as necessary.

Proposed Answer: A

Technical Reference(s): _____

Learning Objective: _____ (As available)
EPE: 038 Steam Generator Tube Rupture (SGTR) EK1 Knowledge of the operational implications of the following concepts as they apply to the SGTR: (CFR 41.8 /41.10 / 45.3).
EK1.04 Reflux boiling.

Question Source:	Bank #	X (INPO Bank 5543)
	Modified Bank #	
	New	
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	8, 10
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	2
	K/A #	060G2.2.25	___
	Importance Rating	___	3.7

Proposed Question: 35/-

There is a leaking Waste Gas Decay Tank relief valve in the plant. Which RMS monitor will give the first indication of this condition?

A. R14A, Plant Vent High Range Effluent, Channel 9

B. R13, Auxiliary Building Particulate

C. R35, PASS Panel Wide Range Area Monitor

D. R14, Auxiliary Building Noble Gas

Proposed Answer: D

Technical Reference(s): RMS System Description

Learning Objective: _____ (As available)
APE: 060 Accidental Gaseous Radwaste Release AK2. Knowledge of the interrelations between the Accidental Gaseous Radwaste Release and the following: (CFR 41.7 / 45.7) AK2.01 ARM system, including the normal radiation-level indications and the operability status.

Question Source: Bank # X (C072.0019)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7
55.43 4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	3	2
	K/A #	065AA1.02	
	Importance Rating	2.6	2.8

Proposed Question: 36/25

The plant is at 100% power steady state with normal Service Air and Instrument Air System lineups.

- Service Air Compressor is in standby
- C Instrument Air Compressor running
- A & B Instrument Air Compressors in "Auto" but not running

The following event then occurs. The Instrument Air header fails in the auxiliary building but is isolated within minutes by closing valve V-7350, IA to auxiliary building. Which one of the following correctly states the effect on continued plant operation assuming 3 to 4 days is required for repairs?

A. Repair time is irrelevant, the plant should have already tripped. Actions per E-0, "Reactor Trip or Safety Injection" should be taking place.

B. The plant will have to be shutdown because it has lost the ability for spray additive (sodium hydroxide) on the containment spray system.

C. The plant will have to be shut down because this event results in a loss of RCS inventory control, i.e., normal CVCS and excess letdown.

D. The plant can continue to operate at full power with charging pump suction manually aligned to RWST.

Proposed Answer: C

Technical Reference(s): LP RAP10C, AP-IA.1

Learning Objective: _____ (As available)
APE: 065 Loss of Instrument Air AA1. Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air: (CFR 41.7 / 45.5 /45.6) AA1.02 Components served by instrument air to minimize drain on system.

Question Source:		
	Bank #	X (B078.0014)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

36/25

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	2
	K/A #	E03EA2.2	
	Importance Rating	___	4.1

Proposed Question: 37/-

In ES-1.2, "Post LOCA Cooldown and Depressurization," all SI pumps are stopped. The next Major Action Category is to "Depressurize the RCS to minimize RCS subcooling." Which one of the following describes the purpose of this action:

A. Minimize the chance of pressurized thermal shock by reducing pressure stress.

B. Reduce pressure to inject the accumulators.

C. Reduce pressure to allow RHR to inject into the RCS.

D. Minimize break flow and reduce RCS makeup requirements.

Proposed Answer: D

Technical Reference(s): _____

Learning Objective: _____ (As available)
E03 LOCA Cooldown and Depressurization EA2. Ability to determine and interpret the following as they apply to the (LOCA Cooldown and Depressurization) (CFR: 43.5 / 45.13) EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Question Source:		
	Bank #	X (C000.0782)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	___

10 CFR Part 55 Content:		
	55.41	___
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	2
	K/A #	E11EK3.3	
	Importance Rating	___	3.8

Proposed Question: 38/- (common K/A)

An un-isolable LOCA outside containment has occurred, and the control room operators have entered ECA-1.1, "Loss of Emergency Coolant Recirculation," because the leak cannot be isolated. The STA notes that some of the steps of ECA-1.1 do not appear to apply to present plant conditions. Specifically, he states that the steps to establish containment spray and containment cooler operation (Steps 5 & 7) do not make sense because containment conditions are normal. What operator actions are required?

A. Exit ECA-1.1. This procedure should not be performed if a LOCA outside containment is in progress.

B. Bypass the steps in question. EOP steps are performed at the discretion of the operator, who must exercise his judgment.

C. Hold at the step in effect until plant management and engineering staff can assess the impact of performing Steps 5 & 7 under these conditions.

D. Perform all procedure steps. Although they are not pertinent to current conditions, there are no directions indicating that they should be bypassed.

Proposed Answer: D

Learning Objective: _____ (As available)
E11 Loss of Emergency Coolant Recirculation EK3. Knowledge of the reasons for the following responses as they apply to the (Loss of Emergency Coolant Recirculation) (CFR: 41.5 / 41.10, 45.6, 45.13) EK3.3 Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.

Question Source:		
	Bank #	X (B000.0280)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	5, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	1
	Group #	2	2
	K/A #	E16EK3.2	
	Importance Rating	2.9	3.3

Proposed Question: 39/27

Which one of the following statements describes the major mitigating strategy of FR-Z.3, "Response to High Containment Radiation Level?"

A. The post-accident charcoal filters are checked to be in service (or placed in service) to reduce radiation levels.

B. Containment mini-purge (or purge) is initiated to reduce radiation levels.

C. The containment auxiliary charcoal filter system is placed in service to reduce radiation levels.

D. Containment spray is checked to be in service (or initiated) to reduce containment iodine levels.

Proposed Answer: A

Technical Reference(s): _____

Learning Objective: _____ (As available)
E16 High Containment Radiation EK3. Knowledge of the reasons for the following responses as they apply to the (High Containment Radiation) (CFR:41.5 / 41.10, 45.6, 45.13) EK3.2 Normal, abnormal and emergency operating procedures associated with (High Containment Radiation).

Question Source:	Bank #	X (C000.0861)
	Modified Bank #	_____
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	5, 10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	2
	K/A #	E16EA1.1	
	Importance Rating	___	3.2

Proposed Question: 40/- (common K/A)

The following plant conditions exist with the unit in Mode 2:

- A LOCA has occurred and the operators responded using the EOP network.
- Containment radiation levels are 2.3E4 R/hr and the operators entered FR-Z.3, "Response to High Containment Radiation Level."
- CVI valve status lights are BRIGHT.
- The HCO reports that the control room emergency return fan is not running.

Which one of the following describes the correct operator actions to be taken in response to the above events in accordance with FR-Z.3?

A. Verify that 1A and 1C containment recirculation fan coolers are in operation to ensure maximum charcoal filtering.

B. Verify that all containment recirculation fan coolers are running.

C. Direct the HCO to start the control room emergency return fan.

D. Verify the containment radiation levels before reporting the information to the TSC.

Proposed Answer: B
Technical Reference(s): FR-Z.3, LP FR-Z.3, Containment Ventilation Trng. System Desc.

Learning Objective: E16 High Containment Radiation EA1. Ability to operate and / or monitor the following as they apply to the (High Containment Radiation) (CFR: 41.7 / 45.5 / 45.6) EA1.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Question Source:	Bank #	___
	Modified Bank #	X (INPO Bank 4851)
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	___
10 CFR Part 55 Content:	55.41	7
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	1
	Group #	____	3
	K/A #	028G2.4.4	
	Importance Rating	____	4.3

Proposed Question: 41/-

The plant is at 100% power with normal instrumentation channels selected for control and protection. The following annunciators alarm:

- F-28, "PRZR High Level Channel Alert 87%"
- F-14, "Charging Pump Speed"

followed soon by:

- F-4, "PRZR Level Deviation"
- A-4, "Regen HX Letdown Out Hi Temp 395 Deg F."

What is the cause of these alarms and what operator actions are necessary?

A. PRZR level control channel failed high; place charging pump in AUTO, restore letdown, secure PRZR back-up heaters, enter ER-INST.1.

B. PRZR level control channel failed high; take manual control of charging, control charging and letdown to control PRZR level, secure PRZR back-up heaters, enter ER-INST.1.

C. Charging pump speed controller failed high; secure operating charging pump and start standby pump, manually restore PRZR level, enter AP-PRZR.1.

D. PRZR alarm channel failed high; take manual control of charging, control charging and letdown to control PRZR level, secure PRZR back-up heaters, enter ER-INST.1.

Proposed Answer: B

Technical Reference(s): PZR P & L Training System Description

Learning Objective: _____ (As available)
APE: 028 Pressurizer (PZR) Level Control Malfunction 2.4.4 Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Question Source:		
	Bank #	____
	Modified Bank #	X (B011.0006)
	New	____

411-

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 5

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	3	3
K/A #	028AK2.03	
Importance Rating	2.6	2.9

Proposed Question: 42/29

The plant is at 100% power. All control systems are in a normal/automatic lineup. The controlling PRZR level transmitter , LT428, sticks at 50% level. Assuming no operator action, what effect will this failure have on the PRZR level control system and the CVCS system when power is reduced to 30%?

A. Charging and letdown will remain balanced and maintain level at 49%.

B. Charging flow will increase causing level to increase to the trip setpoint.

C. Charging flow will decrease causing level to decrease until letdown is isolated and heaters are tripped.

D. Charging flow will increase until the flow signal error equals the level signal error and will control at a slightly higher level.

Proposed Answer: C

Technical Reference(s): _____

Learning Objective: _____ (As available)
APE: 028 Pressurizer (PZR) Level Control Malfunction AK2. Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: (CFR 41.7 / 45.7)
AK2.03 Controllers and positioners.

Question Source:
Bank # X (B010.0026)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	1
	Group #	____	3
	K/A #	036AA2.01	
	Importance Rating	____	3.9

Proposed Question: 43/-

During movement of an irradiated fuel assembly from the core to the upender (not indexed over the core), Annunciator K-29 (SFP high/low level, high temp) alarms. The manipulator crane operator informs the control room that the refueling cavity level is rapidly dropping. The manipulator crane radiation monitor is in alarm and the "A" containment sump is visibly increasing on the control room indication. What action is required with respect to the fuel assembly being moved?

A. Place the assembly in the upender, return it to the pit side "Home" position, and leave the upender in the horizontal position.

B. Position the assembly over an empty core location and immediately lower the assembly to the selected core position and unlatch.

C. Position the assembly over the "emergency" location in the transfer slot and lower the assembly until it reaches the bottom of the slot area.

D. Place the assembly in the shipping cask area then lower and unlatch the assembly when it is fully enclosed in the shipping cask.

Proposed Answer: C

Technical Reference(s): Proc RF-65.4, Fuel Handling Accident Instructions

Proposed references to be provided to applicants during examination: Procedure RF-65.4

Learning Objective: _____ (As available)
APE 036 Fuel Handling Incidents AA2.Ability to determine and interpret the following as they apply to the Fuel Handling Incidents: (CFR: 43.5 / 45.13) AA2.01 ARM system indications.

Question Source:		
	Bank #	____
	Modified Bank #	X (B034.0002)
	New	____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____
10 CFR Part 55 Content:	55.41	____
	55.43	5,7

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	001K1.04	
	Importance Rating	3.2	3.4

Proposed Question: 44/30

A narrow range T-hot RTD failed high at power. Which one of the following switch manipulations must be done to restore all rod motion capability?

A. In the RIL rack place the Delta-T Defeat switch to the position corresponding to the failed channel.

B. In the steam dump rack place the Tavg Defeat switch to the position corresponding to the failed channel.

C. Place the Overpower Rod Stop switch to the position corresponding to the failed channel.

D. Place both the Delta-T Defeat and the Tavg Defeat switches to the position corresponding to the failed channel.

Proposed Answer: B

Technical Reference(s): _____

Learning Objective: _____ (As available)
System: 001 Control Rod Drive System K1Knowledge of the physical connections and/or cause -effect relationships between the CRDS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.04 RCS.

Question Source:		
	Bank #	X (C016.0083)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	2 to 9
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	003K3.04	
	Importance Rating	3.9	4.2

Proposed Question: 45/31

Given the following plant conditions:

- Unit start-up in progress per O-1.2, "Plant Startup From Hot Shutdown to Full Load"
- Reactor power is 20%
- Generator ready to synchronize to the grid
- "A" RCP trips

Which one of the following is correct based on the above plant conditions?

A. The reactor will remain at power because power is greater than permissive P-7.

B. The reactor will remain at power because power is less than permissive P-8.

C. The reactor will trip because power is greater than permissive P-7.

D. The reactor will trip because power is less than permissive P-8.

Proposed Answer: B

Technical Reference(s): _____

Learning Objective: _____ (As available)
003 Reactor Coolant Pump System (RCPS) K3 Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: (CFR: 41.7 / 45.6) K3.04 RPS.

Question Source:		
	Bank #	X (C012.0062)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	003A1.05	
	Importance Rating	3.4	3.5

Proposed Question: 46/32

For a trip of "A" Reactor Coolant Pump below P-8, which of the following correctly describes the effect on the "A" S/G level immediately after the trip? "A" S/G level:

A. Decreases to follow the new programmed level for the lower value of turbine impulse chamber pressure.

B. Increases in response to a higher steam flow as sensed from a lower steam pressure.

C. Decreases due to the density increase of the water in the downcomer being cooled by colder RCS water.

D. Increases due to an increased steam flow to compensate for a lower enthalpy rise across the U-tubes.

Proposed Answer: C

Technical Reference(s): _____

Learning Objective: _____ (As available)
003 Reactor Coolant Pump System (RCPS) A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: (CFR: 41.5 /45.5) A1.05 RCS flow.

Question Source:		
	Bank #	X (C331.0217)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	X
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	004K5.14	
	Importance Rating	2.5	2.9

Proposed Question: 47/33

Control room operators are preparing to purge the pressurizer steam space to the VCT, to vent non-condensable gases from the RCS. What precaution is required to ensure effective reactivity control?

A. The VCT should be vented during the purge to ensure that the steam does not add positive reactivity.

B. The Rod Control System should be placed in "manual" control since excessive rod motion may occur from boron concentrating in the VCT.

C. The RCS must be periodically sampled to ensure that it is not diluted below SDM limits.

D. Operators should secure pressurizer heaters to minimize the concentration of boron in the pressurizer water volume.

Proposed Answer: C

Technical Reference(s): S-3.3K Pressurizer Steam Space Purge to the VCT

Learning Objective: _____ (As available)
004 Chemical and Volume Control System (CVCS) K5 Knowledge of the operational implications of the following concepts as they apply to the CVCS: (CFR:41.5/45.7) K5.14 Reduction process of gas concentration in RCS: vent-accumulated non-condensable gases from PZR bubble space, depressurized during cooldown or by alternately heating and cooling (spray) within allowed pressure band (drive more gas out of solution).

Question Source:
Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 5
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	004A1.05	
	Importance Rating	2.9	3.2

Proposed Question: 48/34

The plant is at 6% power during reactor startup near the end of the operating cycle. Operators are warming the steam lines by bypassing the MSIVs. The 1A feed regulating valve fails and slowly drifts open, increasing feed water flow to the 1A S/G. How does reactor power and the CVCS system initially respond to this transient ?

A. Power increases and charging flow increases.

B. Power increases and charging flow decreases.

C. Power decreases and charging flow increases.

D. Power decreases and charging flow decreases.

Proposed Answer: A

Technical Reference(s): _____

Learning Objective: _____ (As available)
System 004 Chemical and Volume Control System. A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: (CFR: 41.5/45.5) A1.05 S/G pressure and level.

Question Source:	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	013K2.01	
	Importance Rating	3.6	3.8

Proposed Question: 49/35

The plant is at 100% power during normal operations. Procedure PT-12.1, "Emergency Diesel Generator 1A" is being conducted. The 1A D/G has been loaded to 1975 KW for the past 20 minutes, supplying both busses 14 and 18, when an SI signal occurs. Which ONE of the following describes the actions that the operator must take with regard to 1A D/G and the associated breakers?

A. 1) Verify Bus 14 D/G breaker closed.
2) Adjust 1A D/G voltage to 480 volts using the manual rheostat.
3) When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ.

B. 1) Pull stop the Bus 18 D/G breaker.
2) Open the Bus 18 normal feed breaker.
3) Adjust 1A D/G voltage to 480 volts using the manual rheostat.
4) When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ.

C. 1) Adjust 1A D/G voltage to 480 volts using the manual rheostat.
2) When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ.

D. 1) Verify Bus 14 D/G breaker is closed.
2) Verify Bus 14 loads sequence on as necessary.

Proposed Answer: C

Learning Objective: _____ (As available)
013 Engineered Safety Features Actuation System (ESFAS) K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.01 ESFAS/safeguards equipment control.

Question Source:	Bank #	X (B064.0011)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	013K6.01	
	Importance Rating	2.7	3.1

Proposed Question: 50/36

The plant experienced a small break LOCA. On SI initiation, the "B" SI pump fails to start and cannot be manually started. Which of the following statements describes the response of the "C" SI pump discharge valves? Assume normal initial equipment alignment for power operations.

A. MOV-871A will close, MOV-871B will remain open.

B. MOV-871A and B will remain open.

C. MOV-871B will open, MOV-871A will remain closed.

D. MOV-871B will close, MOV-871A will remain open.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
013 Engineered Safety Features Actuation System (ESFAS). K6 Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: (CFR: 41.7 / 45.5 to 45.8) K6.01 Sensors and detectors.

Question Source:		
	Bank #	X (C006.0081)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	1
	K/A #	014K3.02	
	Importance Rating	2.5	2.8

Proposed Question: 51/37

During normal 100% power operations, the control room CRT screen for MRPI control rod indication fails. What operator actions are required due to this failure?

A. Be in Mode 2 with keff < 1 within 6 hours (LCO 3.03).

B. Verify rod position by movable incores once per 8 hours or reduce power to < 50% in 8 hours.

C. Reduce power to < 50% within 8 hours and be in mode 2 with keff < 1 in the following 6 hours.

D. Monitor rod position using PPCS.

Proposed Answer: D

Proposed references to be provided to applicants during examination: TS 3.1.7

Learning Objective: _____ (As available)
014 Rod Position Indication System (RPIS) K3 Knowledge of the effect that a loss or malfunction of the RPIS will have on the following: (CFR: 41.7 / 45.6) K3.02 Plant computer.

Question Source:		
	Bank #	X (B001.0015)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	017A2.01	
	Importance Rating	3.1	3.5

Proposed Question: 52/38

A core exit thermocouple on Train A has developed a short circuit and is not available for temperature monitoring. How would the control room operators determine this condition and what are the required actions, if any?

A. An Alarm Message on the Dataliner for CET Channel A; submit a report in 30 days for the inoperable channel.

B. An Individual Point Temperature and Status message on the Dataliner; no action is necessary.

C. An Alarm Message on the Dataliner for CET Channel A; no action is necessary.

D. An Individual Point Temperature and Status message on the Dataliner; submit a report in 30 days for the inoperable channel.

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
017 In-Core Temperature Monitor System (ITM) A2 Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5) A2.01 Thermocouple open and short circuits.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	2
	Group #	____	1
	K/A #	022G2.2.22	
	Importance Rating	____	4.1

Proposed Question: 53/-

The shift supervisor has declared the "A" containment recirculation fan cooler (CRFC) inoperable for routine maintenance. Four hours later the "C" CRFC shuts down due to a breaker failure. What are the plant operational restrictions due to these events? (TSAS: Tech Spec Action Statement)

A. The plant is in a 72-hour TSAS, if not met must be in Mode 3 in 6 hours and Mode 5 in 84 hours.

B. The plant is in a 72-hour TSAS, if not met must be in Mode 3 in 6 hours and Mode 5 in 36 hours.

C. The plant is in a 7-day TSAS, if not met must be in Mode 3 in 6 hours and Mode 5 in 36 hours.

D. The plant is in a 7-day TSAS, if not met must be in Mode 3 in 6 hours and Mode 5 in 84 hours.

Proposed Answer: A

Technical Reference(s): TS 3.6.6

Proposed references to be provided to applicants during examination: TS 3.6.6

Learning Objective: _____ (As available)
022 Containment Cooling System (CCS) 2.2.22 Knowledge of limiting conditions for operations and safety limits.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	____
	55.43	2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	022A4.04	
	Importance Rating	3.1	3.2

Proposed Question: 54/39

Following a LOCA, the operators are attempting to align CNMT spray for recirculation. RHR suction valves from CNMT sump B are open (MOVs 850 A&B, 851 A&B). Which ONE of the following states the conditions that must be met to open MOVs 857A, 857B, and 857C from the Main Control Board?

A. MOVs 897 AND 898 (SI Recirc) must be closed.

B. MOV 897 OR 898 (SI Recirc) must be closed
AND
MOVs 825A and 825B (SI pump suction valves) must be closed.

C. MOVs 897 AND 898 (SI Recirc) must be closed
AND
MOVs 896A and 896B (RWST to SI/CNMT spray) must be closed.

D. MOV 897 OR 898 (SI Recirc) must be closed
AND
MOV 896A or 896B (RWST to SI/CNMT spray) must be closed.

Proposed Answer: D

Technical Reference(s): System Description, CS System

Learning Objective: _____ (As available)
022 Containment Cooling System (CCS) A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.04 Valves in the CCS.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	2
	Group #	___	1
	K/A #	026G2.4.30	
	Importance Rating	___	3.6

Proposed Question: 55/-

During a large break LOCA the following conditions exist:

- SI actuation on Hi containment pressure
- Containment pressure = 32 psig
- Containment radiation monitor R-29 is reading 109 R/hr
- Accumulators have emptied
- RCS pressure has dropped to 32 psig
- Core voiding has occurred
- RWST level = 25%
- Both containment spray pumps failed to start

What emergency classification level does the shift supervisor declare and what is the basis for that level?

A. Site area emergency based on loss of the RCS barrier and potential loss of the containment.

B. Site area emergency based on loss of the RCS barrier and potential loss of the fuel cladding.

C. General emergency based on loss of the RCS barrier and the fuel cladding, and potential loss of the containment.

D. General emergency based on loss of the RCS barrier, the fuel cladding and the containment.

Proposed Answer: C

Technical Reference(s): EPIP 1-0, Ginna Station Event Evaluation and Classification

Proposed references to be provided to applicants during examination: EPIP 1-0

Learning Objective: _____ (As available)
026 Containment Spray System (CSS) 2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.

55/-

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	1
	K/A #	026K4.05	
	Importance Rating	2.8	3.3

Proposed Question: 56/40

Which ONE of the following is used to ensure that the CNMT spray nozzles do not become clogged with debris during recirculation?

A. CNMT is inspected to ensure that no loose material exists which could plug the nozzles.

B. A combination of CNMT inspection and screens in sump B prevent debris from entering the system.

C. Strainers at the CNMt spray pump suction prevent debris from entering the spray nozzles.

D. Strainers at the RHR suction in sump B and at the CNMT spray pump suction prevent debris from entering the spray nozzles.

Proposed Answer: B

Technical Reference(s): TS 3.5.2 & 3.6.6, CS System Description

Learning Objective: _____ (As available)
026 Containment Spray System (CSS) K4 Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.05 Prevention of material from clogging nozzles during recirculation.

Question Source:
Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	059K4.16	
	Importance Rating	3.1	3.2

Proposed Question: 57/41

Which one of the following will result in an automatic trip of a main feedwater pump?

A. Pressurizer pressure of 1750 psig.

B. High S/G water level of 85%

C. Feedwater suction pressure less than 185 psig.

D. Reactor trip.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
059 Main Feedwater (MFW) System K4 Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.16 Automatic trips for MFW pumps.

Question Source:		
	Bank #	X (INPO Bank 5383)
	Modified Bank #	
	New	

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	059A2.05	
	Importance Rating	3.1	3.4

Proposed Question: 58/42

A plant startup from hot shutdown to full load was in progress. The intermediate and low power range trips have been blocked and the turbine is accelerating to synchronous speed. A leak develops at the running MFW pump discharge and the pump trips. Which ONE of the following actions are required per AP-FW.1, "Partial or Complete Loss of Main Feedwater,"in addition to starting all 3 AFW pumps and verifying flow?

A. Decrease power rapidly to less than 8%.

B. Verify turbine trip and go to AP-TURB.1, "Turbine Trip Without Reactor Trip Required."

C. Reduce reactor power to less than 2% and continue with AP-FW.1.

D. Enter E-0, "Reactor Trip or Safety Injection."

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
059 Main Feedwater (MFW) System A2 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13) A2.05 Rupture in MFW suction or discharge line.

Question Source:		
	Bank #	X (B000.0379)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	____

10 CFR Part 55 Content:		
	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	1
	K/A #	063K2.01	
	Importance Rating	2.9	3.1

Proposed Question: 59/43

Which one of the following is correct regarding the relationship between the AC and DC distribution systems?

A. The DC distribution system is the normal power supply (via the inverters) to all the AC Instrument Busses.

B. The DC distribution system has no direct connection to the AC distribution system, per the power source separation requirements of Tech Specs.

C. The DC distribution system, via the battery chargers, is used to provide the backup power supply to inverters 1A and 1B.

D. The DC distribution system is the normal power supply (via the inverters) to two of the AC Instrument Busses.

Proposed Answer: D

Technical Reference(s): LP R0901C, Inst Bus and DC Power Supply System

Learning Objective: _____ (As available)
063 D.C. Electrical Distribution K2 Knowledge of bus power supplies to the following: (CFR:41.7)
K2.01 Major DC loads.

Question Source:		
	Bank #	X (C063.0042)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	068A3.02	
	Importance Rating	3.6	3.6

Proposed Question: 60/44

Which ONE of the following process radiation monitors would automatically isolate or terminate a release if its alarm setpoint were reached?

A. RM-21: Turbine, Service, and AVT Building Retention Tank.

B. RM-20A: Spent Fuel Pit HX Service Water.

C. RM-13: Auxiliary Building Particulate.

D. RM-10A: CNMT Vent Iodine.

Proposed Answer: A

Technical Reference(s): RMS System Description

Learning Objective: _____ (As available)
068 Liquid Radwaste System (LRS) A3 Ability to monitor automatic operation of the Liquid Radwaste System including: (CFR: 41.7 / 45.5) A3.02 Automatic isolation.

Question Source: Bank # X (B068.0001)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis ____

10 CFR Part 55 Content: 55.41 7
55.43 _____

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	072K5.02	
Importance Rating	2.5	3.2

Proposed Question: 61/45

The area radiation monitoring system provides _____ alarm(s) to plant personnel so that any personnel in the vicinity can _____ .

A. Visual and audible; identify and report the area of increased radiation levels.

B. Visual and audible; vacate the area of increased radiation levels.

C. Visual; vacate the area of increased radiation levels.

D. Audible; vacate the area of increased radiation levels.

Proposed Answer: B

Technical Reference(s): RMS System Description

Learning Objective: _____ (As available)
072 Area Radiation Monitoring (ARM) System K5 Knowledge of the operational implications of the following concepts as they apply to the ARM system: (CFR: 41.5 / 45.7) K5.02 Radiation intensity changes with source distance.

Question Source:
Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 5
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	072A3.01	
	Importance Rating	2.9	3.1

Proposed Question: 62/46

Given the following information:

- The plant is shut down for a forced outage
- RCS Tavg = 547 deg F.
- Pressurizer pressure = 2220 psig
- A containment ventilation mini-purge is in progress to improve containment air quality

Which one of the following conditions will cause the containment mini-purge isolation dampers (AOV-7445, 7478, 7970, 7971) to automatically close?

A. A fire breaks out in the charcoal filter bank at the suction of the charcoal filter fans.

B. The containment gas monitor R-12 goes into alarm.

C. The HCO manually starts containment spray pump 1A on recirc for a surveillance test.

D. Containment recirc fan 1B trips on overload.

Proposed Answer: B

Technical Reference(s): LP R2201C, Containment, Auxiliary and Control Bldg Ventilation Systems

Learning Objective: _____ (As available)
072 Area Radiation Monitoring (ARM) System A3 Ability to monitor automatic operation of the ARM system, including: (CFR: 41.7 / 45.5) A3.01 Changes in ventilation alignment.

Question Source:		
	Bank #	X (C029.0030)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	002K5.09	
	Importance Rating	3.7	4.2

Proposed Question: 63/47

Which one of the following explains the basis for the caution that pressurizer heaters should be restored within 1 hour of initiation of natural circulation?

A. Ambient losses could decrease PRZR pressure to the reactor trip setpoint.

B. Ambient losses could decrease PRZR pressure to the SI setpoint.

C. Ambient losses could decrease RCS to saturation.

D. Tech Specs require cooldown to < 350 degrees if the heaters are not restored in one hour.

Proposed Answer: C

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
002 Reactor Coolant System (RCS) K5 Knowledge of the operational implications of the following concepts as they apply to the RCS: (CFR: 41.5/ 45.7) K5.09 Relationship of pressure and temperature for water saturation and sub-cooling conditions.

Question Source:		
	Bank #	X (C000.0279)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	002K6.03	
	Importance Rating	3.1	3.6

Proposed Question: 64/48

Describe what occurs in the RVLIS if SI pumps or RHR pumps are running.

A. T-Cold input to RVLIS disabled and CETs are used for specific gravity calculation and density compensation.

B. RCP flow function generator is provided a delta-pressure input to compensate for additional head of RHR or SI pumps.

C. RCP delta-pressure signal is removed from RVLIS calculation.

D. Uses only RCS pressure as input for all density calculations.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
002 Reactor Coolant System (RCS) K6 Knowledge of the effect of a loss or malfunction on the following RCS components: (CFR: 41.7 / 45.7) K6.03 Reactor vessel level indication.

Question Source:		
	Bank #	X (C016.0130)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	2
	Group #	____	2
	K/A #	010G2.1.14	
	Importance Rating	____	3.3

Proposed Question: 65/-

The plant is at 100% power. Which ONE of the following will require a one-hour NRC notification?

A. PORV 431C fails open and its associated block valve (MOV-515) cannot be closed.

B. Spray valve PCV-431A fails open resulting in a low pressure reactor trip.

C. PT-449 PRZR pressure fails high and operators place controller PC-431K in MANUAL to control pressure.

D. Both PRZR safety valves are leaking such that RCS identified leakage is > 10 gpm.

Proposed Answer: A
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
010 Pressurizer Pressure Control System (PZR PCS) 2.1.14 Knowledge of system status criteria which require the notification of plant personnel.

Question Source:	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	010K2.01	
	Importance Rating	3.0	3.4

Proposed Question: 66/49

Which statement is correct concerning pressurizer heater power supplies when a safety injection signal is generated?

A. Both the proportional and backup heaters are on 480V safeguard busses, both are stripped from their respective busses on an SI, and both may be manually started when SI termination criteria have been met.

B. Both the proportional and backup heaters are on 480V safeguard busses, both are stripped from their respective busses on an SI, and both may be manually started when the SI signal is reset.

C. Both the proportional and backup heaters are on 480V safeguard busses, both are stripped from their respective busses on an SI, but only the proportional heaters are sequenced back onto the bus. The backup heaters may be manually started when the SI signal is reset.

D. The proportional heaters are on a 480V safeguard bus, the backup heaters are on a 480V non-safeguard bus; the proportional heaters are sequenced back onto the safeguard bus, the backup heaters may be manually restarted when the SI signal is reset.

Proposed Answer: B

Technical Reference(s): 480V Distribution System Description

Learning Objective: _____ (As available)
010 Pressurizer Pressure Control System (PZR PCS) K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.01 PZR heaters.

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	012A2.05	
	Importance Rating	3.1	3.2

Proposed Question: 67/50

Which one of the following explains the rod stop signal(s) that would occur if a NIS Power Range upper detector fails high with reactor power initially at 98%, and what is the operators' response?

A. OP Delta-T would be within 1.71 degrees F. of setpoint on 1/4 channels preventing AUTO outward motion only; restore AFD to target band within 15 minutes.

B. OT Delta-T would be within 1.71 degrees F. of setpoint on 1/4 channels preventing MANUAL outward motion only; restore AFD to target band within 15 minutes.

C. Power Range at 103% on 1/4 channels would prevent AUTO and MANUAL outward motion; enter ER-NIS.3, "PR Malfunction."

D. Power Range at 103% on 1/4 channels would prevent AUTO outward motion only; enter ER-NIS.3, "PR Malfunction."

Proposed Answer: C

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
012 Reactor Protection System A2 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5) A2.05 Faulty or erratic operation of detectors and function generators.

Question Source:		
	Bank #	X (B012.0002)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge ____
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 5
	55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	029A1.02	
	Importance Rating	3.4	3.4

Proposed Question: 68/51

The plant is in Mode 5 with the Containment Shutdown Purge System in operation. What automatic actions will take place if there is a containment vent radiation monitor alarm?

A. Purge supply and exhaust containment isolation valves close in 2 seconds, all purge supply and exhaust fans trip, containment recirculation fan coolers 1A and 1C align for charcoal filtration.

B. Purge supply and exhaust containment isolation valves close in 2 seconds, all purge supply and exhaust fans trip.

C. Purge supply containment isolation valve closes in 2 seconds, purge supply fans trip, purge exhaust re-aligns through the charcoal filters.

D. Purge supply containment isolation valve closes in 2 seconds, purge supply fans trip, purge exhaust re-aligns through the charcoal filters, containment recirculation fan coolers 1A and 1C align for charcoal filtration.

Proposed Answer: B

Technical Reference(s): RGE-22 Containment Ventilation System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
029 Containment Purge System (CPS) A1 Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the Containment Purge System controls including: (CFR: 41.5 / 45.5) A1.02 Radiation levels.

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 5
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	033A1.02	
	Importance Rating	2.8	3.3

Proposed Question: 69/52

Which one of the following is true concerning process radiation monitors RM-20A and RM-20B?

A. The monitors alarm locally and cause no automatic actions.

B. The monitors monitor service water from the outlet of the spent fuel pit heat exchangers to warn of a potential release to the auxiliary building.

C. The monitors have different background levels and different setpoints due to different flow capacities.

D. The monitors are redundant to the spent fuel pit low level alarm since a large heat exchanger leak is necessary to alarm the monitors.

Proposed Answer: C

Technical Reference(s): RMS and Spent Fuel Pool Cooling System Descriptions

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
033 Spent Fuel Pool Cooling System (SFPCS) A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Spent Fuel Pool Cooling System operating the controls including: (CFR: 41.5 / 45.5) A1.02 Radiation monitoring systems

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 5
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	035K5.01	
	Importance Rating	3.4	3.9

Proposed Question: 70/53

The plant is operating normally at 100% power. A single steam dump valve fails open. Which one of the following describes the initial plant response with no operator action?

A. The MSIVs will shut on high steamline flow.

B. T-avg decreases, reactor power increases but remains below trip setpoint.

C. The reactor will trip on OP delta T in approximately 5 minutes followed by low pressurizer pressure SI a minute or so later.

D. Turbine load decreases as available steam bypasses to the condenser; reactor power is unchanged.

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
035 Steam Generator System (S/GS) K5 Knowledge of operational implications of the following concepts as the apply to the S/GS: (CFR: 41.5 / 45.7) K5.01 Effect of secondary parameters, pressure, and temperature on reactivity.

Question Source:		
	Bank #	X (C331.0216)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	039K1.04	
	Importance Rating	3.1	3.1

Proposed Question: 71/54

With respect to the inherent stability of the plant, the expression "Reactor power follows steam demand," is sometimes used. Which one of the following statements explains this principle with respect to a steam flow increase?

A. Increased heat transfer out of the primary will cause Tavg to decrease adding positive reactivity causing reactor power to increase.

B. Increased heat transfer out of the primary will cause Tavg to decrease adding negative reactivity causing reactor power to increase.

C. Increased heat transfer out of the primary will cause Tavg to increase adding positive reactivity causing reactor power to increase.

D. Increased heat transfer out of the primary will cause Tavg to increase adding negative reactivity causing reactor power to increase.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
039 Main and Reheat Steam System (MRSS) K1Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.04 RCS temperature monitoring and control.

Question Source:		
	Bank #	X (C331.0001)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge ____
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 2
	55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	2
	Group #	____	2
	K/A #	039G2.1.32	
	Importance Rating	____	3.8

Proposed Question: 72/-

Given the following conditions:

- The plant was initially at 100% power
- 'A' S/G pressure is 700 psig and decreasing
- 'B' S/G pressure is 785 psig
- Containment pressure is 3 psig and increasing
- Operators are responding to a steam line rupture in accordance with E-2, "Faulted Steam Generator Isolation"
- Power to Main DC Distribution Panel 1A has been lost

Which ONE of the following describes operator actions for E-2, Step 1, "Check MSIV of Faulted S/G - Closed." The 'A' MSIV:

A. Failed open; an AO must close the valve locally by manually repositioning the three-way DC solenoid valve.

B. Failed closed; an AO shall be positioned locally to ensure the valve remains closed.

C. Failed as is; but can still be closed by the MCB Main Steam Isolation pushbutton.

D. Failed as is; an AO must locally open locked closed air bleed valves to close the MSIV.

Proposed Answer: D

Technical Reference(s): Main Steam System Description

Learning Objective: _____ (As available)
039 Main and Reheat Steam System (MRSS) 2.1.32 Ability to explain and apply all system limits and precautions.

Question Source:	Bank #	____
	Modified Bank #	X (C039.0041)
	New	____
Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	073K3.01	
	Importance Rating	3.6	4.2

Proposed Question: 73/55

During operation at hot shutdown conditions, R-19 "S/G blowdown monitor" fails. Assuming blowdown is aligned for discharge to the lake and S/G secondary activity is 0.02 uc/gm, what actions must be taken?

A. Releases may continue provided that grab samples are analyzed for isotopic concentrations every 24 hours. Restore R-19 to service within 30 days.

B. Releases may continue provided that grab samples are analyzed for isotopic concentrations every 8 hours. Restore R-19 to service within 30 days.

C. None. Releases may continue provided R-21 "retention tank monitor" is in service.

D. Terminate the release by closing the S/G blowdown valves. Releases may not be continued until R-19 is restored to service.

Proposed Answer: B

Technical Reference(s): ODCM Section 3.1

Proposed references to be provided to applicants during examination: ODCM Sect. 3.1

Learning Objective: _____ (As available)
073 Process Radiation Monitoring (PRM) System K3 Knowledge of the effect that a loss or malfunction of the PRM system will have on the following: (CFR: 41.7 / 45.6) K3.01 Radioactive effluent releases.

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	075A4.01	
	Importance Rating	3.2	3.2

Proposed Question: 74/56

The operators are swapping running service water pumps. After starting the "A" pump and then stopping the "B" pump, the following conditions exist:

- Service water header "A" pressure prior to swapping pumps - 60 psig
- Service water header "A" pressure after swapping pumps - 43 psig
- "B" service water pump rotating slowly in the reverse direction
- "A" service water pump operating normally
- "C" service water pump operating normally
- "D" service water pump operating normally

Which ONE of the following action(s) shall be performed?

A. Isolate the "A" service water pump; restart the "B" service water pump.

B. Isolate the "B" service water pump and declare it inoperable.

C. Initiate a plant shutdown in accordance with O-2.1, "Normal Shutdown to Hot Shutdown."

D. Trip the reactor and enter EOP E-0.

Proposed Answer: B

Technical Reference(s): SWS System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: 075 Circulating Water System A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 /45.5 to 45.8) A4.01 Emergency/essential SWS pumps.

Question Source: Bank # X (C076.0032)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	079K4.01	
	Importance Rating	2.9	3.2

Proposed Question: 75/57

The unit is at cold shutdown for maintenance on a RCP. The following conditions exist:

- The "A" RCP is on hold for seal repair
- The "C" instrument and service air compressors are both OOS
- Instrument air compressors "A" and "B" are running with local control in "constant run"
- The diesel air compressor is aligned to service air per T-2F, "Backup Air Supply"

Subsequently, annunciator H-16, "Instrument Air Comp," alarms followed by H-8, "Instrument Air Lo Press 100 psig." A MCB check reveals that the "B" instrument air compressor has tripped and instrument air header pressure is at 95 psig and slowly decreasing. Assuming no operator action and header pressure continues to slowly decrease, which one of the following describes the instrument and service air system response?

A. The "A" instrument air compressor will load at 90 psig and should return instrument air header pressure to normal.

B. The "B" instrument air compressor will restart as soon as compressor temperatures return to normal and instrument air pressure should return to normal.

C. The service air crosstie valve AOV-5251 should open and supply the instrument air header with backup air.

D. Instrument air header pressure will continue to decrease until the containment instrument air isolation valve AOV-5392 automatically closes.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
079 Station Air System (SAS) K4 Knowledge of SAS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.01 Cross-connect with IAS.

Question Source:			
	Bank #	X	(B078.0013)
	Modified Bank #		(Note changes or attach parent)
	New		

75/57

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	079A2.01	
	Importance Rating	2.9	3.2

Proposed Question: 76/58

Given the following conditions:

- A loss of all AC power has occurred
- Both diesel generators failed to start
- ER-ELEC.5, "Security Diesel Feed to Bus 13," is being used to supply bus 13 from the security diesel generator
- Diesel air compressor is OOS

Which ONE of the following describes the purpose for supplying power to bus 13?

A. The service air compressor is started on bus 13 so service air can be cross-connected with instrument air which will be used to allow control of the TDAFW pump.

B. The service air compressor is started on bus 13 so service air can be cross-connected with instrument air which will be used to isolate RCP seal return.

C. A reactor compartment cooling fan can be started to provide cooling to the source range NIS detectors.

D. The instrument air compressor is started to allow control of the TDAFW pump.

Proposed Answer: B

Learning Objective: _____ (As available)
079 Station Air System (SAS) A2 Ability to (a) predict the impacts of the following malfunctions or operations on the SAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 /43.5/ 45.3 / 45.13) A2.01 Cross-connection with IAS.

Question Source:		
	Bank #	X (B079.0001)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	5
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	086K1.02	
	Importance Rating	2.7	3.2

Proposed Question: 77/59

The plant has experienced a loss of all AC power and the CRF has entered ECA-0.0, "Loss of All AC Power." Operators have verified that power was restored to bus 17, but only one service water pump properly restarted on that bus. Bus 18 is de-energized as a result of an unknown electrical fault. What actions shall operators take to ensure adequate cooling to both emergency diesel generators (EDGs)?

A. One service water pump is adequate cooling for both EDGs; post an auxiliary operator to monitor EDG temperatures.

B. Secure the operating service water pump and enter ER-D/G.2, "Alternate Cooling for Emergency D/Gs."

C. Manually close the breaker to energize bus 18 from the 1A EDG and start a service water pump on that bus.

D. Enter ER-D/G.2, "Alternate Cooling for Emergency D/Gs," and provide alternate cooling to the 1A EDG.

Proposed Answer: D

Technical Reference(s): ER-D/G.2, SWS System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
086 Fire Protection System (FPS) K1 Knowledge of the physical connections and/or cause-effect relationships between the Fire Protection System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.02 Raw service water.

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	2-9
	55.43	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	086A3.01	
	Importance Rating	2.9	3.3

Proposed Question: 78/60

The following plant conditions exist:

- Fire protection suppression systems have actuated for a transformer fire.
- Fire header pressure has remained above 90 psig.

What fire system pump(s) is(are) expected to be running?

A. The motor-driven pump

B. The diesel-driven pump

C. Both the motor-driven and diesel-driven pumps

D. Neither the motor-driven nor the diesel-driven pump

Proposed Answer: C

Technical Reference(s): Fire Protection System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
086 Fire Protection System (FPS) A3 Ability to monitor automatic operation of the Fire Protection System including: (CFR: 41.7 / 45.5) A3.01 Starting mechanisms of fire water pumps

Question Source:			
	Bank #	X	(C086.0007)
	Modified Bank #		(Note changes or attach parent)
	New		

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:		
	55.41	7
	55.43	

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	3	2
K/A #	103K3.01	
Importance Rating	3.3	3.7

Proposed Question: 79/61

The plant is in Mode 6 and core alterations are in progress. Which ONE of the following conditions will result in a loss of containment integrity?

A. Operation of an operable Containment Purge and Exhaust System.

B. Movement of maintenance personnel through the personnel air lock doors.

C. The equipment hatch removed and a closure plate installed that restricts air flow from containment.

D. The "A" S/G secondary manways removed and the associated atmospheric relief valve removed for maintenance.

Proposed Answer: D

Technical Reference(s): O-15.2 Containment Integrity

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
103 Containment System K3 Knowledge of the effect that a loss or malfunction of the containment system will have on the following: (CFR: 41.7 / 45.6) K3.01 Loss of containment integrity under shutdown conditions.

Question Source:
Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level:
Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	3	3
	K/A #	005K6.03	
	Importance Rating	2.5	2.6

Proposed Question: 80/62

The plant is in Mode 6 with the vessel head installed. Mid-loop operations are in progress. The S/G hot and cold leg manways are removed. S/G nozzle dams are installed on the hot legs but not on the cold legs. No vents are open in the RCS. The plant experiences a loss of RHR cooling. Which one of the following will occur as a long-term result of this event if no operator actions are taken?

A. Steam formation in the upper head will depress vessel level and displace water out the S/G cold leg nozzles.

B. Steam formation in the hot legs will cause erroneous reactor vessel level indication.

C. Steam formation in the upper head will increase pressure enough to blow out one or more S/G hot leg nozzle dams.

D. Steam formation in the cold legs and resultant steam expansion will displace water out the S/G hot leg manways.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
005 Residual Heat Removal System (RHRS) K6 Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: (CFR: 41.7 / 45.7) K6.03 RHR heat exchanger.

Question Source:		
	Bank #	X (INPO Bank 9241)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge ____
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 7
	55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	3	3
	K/A #	041A3.03	
	Importance Rating	2.7	2.8

Proposed Question: 81/63

The plant is operating at full power with the Steam Dump Mode Selector Switch in AUTO and control rods in MANUAL, when a step load decrease of 15% occurs. Which statement below is correct with regard to operation of the condenser steam dump valves for these conditions?

A. Steam dumps will modulate open if the temperature error exceeds 6 deg F.

B. No action will occur because the load rejection controller has not armed.

C. Steam dump valve groups A & B will immediately go full open to match T-avg with T-ref.

D. All steam dump valve groups will go full open to reduce T-avg to match T-ref.

Proposed Answer: A

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
041 Steam Dump System (SDS) and Turbine Bypass Control A3 Ability to monitor automatic operation of the SDS, including: (CFR: 41.7 / 45.5) A3.03 Steam flow.

Question Source:		
	Bank #	X (C041.0019)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	7
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	2
	Group #	____	3
	K/A #	041G2.4.31	
	Importance Rating	____	3.4

Proposed Question: 82/-

The following plant conditions exist:

- Reactor trip has occurred from 100% power
- Red channel T-avg failed as-is during the trip
- All other equipment is operable
- All other T-avg channels are indicating 560 degrees F and decreasing

Assume no operator actions were taken. What is the effect of the T-avg failure on the steam dump system?

A. Steam dump valves will open and remain open until manually closed.

B. Steam dump valves will open and remain open until Average T-avg decreases to 547 degrees F. and then will close.

C. Steam dump valves will be closed and can be opened in MANUAL only.

D. Steam dump valves will be closed and can be opened only if steam dump interlock selector switch is selected to BYPASS INTERLOCK.

Proposed Answer: B

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
041 Steam Dump System (SDS) and Turbine Bypass 2.4.31 Knowledge of annunciators alarms and indications, and use of the response instructions.

Question Source:		
	Bank #	X (C041.0021)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	____
	55.43	5

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	3	3
K/A #	076K2.01	
Importance Rating	2.7	2.7

Proposed Question: 83/64

Which ONE of the following statements describes how the service water (SW) system responds to an undervoltage condition on bus 17/18 (No SI signal present)?

A. Selected SW pump starts immediately after diesel generator supply breaker closes.

B. Selected SW pump starts immediately after the normal supply breaker to bus 17 or 18 opens.

C. Selected SW pump starts 40 seconds after bus 17 or 18 diesel generator supply breaker closes.

D. Selected SW pump starts 40 seconds after the normal supply breaker to bus 17 or 18 opens.

Proposed Answer: C

Technical Reference(s): SWS System Description

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
076 Service Water System (SWS) K2 Knowledge of bus power supplies to the following: (41.7)
K2.01 Service water.

Question Source:
Bank # X (C076.0019)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:
55.41 7
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	1
	K/A #	G2.1.6	___
	Importance Rating	___	4.3

Proposed Question: 84/-

As the Control Room Foreman, you have entered AP-FW.1, "Partial or Complete Loss of Main Feedwater," due to annunciator G-3, "S/G 'A' level deviation +/-7%." Reactor power is 63% with both MFPs running. MFP suction pressure is 220 psig. S/G 'A' level is decreasing and is at 40% when the Control Operator takes manual control of the 'A' feed regulating valve and increases main feedwater flow to 50K lbm/hr above steam flow. S/G 'A' level continues to decrease from 40% to 20%. With level at 20% and decreasing, which one of the following actions do you direct the board operators to take?

A. Shut the 'A' S/G MSIV.

B. Start all three AFW pumps and quickly reduce turbine load to less than 50%.

C. Trip the reactor and go to E-0.

D. Decrease feedwater flow since the 'A' S/G level is shrinking out low due to cold feedwater.

Proposed Answer: C

Technical Reference(s): AP-FW.1
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.1.6 Ability to supervise and assume a management role during plant transients and upset conditions. (CFR: 43.5 / 45.12 /45.13)

Question Source:		
	Bank #	X (B000.0378)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	___
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	___
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	1	1
	K/A #	G2.1.31	
	Importance Rating	4.2	3.9

Proposed Question: 85/65

Given the following conditions:

- The plant is at 100% reactor power
- Service water (SW) pumps 'A' and 'D' are in service
- SW pump 'B' is out of service for routine maintenance
- SW pumps 'C' and 'D' are selected for Auto Start

The plant sustains a loss of offsite power and a SI signal. What service water MCB indications would the operators expect to see if all equipment functioned as designed?

A. 12 SW isolation MOVs close after the D/Gs re-energize busses 14 and 16; SW pump 'C' starts 15 seconds after the D/Gs re-energize busses 17 and 18. No other SW pumps auto start.

B. 12 SW isolation MOVs close after the D/Gs re-energize busses 14 and 16; SW pumps 'C' and 'D' start 15 and 17 seconds respectively after the D/Gs re-energize busses 17 and 18.

C. Two AOVs fail open in the containment recirculation fan cooler return line; SW pump 'C' starts 15 seconds after the D/Gs re-energize busses 17 and 18. No other SW pumps auto start.

D. Two AOVs fail closed in the containment recirculation fan cooler return line; SW pumps 'C' and 'D' start 15 and 17 seconds respectively after the D/Gs re-energize busses 17 and 18.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.1.31 Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup. (CFR: 45.12)

Question Source:		
	Bank #	
	Modified Bank #	(Note changes or attach parent)
	New	X

85/65

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7
55.43 ____

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	1	1
K/A #	G2.1.33	
Importance Rating	3.4	4.0

Proposed Question: 86/66

The plant power level is being increased following repairs to 'A' main feed pump. Present power level is 93%. The 100% Delta-I target is -1%. The control operator initiates an excessive dilution resulting in auto insertion of control rods. The channels of Delta-Flux are observed to be -7%, -6.9%, -6.7%, and -6.9%. Which ONE of the following is the correct action for this condition?

A. Start boration to improve AFD but no LCO action statement is applicable.

B. Restore AFD to target band within 15 minutes or be < 90% power in the following 15 minutes.

C. Restore AFD to target band or be < 90% power in 15 minutes.

D. Restore AFD to target band or be < 90% power in 15 minutes and < 50% power in the following 30 minutes.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (CFR: 43.2 / 43.3 /45.3)

Question Source:
Bank # X (C000.0708)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 ____
55.43 2, 3

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	3
	Group #	____	1
	K/A #	G2.1.34	
	Importance Rating	____	2.9

Proposed Question: 87/-

The plant has operated at high power levels for six months. Earlier in the shift, a main feedwater pump tripped and reactor power was rapidly reduced to 50% and maintained at that level. The results of an RCS activity sample taken three hours after the load reduction were:

- Total specific activity: 96 micro-curies/gram
- Dose-equivalent I-131 activity: 150 micro-curies/gram
- 100/E-bar limit: 90.9 micro-curies/gram

Which ONE of the following states any limits associated with these parameters assuming the parameters do not change?

A. Power increases may commence but must be limited to 3% per hour, or to 10% step-load increased followed by a three-hour soak.

B. Operation can continue for up to seven days if power is reduced to < 47% in the next eight hours.

C. The reactor must be shut down with the T-Avg < 500 deg F. within eight hours.

D. Operation at any power level may continue for seven days.

Proposed Answer: C

Proposed references to be provided to applicants during examination: TS 3.4.16

Learning Objective: _____ (As available)
2.1.34 Ability to maintain primary and secondary plant chemistry within allowable limits. (CFR: 41.10 / 43.5 /45.12).

Question Source:		
	Bank #	X (B300.0049)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	2
	K/A #	G2.2.23	
	Importance Rating	___	3.8

Proposed Question: 88/- (common K/A)

The plant is at 100% power. 'A' MDAFW pump was declared inoperable at 0700 on 12/10. 'B' MDAFW pump was declared inoperable at 1000 on 12/13. 'A' MDAFW was declared operable at 1300 on 12/14. Assuming the 'B' MDAFW pump remains inoperable, which ONE of the following is the date/time at which TS action statement 3.7.5G must be entered?

A. At 1000 on 12/16.

B. At 0700 on 12/18.

C. At 0700 on 12/17.

D. At 1000 on 12/20.

Proposed Answer: B

Technical Reference(s): TS 1.3, TS 3.7.5

Proposed references to be provided to applicants during examination: TS 1.3, 3.7.5

Learning Objective: _____ (As available)
2.2.23 Ability to track limiting conditions for operations.

Question Source:		
	Bank #	X (B300.0056)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	___
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	___
	55.43	2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	2
	K/A #	G2.2.26	
	Importance Rating	____	3.7

Proposed Question: 89/-

In procedure O-15.1, "Administrative Requirements Checklist for Entry Into Mode 6, Refueling," there is a step that requires two RHR loops to be operable when there is less than 23 feet of water in the cavity. What is the basis for that step?

A. Provides additional boron mixing capability.

B. Provides additional decay heat removal capability.

C. Provides additional boron mixing and proper iodine removal capabilities for a fuel handling accident.

D. Provides additional decay heat removal and proper iodine removal capabilities for a fuel handling accident.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.2.26 Knowledge of refueling administrative requirements (CFR: 43.5/ 45.13).

Question Source:		
	Bank #	X (C300.0250)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:		
	55.41	_____
	55.43	5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	2
	K/A #	G2.2.32	
	Importance Rating	___	3.3

Proposed Question: 90/-

The plant is in Mode 6 and fuel is being loaded into the core. What parameter is monitored during fuel movement to ensure that the addition of subsequent fuel assemblies will not cause an approach to a critical core configuration, and how is this parameter measured?

A. Inverse count rate ratio; normalized SR count rate divided by actual SR count rate.

B. Inverse count rate ratio; average normalized SR count rate divided by average SR count rate.

C. Boron concentration; concentration in the refueling canal and refueling cavity must be within COLR limit.

D. Boron concentration; concentration in the refueling cavity and the RCS must be within 25 ppm of each other.

Proposed Answer: A

Technical Reference(s): Proc. RF-65.2

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.2.32 Knowledge of the effects of alterations on core configuration (CFR: 43.6).

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	___
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	___
	55.43	6

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	2
	K/A #	G2.2.33	
	Importance Rating	___	2.9

Proposed Question: 91/-

The control rod bank insertion, sequence, and overlap limits must be maintained within the limits specified in the COLR. This is done to:

A. Preserve the assumed power distribution, ejected rod worth, SDM, and reactivity rate insertion assumptions in the safety analysis.

B. Ensure that the AFD and QPTR process variables accurately characterize the three-dimensional power distribution of the core.

C. Restrict the reactivity added due to an inadvertent rod drop, minimizing local power peaks and possible approach to hot channel factor limits.

D. Ensure at all times that sufficient reactivity is available in the rods to shut down the reactor to hot zero power with the maximum worth rod fully withdrawn.

Proposed Answer: A
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.2.33 Knowledge of control rod programming (CFR: 43.6).

Question Source:		
	Bank #	___
	Modified Bank #	___
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	___
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	___
	55.43	6

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	2	2
	K/A #	G2.2.34	
	Importance Rating	2.8	3.2

Proposed Question: 92/68

The plant has been at steady state 100% power for two days following a refueling outage. With control rods in AUTO the "Control Banks Lo Limit" alarm is received, accompanied by inward rod motion. Which ONE of the following is the cause of this plant response?

A. Dilutions have over-compensated for xenon burnout.

B. An unsaturated standby mixed bed ion exchanger was placed in service.

C. PRZR back-up heaters were turned to equalize the boron concentration in response to a routine chemistry sample (PRZR - 840 ppm, RCS - 820 ppm).

D. A steam dump valve to the condenser was reported leaking excessively by the seat.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.2.34 Knowledge of the process for determining the internal and external effects on core reactivity (CFR: 43.6).

Question Source:		
	Bank #	X (B320.0049)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	5
	55.43	6

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	3	3
	K/A #	G2.3.1	
	Importance Rating	2.6	3.0

Proposed Question: 93/69

An operator received the following radiation exposure at Ginna during the year. The exposure record until the last day of the year is:

- Deep Dose Equivalent (DDE) 275 mrem
- Lens Dose Equivalent (LDE) 15 mrem
- Committed Effective Dose Equivalent (CEDE) 120 mrem
- Shallow Dose Equivalent (SDE) 25 mrem
- Committed Dose Equivalent (CDE) 25 mrem

On the last day of the year the individual was requested to work in an area where the known radiation dose rate is 280 mrem/hr. If the worker takes 15 minutes in that radiation field to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

A. 345 mrem.

B. 465 mrem.

C. 515 mrem.

D. 530 mrem.

Proposed Answer: B
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements. (CFR: 41.12/ 43.4/45.9 / 45.10).

Question Source:		
	Bank #	_____
	Modified Bank #	_____ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	12
	55.43	4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	3
	K/A #	G2.3.4	___
	Importance Rating	___	3.1

Proposed Question: 94/-

Which ONE of the following statements describes the policy at Ginna regarding emergency radiation exposure above 10 CFR 20 limits?

A. Exposures up to 100 Rem to save human life are authorized.

B. After individuals have received an emergency exposure they shall be removed from work involving radiation exposure for the remainder of their lifetime.

C. Only one emergency exposure is authorized in an individual's lifetime.

D. The Plant Superintendent must give prior authorization for each emergency exposure.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.4 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized (CFR: 43.4 / 45.10 0 0).

Question Source:	Bank #	X (C310.0258)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	_____
	55.43	4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	3
	K/A #	G2.3.10	___
	Importance Rating	___	3.3

Proposed Question: 95/-

Which ONE of the following describes procedural controls which must be followed to ensure control of radiation exposure in restricted areas (RAs)?

A. Personnel enter a RA at designated control points; all RA work will be performed under an approved Radiation Work Permit; visitors are not permitted in a RA.

B. Material and equipment used in RA must remain there; secondary dosimeters are required in the RA; no smoking, chewing or eating in RA.

C. Visitors are limited to 100 mrem total exposure; all RA work will be performed under an approved Radiation Work Permit; secondary dosimeters are required in the RA.

D. Personnel enter a RA at designated control points; all RA work will be performed under an approved Radiation Work Permit; secondary dosimeters are required in the RA.

Proposed Answer: D

Technical Reference(s): Radiation Control Manual Section 3.10.3

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure (CFR: 43.4 / 45.10).

Question Source:		
	Bank #	___
	Modified Bank #	___ (Note changes or attach parent)
	New	X

Question Cognitive Level:		
	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	___

10 CFR Part 55 Content:		
	55.41	___
	55.43	4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	3	3
	K/A #	G2.3.11	
	Importance Rating	2.7	3.2

Proposed Question: 96/70

Given the following:

- A gas decay tank release is in progress
- The auxiliary building filter switch is in the OUT position
- The 1A and 1B auxiliary building supply fans trip

Which ONE of the following statements is correct concerning the gas release?

A. It may continue with the above given conditions.

B. It must be manually terminated.

C. It is automatically terminated by RCV-14 closing.

D. It is automatically terminated by the gas decay tank pump tripping.

Proposed Answer: A
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.3.11 Ability to control radiation releases (CFR: 45.9 / 45.10).

Question Source:
Bank # X (C029.0032)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 10
55.43 4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	____	3
	Group #	____	4
	K/A #	G2.4.1	_____
	Importance Rating	____	4.6

Proposed Question: 97/-

A loss of all AC power has occurred. When AC power was restored, the following plant status existed:

- Annunciators lost power
- S/G pressure - 960 psig
- RCS pressure - 1100 psig
- Core exit thermocouples - 550 deg F.
- Containment pressure - 3 psig
- Containment radiation - 3.7 mrem/hr
- Pressurizer level - 31%
- Step 15 of ECA-0.0, "Loss of All AC Power," is in progress

Which ONE of the following states which procedure is entered from ECA-0.0 and why it is used? Assume, if no information is provided, that procedure steps are satisfied. (ECA-0.1, "Loss of All AC Power Recovery Without SI Required;" ECA-0.2, "Loss of All AC Power Recovery With SI Required")

A. ECA-0.1 is entered because conditions are stable.

B. ECA-0.2 is entered because of inadequate PRZR level.

C. ECA-0.2 is entered because of inadequate subcooling.

D. ECA-0.2 is entered because of containment radiation level.

Proposed Answer: C
Proposed references to be provided to applicants during examination: Fig 1.0, Minimum Subcooling

Learning Objective: _____ (As available)
2.4.1 Knowledge of EOP entry conditions and immediate action steps (CFR: 41.10 / 43.5 / 45.13).

Question Source:		
	Bank #	X (B000.0019)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

97/-

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	4
	K/A #	G2.4.7	___
	Importance Rating	___	3.8

Proposed Question: 98/-

The RCS has been cooled down and depressurized in response to a SGTR event. If the affected steam generator is isolated, why is safety injection terminated?

A. To prevent losing pressurizer level indication.

B. To determine RCS equilibrium pressure.

C. To maintain adequate RCS inventory.

D. To stop primary-to-secondary leakage.

Proposed Answer: D
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.4.7 Knowledge of event based EOP mitigation strategies (CFR: 41.10 / 43.5 / 45.13).

Question Source:
Bank # X (C000.0947)
Modified Bank # _____ (Note changes or attach parent)
New _____

Question Cognitive Level:
Memory or Fundamental Knowledge ___
Comprehension or Analysis X

10 CFR Part 55 Content:
55.41 ___
55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	3
	Group #	4	4
	K/A #	G2.4.23	
	Importance Rating	2.8	3.8

Proposed Question: 99/71

In many of the emergency procedures requiring a RCS depressurization (i.e., E-3, ES-1.2, FR-P.1, etc.), one of the requirements to stop the depressurization is pressurizer level. Which ONE of the following explains why high pressurizer level is a criterion for stopping a RCS depressurization? This pressurizer level ensures:

A. That pressurizer level is an accurate indication of RCS inventory.

B. Sufficient inventory to accommodate the collapse of an upper head steam bubble.

C. An adequate steam bubble for effective pressure control.

D. The RCS is water-solid when allowance is made for post-accident transmitter errors.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.4.23 Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations (CFR: 41.10 / 45.13).

Question Source:		
	Bank #	X (B000.0326)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:		
	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:		
	55.41	10
	55.43	_____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	3
	Group #	___	4
	K/A #	G2.4.48	___
	Importance Rating	___	3.8

Proposed Question: 100/-

Assume a normal cooldown is in progress at 250 degrees F. when a loss of both RHR pumps results in a loss of cooling. The following conditions exist:

- RCS is intact
- All other systems functioning in expected line-up

Which ONE of the following would be a mitigating strategy for this condition?

A. Establishing an SI pump as prime mover for RHR cooling.

B. Isolating letdown and any known drain paths.

C. Establishing secondary heat sink for cooling.

D. Investigate the apparent cause of the loss of both pumps, and restart one pump as soon as possible.

Proposed Answer: C
Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)
2.4.48 Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions (CFR: 43.5 / 45.12).

Question Source:		
	Bank #	X (C000.0217)
	Modified Bank #	_____ (Note changes or attach parent)
	New	_____

Question Cognitive Level:	
	Memory or Fundamental Knowledge ___
	Comprehension or Analysis X

10 CFR Part 55 Content:	
	55.41 ___
	55.43 5

55/-

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 5