RO Written

Examination Outline Cross-reference: Level RO SRO
Tier # 1 1
Group # 2

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.

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 <u>5.10</u>

55.43 ____

Form ES-401-6 (R8, S1)

SRO

Examination Outline Cross-reference:

 Level
 RO

 Tier #
 1

 Group #
 2

 K/A #
 003AK2.05

 Importance Rating
 2.5

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- C. Group C rod moving with group D rods withdrawn.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

Examination Outline Cross-reference:

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:	<u>B</u>
Technical Reference(s):	Background information ES-1.3 (Attach if not previously provided)
	(As available) A EK2 Knowledge of the interrelations between the Large Break R 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 AnalysisX
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43 <u>5</u>

Form ES-401-6 (R8, S1)

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. #2 seal failed open. B. C. #1 seal failed closed. #1 seal failed open. D. В Proposed Answer: AP-RCP.1 (Attach if not previously provided) Technical Reference(s): (As available) Learning Objective: 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. X (B003.0002) Bank# Question Source: (Note changes or attach parent) Modified Bank # New

Memory or Fundamental Knowledge_

Comprehension or Analysis

Question Cognitive Level:

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:	Level Tier # Group # K/A #	RO 1 1 040AA	SRO 1 1.01
	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?

- The S/G with the tube rupture shall be used for cooldown and the faulted S/G shall be A. isolated to prevent uncontrolled cooldown of the RCS.
- The faulted S/G shall be used for cooldown and the S/G with the tube rupture shall be B. isolated to minimize radiological releases.
- Both S/Gs should be used equally for cooldown to minimize the adverse effects C. associated with both casualties.
- Isolate both S/Gs and initiate feed and bleed of the RCS using the SI system. D.

Proposed Answer:	<u>B</u>
Technical Reference(s):	Background information E-2, LP REP02C
	(As available) re AA1. Ability to operate and / or monitor the following as they sture: (CFR 41.7 / 45.5 / 45.6) AA1.01Manual and automatic ESFAS
Question Source:	Bank # X (C000.0945) Modified Bank # (Note changes or attach parent) New
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1
1
1
057AA1.01
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.

C Proposed Answer: RGE-9, Training System Description, LP R0901C Technical Reference(s): (As available) Learning Objective: 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. X (INPO Bank 1172) Question Source: Bank # Modified Bank # New Memory or Fundamental Knowledge X Question Cognitive Level: Comprehension or Analysis 55.41 7 10 CFR Part 55 Content: 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1 1 1
068AK3.02

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:	<u>C</u>
Technical Reference(s):	AP-CR.1
Learning Objective: AK3. Knowledge of the reas Evacuation: (CFR 41.5,41.1	(As available) cons for the following responses as they apply to the Control Room 0 / 45.6 / 45.13) AK3.02 System response to turbine trip.
Question Source:	Bank # (Note changes or attach parent) New X
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX
10 CFR Part 55 Content:	55.41 <u>5, 10</u> 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier# Group # K/A#

RO SRO 069AK3.01 4.2 3.8

Importance Rating

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:

- Ensure appropriate containment penetrations are isolated and limit containment internal A. pressure.
- Mitigate the consequences of exceeding the containment design pressure of 60 psig. B.
- Take manual control of containment spray pumps to conserve RWST water inventory. C.
- Mitigate the hazard of hydrogen detonation by reducing containment hydrogen D. concentration.

Proposed Answer:	<u>A</u>
Technical Reference(s):	LP RFRZ1C, FR-Z.1
responses as they apply to t	(As available) ent Integrity AK3. Knowledge of the reasons for the following the Loss of Containment Integrity: (CFR 41.5,41.10 / 45.6 / 45.13) I in EOP for loss of containment integrity.
Question Source:	Bank # Modified Bank #
Question Cognitive Level:	New X Memory or Fundamental Knowledge X Comprehension or Analysis
10 CFR Part 55 Content:	55.41 <u>5, 10</u>

Examination Outline Cross-reference:

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: С E-0. ES-0.0, Background information ES-0.0 Technical Reference(s): Proposed references to be provided to applicants during examination: None LP RES00C, LO 1.3(C) Learning Objective: 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. X (C000.0756) **Question Source:** Bank # ____ (Note changes or attach parent) Modified Bank # New

Question Cognitive Level: Memo

Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content:

55.41 <u>8, 10</u> 55.43 ____

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-ref	ference:	Level Tier # Group # K/A # Importance Rating	RO _1 _2 _E02EK3.1 _3.3	SRO _1 _1 _1
Propo	sed Question: 17/10				
ES-1.	1, "SI Termination," is be dance with Step 15. The	eing performe e following co	ed. Normal letdown ha onditions exist:	as just been est	ablished in
•	Containment pressure Containment radiation RCS pressure - 1240 Core exit Tcs - 540 de Pressurizer level - 429	- 72 mrem/h psig and decr grees F.	reasing slowly		
Which	ONE of the following is	required nex	d?		
A.	Adjust charging pump	speed as ne	cessary.		
B.	Control pressurizer he	eaters and sp	ray to stabilize RCS p	ressure.	
C.	Control steam dump a	and total feed	flow as necessary to	stabilize RCS te	emperature.
D.	Manually operate SI p Coolant," Step 1.	oumps as nec	essary and go to E-1,	"Loss of React	or or Secondary
Propo	osed Answer:	_ <u>D</u>			
Techr	nical Reference(s):	ES-1.1		_	
	osed references to be prinimum Subcooling	rovided to ap _l	plicants during examin	nation: <u>ES-1.1,</u>	Steps 1-15; Fig.
E02 S the S during press	ning Objective: SI Termination EK3. Kn I Termination (CFR: 41. g transient conditions, in ture, and reactivity chan acteristics.	5 / 41.10, 45. noluding cools	ne reasons for the follo .6, 45.13) EK3.1 Facil ant chemistry and the	lity operating cheffects of temp	naracteristics perature,
Ques	tion Source:	Bank # Modified Ba New		00.0333) lote changes o	r attach parent)

Question Cognitive Level:

Memory or Fundamental Knowledge _ Comprehension or Analysis _

10 CFR Part 55 Content:

55.41 <u>5, 10</u> 55.43 ____

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1 1
2 1
E02EA1.2
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.

D Proposed Answer: Technical Reference(s): (As available) Learning Objective: 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. X (C002.0119) Bank # Question Source: ____ (Note changes or attach parent) Modified Bank # New **Question Cognitive Level:** Memory or Fundamental Knowledge X Comprehension or Analysis 10 CFR Part 55 Content: 55.41 <u>7</u>

SRO

1__

Examination Outline Cross-reference:

Level RO
Tier # __1
Group # __1
K/A # __E07!

Importance Rating

E07EK1.3 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): (As available) Learning Objective: 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. X__(C000.0854) Bank# Question Source: _ (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge X Question Cognitive Level: Comprehension or Analysis 10 CFR Part 55 Content: 55.41 <u>8, 10</u>

55.43 _____

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier# Group # K/A# Importance Rating

RO SRO E08EA1.1 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?

- Adds pump heat to the cold reactor coolant and thereby decreases the thermal stress. A.
- Raises RCS pressure which reduces SI injection flow and thereby decreases the thermal B. stress.
- Forces SI injection to the loops rather than the core and thereby decreases the thermal C.
- Mixes the cold incoming SI water and the warm reactor coolant and thereby decreases D. the thermal stress.

D Proposed Answer: Technical Reference(s):

Learning Objective: 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: X (B000.0262) Bank#

(Note changes or attach parent) Modified Bank #

(As available)

New

Memory or Fundamental Knowledge X Question Cognitive Level:

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 __7__

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1
1
1
E09EK1.1
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:

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 #

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 <u>8, 10</u> 55.43

Form ES-401-6 (R8, S1)

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: <u>C</u>

Technical Reference(s): ES-0.2

Proposed references to be provided to applicants during examination: <u>Fig-3.0</u>, <u>Nat Circ C/D</u> 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

10 CFR Part 55 Content:

55.41 __7__

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1
1
1
E14EK1.2
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 <u>8, 10</u>

55.43 _____

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1 2

007EK2.02

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__

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier# Group # K/A#

Importance Rating

SRO RO 008G2.1.30 3.4 3.9

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?

- Stop both RCPs and close both PORV block valves. A.
- Stop both RCPs and close PORV PCV-431C block valve. B.
- Stop 1A RCP and close PORV PCV-431C block valve. C.
- Stop 1A RCP and close both PORV block valves. D.

Proposed Answer: С

E-0 Technical Reference(s):

(As available)

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

Bank # Question Source:

X (INPO Bank 2710) Modified Bank #

New

Memory or Fundamental Knowledge_ Question Cognitive Level:

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 10 55.43 5 **Examination Outline Cross-reference:**

Level Tier # Group # K/A #

Importance Rating

RO SRO

1
2
009EK1.01
42
47

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 Utubes, which then drains back to the core via the hot legs.

Modified Bank # ____ New ____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 <u>8, 10</u> 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

SRO RO Level Tier# Group # K/A# 009EK2.03

Importance Rating

3.3 3.0

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
- RCS hot leg temperatures stable or decreasing B.
- RCS cold leg temperatures at saturation temperature for S/G pressure C.
- D. Core exit thermocouples - stable or decreasing

Proposed Answer: EOP Attachment NC Technical Reference(s): (As available) Learning Objective: 009 Small Break LOCA K2 Knowledge of the interrelations between the small break LOCA and the following: EK2.03 S/Gs X (C000.0931) Bank # Question Source: (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge X Question Cognitive Level: Comprehension or Analysis 10 CFR Part 55 Content: 55.41 <u>7</u> 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1 2

027AK2.03

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:

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 # Modified Bank # X (B010.0022)

(Note changes or attach parent)

New

30/21		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	<u>X</u>
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43	

Form ES-401-6 (R8, S1)

Level **Examination Outline Cross-reference:**

SRO RO Tier# Group # 033AA1.03 K/A #

Importance Rating

3.0

Proposed Question: 31/22

10 CFR Part 55 Content:

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?**

- The reactor will trip on high IR flux, and source range NI's will have to be manually re-A. energized.
- The reactor will trip on high IR flux, and source range NI's will re-energize when N35 B. reaches the proper setpoint.
- The reactor will not trip, and source range NI's will have to be manually re-energized. C.
- The reactor will not trip, and source range NI's will re-energize when N35 reaches the D. proper setpoint.

Proposed Answer: NIS System Description Technical Reference(s): (As available) Learning Objective: 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. __X__ (INPO Bank 2823) Bank # Question Source: ____ (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge_ Question Cognitive Level: Comprehension or Analysis

> 55.41 _7__ 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 2 2

037AK3.08

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.

55.43

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): (As available) Learning Objective: 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. X___(C000.0896) Question Source: Bank # (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge_ X Question Cognitive Level: Comprehension or Analysis ____ 10 CFR Part 55 Content: 55.41 <u>5, 10</u>

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

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: EPE: 038 Steam Generator implications of the following EK1.04 Reflux boiling.	Tube Rupture (SGTR) concepts as they apply	(As available) EK1 Knowledge of the operational to the SGTR: (CFR 41.8 /41.10 / 45.3).
Question Source:	Bank# Modified Bank# New	X (INPO Bank 5543)
Question Cognitive Level:	Memory or Fundame Comprehension or Ar	ntal Knowledge nalysisX
10 CFR Part 55 Content:	55.41 <u>8, 10</u> 55.43	

Form ES-401-6 (R8, S1)

SRO

Examination Outline Cross-reference:

RO Level Tier# 1 3 Group # K/A# 065AA1.02

Importance Rating

2.8 2.6

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?

- Repair time is irrelevant, the plant should have already tripped. Actions per E-0, A. "Reactor Trip or Safety Injection" should be taking place.
- The plant will have to be shutdown because it has lost the ability for spray additive B. (sodium hydroxide) on the containment spray system.
- The plant will have to be shut down because this event results in a loss of RCS inventory C. control, i.e., normal CVCS and excess letdown.
- The plant can continue to operate at full power with charging pump suction manually D. aligned to RWST.

Proposed Answer:	_ <u>C</u> _	
Technical Reference(s):	LP RAP10C, AP-	IA.1
Learning Objective: APE: 065 Loss of Instrumer apply to the Loss of Instrum instrument air to minimize d	ent Air: (CFR 41.7 / 4	(As available) sperate and / or monitor the following as they 5.5 /45.6) AA1.02 Components served by
Question Source:	Bank # Modified Bank # New	X (B078.0014) (Note changes or attach parent)

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

10 CFR Part 55 Content: 55.41 __7__
55.43 _____

Form ES-401-6 (R8, S1)

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: Proposed references to be p	<u>D_</u> provided to applicants	during examir	nation:	None
Learning Objective: E11 Loss of Emergency Cooresponses as they apply to t 45.6, 45.13) EK3.3 Manipul abnormal, and emergency s	olant Recirculation Ele he (Loss of Emergend ation of controls requi	cy Coolant Re	e of the rea	asons for the following) (CFR: 41.5 / 41.10,
Question Source:	Bank # Modified Bank # New		000.0280) Note chang	ges or attach parent)
Question Cognitive Level:	Memory or Fundame Comprehension or A		ge_X_	
10 CFR Part 55 Content:	55.41 <u>5, 10</u> 55.43	чішуэіз		

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1 2

E16EK3.2

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: Technical Reference(s): (As available) Learning Objective: 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). Bank # Question Source: Modified Bank # New Memory or Fundamental Knowledge X Question Cognitive Level: Comprehension or Analysis 10 CFR Part 55 Content: 55.41 5, 10 55.43 _____

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-I	reference:	Level Tier # Group # K/A # Importance Ra	_	O 1 2 E16EA1.1 3.1_	SRO 1 2 3.2
Propo	sed Question: 40/28 (Common K/A, F	RO only)			
The fo	llowing plant condition	ns exist with the	unit in Mode 2:			
•	A LOCA has occurre Containment radiatio "Response to High C CVI valve status ligh The HCO reports tha	on levels are 2.3 Containment Ra ts are BRIGHT	E4 R/hr and the diation Level"	e operator	rs entered FI	R-Z.3,
Given	these conditions, wha	at is the primary	concern of the	operators	regarding F	R-Z.3?
Α.	Prevent a release fro	om the containm	nent.			
B.	Ensure containment	atmosphere filt	ration is in servi	ce.		
C.	Ensure control room	emergency ver	tilation is in Mo	de F.		
D.	Ensure containment	spray is in serv	ce for containm	ent heat i	removal.	
Propos	sed Answer:	<u>B</u>				
Techn	ical Reference(s):	FR-Z.3, LP Desc.	FR-Z.3, Contair	<u>ıment Ve</u>	ntilation Trno	<u>g. System</u>
E16 Hi apply t functio	ng Objective: igh Containment Radi to the (High Containm ons of control and safe s, and automatic and r	ent Radiation) (ety systems, inc	CFR: 41.7 / 45.9 uding instrumer	5 / 45.6)	nitor the follo EA1.1 Comp	onents, and
Questi	on Source:	Bank # Modified Bank New	# X	_ _ (INPO E -	Bank 4851)	

Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content:

Question Cognitive Level:

55.41 <u>7</u> 55.43 <u>5</u>

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

1 1 3
028AK2.03

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: Technical Reference(s): (As available) Learning Objective: 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. Bank # X (B010.0026) **Question Source:** (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge Question Cognitive Level: Comprehension or Analysis 10 CFR Part 55 Content: 55.41 _ 7__ 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier# Group# K/A#

Importance Rating

RO SRO
2 2
1 1
001K1.04
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:	<u>B</u> _
Technical Reference(s):	
Learning Objective: System: 001 Control Rod Dri- effect relationships between 45.8) K1.04 RCS.	(As available) ive System K1Knowledge of the physical connections and/or cause the CRDS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to
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 <u>2 to 9</u>

10 CFR Part 55 Content:

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

		Ques	tion worksneet			
Exam	ination Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 003K3.04 3.9	SRO _2 _1	
Propo	sed Question: 45/31					
Given	the following plant cor	nditions:				
•	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	n one of the following is	correct based	on the above plant co	onditions?		
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.					
Propo	sed Answer:	_B				
Techr	nical Reference(s):					
003 F	ing Objective: Reactor Coolant Pump on the RCPS wil	-) K3 Knowledge of the			
Question Source:		Bank # Modified Ban New	<u>X</u> (C0 ²	•	r attach parent)	
Question Cognitive Level:		Memory or Fundamental Knowledge Comprehension or AnalysisX				

55.41 <u>7</u> 55.43 ___

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

2
1
003A1.05

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:	_ <u>C</u>					
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 # Modified Bank # New	X (C331.0217) (Note changes or attach parent)				
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX					
10 CFR Part 55 Content:	55.41 <u>X</u>					

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO
2 2
1 1
004K5.14
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: С S-3.3K Pressurizer Steam Space Purge to the VCT Technical Reference(s): (As available) Learning Objective: 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). Bank # Question Source: (Note changes or attach parent) Modified Bank # New

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 <u>5</u> 55.43 ____

ES-401

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

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

55.43

D. Fower decreases an	d charging now decreases.	
Proposed Answer:	_A_	
Technical Reference(s):		
in parameters (to prevent ex	/olume Control System. A1 Ability ceeding design limits) associated v A1.05 S/G pressure and level.	•
Question Source:	Bank #	Note changes or attach parent)
Question Cognitive Level:	Memory or Fundamental Knowled Comprehension or Analysis	dge
10 CFR Part 55 Content:	55.41 5	

Form ES-401-6 (R8, S1)

 Examination Outline Cross-reference:
 Level
 RO
 SRO

 Tier #
 2
 2

 Group #
 1
 1

 K/A #
 013K2.01

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:	<u>C</u>	
	res Actuation System (ESFAS) R: 41.7) K2.01 ESFAS/safegua	
Question Source:	Bank # X (Modified Bank # New	B064.0011) (Note changes or attach parent)
Question Cognitive Level:	Memory or Fundamental Knowl Comprehension or Analysis	edge
10 CFR Part 55 Content:	55.41 _ <u>7</u> _ 55.43	

Form ES-401-6 (R8, S1)

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 p	rovided to applicants during exa	mination: None
•	• • •	(As available) K6 Knowledge of the effect of a (CFR: 41.7 / 45.5 to 45.8) K6.01
Question Source:	Bank # X (Modified Bank #	C006.0081) (Note changes or attach parent)
Question Cognitive Level:	Memory or Fundamental Knowl Comprehension or Analysis	edge X
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43	

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO
2
2
1
014K3.02
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

55.41 <u>1</u> 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO
2 2
1 1
017A2.01
3.1 3.5

Proposed Question: 52/38

10 CFR Part 55 Content:

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:	<u>B</u>		
Proposed references to be p	rovided to applicants	during examination:	None
Learning Objective: 017 In-Core Temperature Mofollowing malfunctions or oper procedures to correct, control (CFR: 41.5 / 43.5 / 45.3 / 45.8)	erations on the ITM sy of or mitigate the cons	ystem; and (b) based sequences of those m	ct the impacts of the on those predictions, use halfunctions or operations:
Question Source:	Bank # Modified Bank # New	(Note ch	anges or attach parent)
Question Cognitive Level:	Memory or Fundame Comprehension or A	ental Knowledge> Analysis	<u>(</u> –

55.41 <u>5</u> 55.43 <u>5</u>

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 022A4.04 3.1	SRO 2 1 3.2	
Propo	osed Question: 54/39					
suction follow	wing a LOCA, the opera on valves from CNMT s ring states the conditior Control Board?	ump B are op	en (MOVs 850 A&B, 8	851 A&B). Whic	h ONE of the	
A.	MOVs 897 <u>AND</u> 898	(SI Recirc) m	ust be closed.			
B.	MOV 897 <u>OR</u> 898 (SI Recirc) must be closed <u>AND</u> MOVs 825A <u>and</u> 825B (SI pump suction valves) must be closed.					
C.	MOVs 897 <u>AND</u> 898 (SI Recirc) must be closed <u>AND</u> MOVs 896A <u>and</u> 896B (RWST to SI/CNMT spray) must be closed.					
D.	MOV 897 <u>OR</u> 898 (S <u>AND</u> MOV 896A <u>or</u> 896B (•	t be closed CNMT spray) must be	closed.		
Propo	osed Answer:	_ <u>D</u>				
Tech	nical Reference(s):	System	Description, CS Syste	<u>m</u>		
022 (ning Objective: Containment Cooling Sy ol room: (CFR: 41.7 / 4		A4 Ability to manually		monitor in the	
Ques	stion Source:	Bank # Modified Ba New	nk# (N	lote changes or	attach parent)	
Ques	stion Cognitive Level:	•	Fundamental Knowled sion or Analysis	ge		
10 0	FR Part 55 Content:	55 <i>4</i> 1 7				

55.43

Form ES-401-6 (R8, S1)

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:	<u>B</u> _
Technical Reference(s):	TS 3.5.2 & 3.6.6, CS System Description
	(As available) tem (CSS) K4 Knowledge of CSS design feature(s) and/or the following: (CFR: 41.7) K4.05 Prevention of material from culation.
Question Source:	Bank # Modified Bank # New (Note changes or attach parent)
Question Cognitive Level:	Memory or Fundamental Knowledge X Comprehension or Analysis
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43

Form ES-401-6 (R8, S1)

Examinati	on Outline Cross-ref	erence:	Level Tier # Group # K/A # Importance Rating	RO 2 1 059K4.16 3.1	SRO 2 1 3.2
Proposed	Question: 57/41				
Which on	e of the following will	l result in an a	utomatic trip of a ma	in feedwater pu	ımp?
A. Pr	essurizer pressure o	of 1750 psig.			
B. Hi	gh S/G water level o	f 85%			
C. Fe	eedwater suction pre	ssure less tha	n 185 psig.		
D. Re	eactor trip.				
Proposed	Answer:	_A_			
Proposed	references to be pro	ovided to appl	icants during examin	ation: <u>No</u>	ne
059 Main			(A: owledge of MFW des (CFR: 41.7) K4.16 A		
Question		Bank # Modified Bank New		PO Bank 5383)	
Question			ındamental Knowledថ on or Analysis	ge <u>X</u>	
10 CFR F	Part 55 Content:	55.41 <u>7</u>			

55.43

Question Cognitive Level:

10 CFR Part 55 Content:

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Examir	nation Outline Cross-re	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 059A2.05 3.1	SRO 2 1 3.4
Propos	ed 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 rapid	dly to less than	8%.		
B.	Verify turbine trip and	go to AP-TUR	B.1, "Turbine Trip	Without Reactor ∃	rip Required."
C.	Reduce reactor power to less than 2% and continue with AP-FW.1.				
D.	Enter E-0, "Reactor Trip or Safety Injection."				
Propos	pposed 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.					
Questi	on Source:	Bank # Modified Bank New		000.0379) (Note changes or	attach parent)

Memory or Fundamental Knowledge __X

Comprehension or Analysis

55.41 <u>5</u> 55.43 <u>5</u>

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

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: 063 D.C. Electrical Distribut K2.01 Major DC loads.	ion K2 Knowledge of t	(As available) ous power supplies to the following: (CFR:41.7)
Question Source:	Bank # Modified Bank # New	X (C063.0042) (Note changes or attach parent)
Question Cognitive Level:	Memory or Fundam Comprehension or A	ental Knowledge <u>X</u> Analysis
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43	

ES-401

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

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 lodine.

Proposed Answer: **RMS System Description** Technical Reference(s): (As available) Learning Objective: 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. X (B068.0001) Question Source: Bank # _____ (Note changes or attach parent) Modified Bank# New **Question Cognitive Level:** Memory or Fundamental Knowledge X Comprehension or Analysis 10 CFR Part 55 Content: 55.41 __7__

55.43 _____

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-r	eference:	Level Tier # Group # K/A # Importance F	Rating	RO _2 _1 _072K5.02 _2.5	SRO _2 _1
Propo	osed Question: 61/45					
	area radiation monitorin				alarm(s) to pla	nt personnel so
A.	Visual and audible; id	dentify and re	eport the area of	increas	ed radiation lev	/els.
B.	Visual and audible; v	racate the are	ea of increased i	radiation	levels.	
C.	Visual; vacate the ar	ea of increas	sed radiation leve	els.		
D.	Audible; vacate the area of increased radiation levels.					
Propo	osed Answer:	_ <u>B</u>				
Tech	nical Reference(s):	RMS Sy	stem Descriptior	າ		
072 A	ning Objective: Area Radiation Monitori ollowing concepts as th sity changes with sourc	ey apply to tl	stem K5 Knowl	edge of		
Ques	stion Source:	Bank # Modified B New	ank#		ote changes or	attach parent)
Ques	stion Cognitive Level:		Fundamental K nsion or Analysis		e_X	
10 C	FR Part 55 Content:	55.41 <u>5</u> 55.43				

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

 Level
 RO

 Tier #
 2

 Group #
 1

 K/A #
 07

Importance Rating

O SRO
2 2
1 1
072A3.01
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

55.41 <u>7</u> 55.43 ____

Form ES-401-6 (R8, S1)

Exam	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO _2 _2 	SRO _2 _2 2
Propo	sed Question: 63/47				
	one of the following e ed within 1 hour of initi	•		t pressurizer he	aters should be
A.	Ambient losses could	l decrease PR	ZR pressure to the re	actor trip setpoi	int.
B.	Ambient losses could	l decrease PR	ZR pressure to the SI	setpoint.	
C.	Ambient losses could	I decrease RC	S to saturation.		
D.	Tech Specs require of hour.	cooldown to < 3	350 degrees if the hea	aters are not re	stored in one
Propo	sed Answer:	_C_			
Propo	sed references to be p	provided to app	licants during examin	ation: <u>No</u>	one
002 R	ing Objective: leactor Coolant Systen ing concepts as they a emperature for water s	pply to the RC	nowledge of the opera S: (CFR: 41.5/ 45.7)	K5.09 Relations	
Ques	tion Source:	Bank# Modified Ban New	<u>X</u> (C0 k# (N	,	⁻ attach parent)
Ques	tion Cognitive Level:	•	undamental Knowled	geX_	

55.41 <u>5</u> 55.43 ____

10 CFR Part 55 Content:

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier# Group # K/A#

SRO RO 002K6.03

Importance Rating

Proposed Question: 64/48

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

- T-Cold input to RVLIS disabled and CETs are used for specific gravity calculation and A. density compensation.
- RCP flow function generator is provided a delta-pressure input to compensate for B. additional head of RHR or SI pumps.
- C. RCP delta-pressure signal is removed from RVLIS calculation.
- Uses only RCS pressure as input for all density calculations. D.

Proposed Answer:

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

10 CFR Part 55 Content:

55.41 __7__

55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

2
2
2
2
010K2.01

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: 010 Pressurizer Pressure C the following: (CFR: 41.7)	(As available) ontrol System (PZR PCS) K2 Knowledge of bus power supplies to (2.01 PZR heaters.
Question Source:	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 <u>7</u> 55.43 <u>—</u>

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO
2 2
2
2
012A2.05
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:	<u>C</u>	
Proposed references to be p	rovided to applicants during ex	amination: <u>None</u>
or operations on the RPS; ar control, or mitigate the conse	nd (b) based on those predictio	impacts of the following malfunctions ns, use procedures to correct, s or operations: (CFR: 41.5 / 43.5 /
Question Source:	Bank# X Modified Bank# New	_ (B012.0002) (Note changes or attach parent) _
Question Cognitive Level:	Memory or Fundamental Kno Comprehension or Analysis	wledge
10 CFR Part 55 Content:	55.41 <u>5</u> 55.43 <u>5</u>	

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference: Leve

 Level
 RO

 Tier #
 2

 Group #
 2

 K/A #
 029/4

O SRO 2 2 2 2 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: В RGE-22 Containment Ventilation System Description Technical Reference(s): Proposed references to be provided to applicants during examination: None (As available) Learning Objective: 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# ____ (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge X **Question Cognitive Level:** Comprehension or Analysis 10 CFR Part 55 Content: 55.41 5__ 55.43

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO _2_ _2 _033A1.02 _2.8	SRO 2 2 2 3.3	
Propo	sed Question: 69/52					
Which	one of the following is	true concerni	ng process radiation n	nonitors RM-20	A and RM-20B?	
A.	The monitors alarm le	ocally and caus	se no automatic action	ns.		
B.	The monitors monitor to warn of a potential		from the outlet of the auxiliary building.	spent fuel pit h	eat exchangers	
C.	The monitors have di flow capacities.	fferent backgro	ound levels and differe	ent setpoints du	ue to different	
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.					
Propo	sed Answer:	_ <u>C</u> _				
Techn	ical Reference(s):	RMS and	Spent Fuel Pool Coo	ling System De	scriptions	
Propo	sed references to be p	provided to app	licants during examin	ation: <u>No</u>	ne	
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						
Quest	ion Source:	Bank # Modified Ban New	k# (N	ote changes or	attach parent)	
Quest	ion Cognitive Level:	•	undamental Knowledç ion or Analysis	ge_X		

55.41 <u>5</u> 55.43 ____

10 CFR Part 55 Content:

10 CFR Part 55 Content:

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 035K5.01 3.4	SRO _2 _2 _2 	
Propo	sed Question: 70/53					
•	•	•	ower. A single steam of ant response with no o	•	•	
A.	The MSIVs will shut	on high steam	line flow.			
B.	T-avg decreases, re	actor power inc	creases but remains b	elow trip setpoi	nt.	
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 decreatunchanged.	ses as availabl	e steam bypasses to t	he condenser;	reactor power is	
Propo	sed Answer:	<u>B</u>				
Propo	sed references to be	provided to app	olicants during examin	ation: <u>No</u>	ne	
035 S conce		S/GS: (CFR:	(As Knowledge of operation 41.5 / 45.7) K5.01 Eff	•	-	
Quest	ion Source:	Bank# Modified Bar New	X(C3: (N	•	attach parent)	
Quest	ion Cognitive Level:	Memory or F	undamental Knowledd	10		

Comprehension or Analysis

55.41 <u>5</u> 55.43

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier#	_2	_2
	~ "	^	_

Group # K/A# Importance Rating

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?

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

Proposed Answer:	_A_	
Proposed references to be p	provided to applicants	s during examination: None
Learning Objective: 039 Main and Reheat Steam cause-effect relationships be 45.7 to 45.8) K1.04 RCS te	etween the MRSS ar	(As available) 1Knowledge of the physical connections and/or and the following systems: (CFR: 41.2 to 41.9 / g and control.
Question Source:	Bank# Modified Bank# New	X (C331.0001) (Note changes or attach parent)
Question Cognitive Level:	Memory or Fundan Comprehension or	nental Knowledge AnalysisX
10 CFR Part 55 Content:	55.41 <u>2</u> 55.43	

Form ES-401-6 (R8, S1)

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:	_ <u>B</u>	
Technical Reference(s):	ODCM Section 3.1	
Proposed references to be	provided to applicants during examination:	ODCM Sect. 3.1
	(As availal itoring (PRM) System K3 Knowledge of the tem will have on the following: (CFR: 41.7 / 4	effect that a loss or
Question Source:	Bank # (Note cha	nges or attach parent)
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX	- -
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43	

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

 Level
 RO

 Tier #
 2

 Group #
 2

 K/A #
 07

SRO 2 2 2 4.01

Importance Rating

075A4.01 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:E	<u>B</u>	
Technical Reference(s):	SWS System Description	
Proposed references to be provi	ided to applicants during ex	amination: None
Learning Objective: 075 Circula monitor in the control room: (CF	•	ity to manually operate and/or 11 Emergency/essential SWS pumps
	,	(0070 0000)

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

Form ES-401-6 (R8, S1)

SRO

2

Examination Outline Cross-reference:

 Level
 RO

 Tier #
 2

 Group #
 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: Proposed references to	Cbe provided to applicants	s during examin	nation: <u>Non</u>	<u>1e</u>
	(SAS) K4 Knowledge of g: (CFR: 41.7) K4.01 Cro	SAS design fea		nterlock(s) which
Question Source:	Bank # Modified Bank # New		078.0013) lote changes or a	attach parent)

75/57

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

10 CFR Part 55 Content: 55.41 __7

55.43 _____

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

2
2
2
2
079A2.01
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:	<u>B</u>
or operations on the SAS; a	(As available) S) A2 Ability to (a) predict the impacts of the following malfunctions nd (b) based on those predictions, use procedures to correct, equences of those malfunctions or operations: (CFR: 41.5 /43.5/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

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 086K1.02 2.7	SRO 2 2 2		
Propo	sed 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 monitor EDG temperatures.	te cooling for both ED0	Gs; post an aux	kiliary operator to		
B.	Secure the operating service water pump and enter ER-D/G.2, "Alternate Cooling for Emergency D/Gs."					
C.	C. Manually close the breaker to energize bus 18 from the 1A EDG and start a service water pump on that bus.					
D.	D. Enter ER-D/G.2, "Alternate Cooling for Emergency D/Gs," and provide alternate cooling to the 1A EDG.					
Propo	sed Answer:D_					
Techn	nical Reference(s): <u>ER-D/G.2,</u>	SWS System Descrip	tion			

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 causeeffect 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. Bank # Question Source: (Note changes or attach parent) Modified Bank # New Memory or Fundamental Knowledge_ Question Cognitive Level: Comprehension or Analysis 55.41 <u>2-9</u> 10 CFR Part 55 Content: 55.43 _____

Form ES-401-6 (R8, S1)

Examination Ou	utline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 086A3.01 2.9	SRO 2 2 3.3
Proposed Ques	stion: 78/60				
The following p	lant condition	s exist:			
•		•	s have actuated for a t above 90 psig.	ransformer fire	
What fire syste	m pump(s) is	(are) expected	to be running?		
A. The mo	tor-driven pu	mp			
B. The die:	sel-driven pu	mp			
C. Both the	e motor-drive	n and diesel-dr	iven pumps		
D. Neither	the motor-dri	ven nor the die	sel-driven pump		
Proposed Answ	ver:	_C_			
Technical Refe	rence(s):	Fire Protec	tion System Description	on	_
Proposed refer	ences to be p	provided to app	licants during examina	ation: <u>Nor</u>	ne
	tion System		ty to monitor automation (As) A3.01 Starting in		
Question Source	e:	Bank # Modified Ban New	<u>X</u> (C0	86.0007) ote changes or	attach parent)
Question Cogn	itive Level:	•	undamental Knowledg ion or Analysis	e_X_	

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Examiı	nation Outline Cross-re	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 103K3.01 3.3	SRO 2 2 2 3.7
Propos	sed Question: 79/61				
•	ant is in Mode 6 and c ons will result in a loss		. •	ch ONE of the	following
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.				
Propos	sed Answer:	_D_			
Techni	ical Reference(s):	O-15.2 Co	ontainment Integrity		
Propos	sed references to be p	provided to app	licants during examina	ation: <u>No</u>	ne
103 Contain	ng Objective: ontainment System K3 nment system will hav ty under shutdown cor	e on the follow	f the effect that a loss		
Question Source:		Bank# Modified Ban New	k# (No	ote changes or	attach parent)
Question Cognitive Level:			undamental Knowledg ion or Analysis	je	
10 CFR Part 55 Content:		55.41 <u>7</u> 55.43	<u>-</u>		

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO
2 2
3 3
005K6.03
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:	<u>A</u>
Proposed references to be p	provided to applicants during examination: None
	System (RHRS) K6 Knowledge of the effect of a loss or malfunction 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 <u>7</u> 55.43

10 CFR Part 55 Content:

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Examination Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 041A3.03 2.7	SRO 2 3 2.8	
Proposed Question: 81/63					
The plant is operating at full control rods in MANUAL, who correct with regard to operate	en a step load	decrease of 15% occu	ırs. Which stat	tement below is	
A. Steam dumps will mo	Steam dumps will modulate open if the temperature error exceeds 6 deg F.				
B. No action will occur b	No action will occur because the load rejection controller has not armed.				
C. Steam dump valve g	Steam dump valve groups A & B will immediately go full open to match T-avg with T-ref.				
D. All steam dump valve	All steam dump valve groups will go full open to reduce T-avg to match T-ref.				
Proposed Answer:	_A_				
Proposed references to be p	provided to app	licants during examina	tion: <u>Nor</u>	ne	
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 # Modified Bank New	X(C04 (No	1.0019) te changes or a	attach parent)	
Question Cognitive Level: Memory or Fundamental Knowledge					

Comprehension or Analysis

55.41 <u>7</u> 55.43 ___

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

2
3
076K2.01

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: С SWS System Description Technical Reference(s): Proposed references to be provided to applicants during examination: None (As available) Learning Objective: 076 Service Water System (SWS) K2 Knowledge of bus power supplies to the following: (41.7) K2.01 Service water. Question Source: Bank # __ (C076.0019) Modified Bank # (Note changes or attach parent) **Question Cognitive Level:** Memory or Fundamental Knowledge X Comprehension or Analysis 10 CFR Part 55 Content: 55.41 <u>7</u> 55.43 _____

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

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: Proposed references to	B_ be provided to applicants	s during examination:	<u>None</u>
	control room switches, co the desired plant lineup. (•
Question Source:	Bank # Modified Bank # New	(Note char	nges or attach parent)

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

55.41 <u>7</u> 55.43 ____ 10 CFR Part 55 Content:

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

 Level
 RO

 Tier #
 3

 Group #
 1

 K/A #
 G

Importance Rating

RO SRO

3
1
G2.1.33
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: Proposed references to be p	B provided to applicants	s during examination:	None
Learning Objective: 2.1.33 Ability to recognize in conditions for technical spec	dications for system	(As availab	
Question Source:	Bank # Modified Bank # New	X(C000.0708) (Note chan	ges or attach parent)
Question Cognitive Level:	Memory or Fundam Comprehension or	-	
10 CFR Part 55 Content:	55.41 55.43		

Form ES-401-6 (R8, S1)

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.					
Propos	sed Answer:	_B				
Explan	ation (Optional):Differ	ent ques	tion for RO to	reduce o	lifficulty.	
Techni	ical Reference(s):		TS 3.7.5	_		
Propos	sed references to be p	rovided t	o applicants	during exa	amination:	TS 3.7.5
	ng Objective: Ability to track limiting	conditio	ns for operat	ions.	_ (As available)	
Questi	on Source:	Bank # Modified New	d Bank #	<u>X</u>	(B300.0056) _ (Note changes	or attach parent)
Questi	on Cognitive Level:		or Fundame hension or A		/ledge	
10 CFF	R Part 55 Content:	55.41	10			

55.43

ES-401

Sample Written Examination **Question Worksheet**

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level RO SRO Tier# 3 Group # 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: Proposed references to be	<u>B</u> provided to applicant	s during examination:	None
Learning Objective: 2.2.34 Knowledge of the pr reactivity (CFR: 43.6).	ocess for determining	(As available) the internal and external	
Question Source:	Bank # Modified Bank # New	X(B320.0049) (Note chang	ges or attach parent)
Question Cognitive Level:	Memory or Fundan Comprehension or	nental Knowledge AnalysisX_	
10 CFR Part 55 Content:	55.41 <u>5</u>		

55.43 6

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

3
3
3
G2.3.1
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)
 Lens Dose Equivalent (LDE)
 Committed Effective Dose Equivalent (CEDE)
 Shallow Dose Equivalent (SDE)
 Committed Dose Equivalent (CDE)
 275 mrem
 25 mrem
 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:

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

Question Cognitive Level:

Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content:

55.41 12

55.43 4

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

Level Tier # Group # K/A #

Importance Rating

RO SRO

3
3
3
G2.3.11
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:

2.3.11 Ability to control radiation releases (CFR: 45.9 / 45.10).

Question Source: Bank #

Bank # X (C029.0032)
Modified Bank # (Note change

New

____ (Note changes or attach parent)

(As available)

Question Cognitive Level:

Memory or Fundamental Knowledge ____

Comprehension or Analysis X

10 CFR Part 55 Content:

55.41 <u>10</u>

55.43 4

Form ES-401-6 (R8, S1)

SRO

3.8

Examination Outline Cross-reference:

 Level
 RO

 Tier #
 3

 Group #
 4

 K/A #
 G2.4.2

Importance Rating 2.8

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: Proposed references to be	<u>C</u> _ provided to applicants	during examination:	None
Learning Objective: 2.4.23 Knowledge of the ba emergency operations (CFF		(As available ergency procedure imple	
Question Source:	Bank # Modified Bank # New	X (B000.0326) (Note chan	ges or attach parent)
Question Cognitive Level:	Memory or Fundam Comprehension or A	ental Knowledge AnalysisX	
10 CFR Part 55 Content:	55.41 <u>10</u> 55.43		

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _1 _026AA2.04 _2.5	SRO 			
Propos	sed Question: -/72							
The sh	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 pun	nps are running	and seal injection is in	creased to bot	h RCPs.			
В.	Immediately trip the	RCPs, then trip	the reactor.					
C.	If any RCP motor bea	aring reaches 20	00 deg F, trip the reac	tor and trip the	affected			
D.	If annunciator A-31, 'the RCPs.	CCW System L	o Flow," is lit, immedia	ately trip the rea	actor and then			
Propos	sed Answer:	_ <u>C</u> _						
Techni	cal Reference(s):							
Propos	ed references to be p	rovided to appli	cants during examinat	ion: <u>None</u>	9			
Learning Objective: 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.								
Questio	on Source:	Bank # Modified Bank New	# <u>X</u> (B000 (Note	.0882) e changes or a	ttach parent)			
Questic	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	_X				
10 CFF	R Part 55 Content:	55.41 <u>10</u> 55.43						

Exami	ination Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _1 _040AA2.03 _4.6	SRO 	
Propos	sed 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 indicat	ive of a:				
A.	Small break LOCA.					
B.	Large break LOCA.					
C.	Faulted steam genera	ator.				
D.	Steam generator tube	e rupture.				
	sed Answer: sed references to be p	C_ rovided to appli	cants during examinat	tion: <u>Non</u>	<u>e</u>	
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.						
	on Source: on Cognitive Level:	Bank # Modified Bank New Memory or Ful Comprehensio	X (BV 2	te changes or a 2001 #16)	ittach parent)	
10 CFF	OCFR Part 55 Content: 55.41 <u>5</u> 55.43					

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1_ _1_ _067AA2.10 _2.9	SRO 		
Propo	sed Question: -/74						
Super	lant is operating at 10 visor that the "A" Dies ct to fire system opera	el Generator Ro	oom Sprinkler Syster	m (S-12) has fail	ed the Shift ed its PT. With		
A.	"A" Diesel Generator suppression equipm				backup		
B.	Establish a continuo AND restore affected				thin one hour		
C.	Establish an hourly f system to operable s			equipment AND r	estore affected		
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.						
Propos	sed Answer:	<u>B</u>					
Techn	ical Reference(s):						
Propos	sed references to be p	provided to appl	icants during examir	nation: <u>TRM 3.7</u>	7.2		
APE 0 the Pla	Learning Objective: 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.						
Questi	on Source:	Bank # Modified Bank New	# (N	ote changes or a	attach parent)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledo on or Analysis	ge _X			
10 CFI	R Part 55 Content:	55.41 <u>8</u> 55.43 <u>5</u>					

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _1 _068G2.1.2 _3.0	SRO 		
Propo	sed Question: -/75						
			fference in intent betw Shutdown for Control				
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.		ontrol room is h	-free boron concentrat abitable. ER-Fire.1 bo hutdown.				
D.		n is habitable. B	boron concentration a ER-Fire.1 borates via \				
•	sed Answer: ical Reference(s):	_D					
Propos	sed references to be p	provided to appl	icants during examina	tion: Non	<u>e</u>		
APE: C	ng Objective: 968 Control Room Eva of plant operation. (C		Knowledge of operator	available) r responsibilities	s during all		
Questi	on Source:	Bank # Modified Bank New	X(B000 (No	0.0318) te changes or a	attach parent)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	e_X			
IO CFF	R Part 55 Content:	55.41 <u>10</u> 55.43					

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1_ _1_ _069G2.2.25 _2.5_	SRO —— ——		
Propo	sed Question: -/76						
Which 1.0 ps		is the basis fo	r limiting containment	pressure to less	than or equal to		
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.			re outside the limits of ose Calculation Manua		es an initial		
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.						
•	sed Answer: ical Reference(s):	_B_					
Propos	sed references to be	provided to app	olicants during examina	ation: <u>Non</u>	<u>e</u>		
APE: ((As 2.25 Knowledge of ba afety limits. (CFR: 43.2		specifications		
Questi	on Source:	Bank # Modified Ban New	k# (No	ote changes or a	attach parent)		
Questi	on Cognitive Level:		undamental Knowledg ion or Analysis	e_X			
10 CFI	R Part 55 Content:	55.41 <u>9</u> 55.43					

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 2 029EA2.05 3.4	SRO
Propo	sed Question: -/77				
Given	the following:				
•	Emergency boration	via MOV-350 is	se to Reactor Restart/ s not working (MOV ja acid pump are running	mmed)	
	these conditions, which		ollowing states the ne	xt method to be	e used to
Α.	Open manual boration	on valve V-356.			
В.	Open the bypass arc	ound MOV-350.			
C.	Open the blender ou	tlet to the charg	ging pump suction (FC	V-110B).	
D.	Initiate the "normal b	oration" flowpa	th.		
	sed Answer: ical Reference(s):	_D_			
Propo	sed references to be p	provided to app	licants during examina	ation: <u>FR-S.1</u>	Steps 1-6
EPE: (followi			(As ram (ATWS) EA2 Abi 3.5 / 45.13) EA2.05 S		
Quest	ion Source:	Bank # Modified Bank New	X(C00 <#(No	0.1016) ote changes or	attach parent)
Questi	on Cognitive Level:	•	ındamental Knowledge on or Analysis	e_X	
10 CF	R Part 55 Content:	55.41 <u>6-8</u> 55.43 <u>5</u>			

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _3 _E15EA2.2 _2.9	\$RO 	
Propo	osed Question: -/78					
"Resp			escribes the containme ntered? A water level g			
A.	Water from one of the stored water sources (RWST, accumulators, etc.) has been introduced into the containment sump.					
B.	Water from a natura into the containment		ere thunderstorm, torna	ado, etc.) has b	een introduced	
C.	Water volumes othe introduced into the c		vater sources (RWST, a	accumulators, o	etc.) have been	
D.	Water from the RCS	(LOCA) has b	een introduced into the	e containment s	sump.	
•	sed Answer: lical Reference(s):	C				
Propo	sed references to be	provided to app	olicants during examina	ation: <u>No</u>	ne	
E15 C	ontainment Flooding (CFR: 43.5 / 45.	determine and interpre 13) EA2.2 Adherence y's license and amend	to appropriate	as they apply to procedures and	
Question Source:		Bank # Modified Ban New	X(C00	0.0862) ote changes or	attach parent)	
Quest	ion Cognitive Level:	_	undamental Knowledg ion or Analysis	e_X		
10 CF	R Part 55 Content:	55.41 <u>9-10</u> 55.43 <u>5</u>				

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 001G2.4.4 4.0	SRO 	
Propos	sed Question: -/79					
"Rod Vincrea	Vithdrawal Bank D Hi	gh" with no know od motion. Wh	ctor power, the Contro wn changes in parame at is the appropriate a al/Insertion"?	eters other than	T-avg	
A.	Trip the reactor and	go to E-0, "Rea	ctor Trip or Safety Inje	ection."		
B.	Place rods in manua	I, verify rods sto	opped moving, then tri	p the reactor ar	nd go to E-0.	
C.	Place rods in manua	l, verify rods sto	opped moving, then co	ontinue with AP	-RCC.1.	
D.	Place rods in manua with AP-RCC.1.	l, if rods continu	ue to move then do no	t trip the reacto	r, and continue	
	sed Answer: ical Reference(s):					
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>Non</u>	<u>e</u>	
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)						
Questi	on Source:	Bank # Modified Bank New	X(B00 ⁻ (No	1.0008) te changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	X		
10 CFF	R Part 55 Content:	55.41 <u>10</u> 55.43				

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 015G2.1.14 2.5	SRO —— ——
Propo	sed Question: -/80				
			o and is at 5% power w ne following explains th		
Α.	Reactor trip since bo		and coincidence requi	irements would	be satisfied and
В.	No effect since it tak	es a 2/2 coinci	dence for a trip.		
C.	No effect since IR tri	ps would be bl	ocked by this time duri	ng startup.	
D.	Reactor trip since bo P-10 permissive con-		and coincidence requi	rements would	be satisfied and
-	sed Answer: ical Reference(s):	_A_			
Propos	sed references to be p	provided to app	olicants during examina	ntion: <u>Nor</u>	ne
Syster			(As em (NIS) 2.1.14 Know ennel. (CFR: 43.5 / 45.		n status criteria
Questi	on Source:	Bank # Modified Ban New	X(C01	5.0053) ite changes or a	attach parent)
Questi	on Cognitive Level:	•	undamental Knowledge ion or Analysis	• X	
10 CF	R Part 55 Content:	55.41 <u>7</u>			

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Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 017A4.01 3.8	SRO
Propo	esed Question: -/81				
Given	the following:				
•	Inadequate Core Co All RCPs are stopped All S/G NR water lev The HCO noted that	oling," Step 23, d and available els are 33% there are three	event in accordance of the control o	ild Be Started." stems have not ter than 1200 c	t been verified.
	CET Channe CH A Avg 11 High 1202 de Low 1172 de	85 deg F g F H6	CET Channe CH B Avg 11 High 1204 de Low 1182 de	92 deg F g F E10	
Which	ONE of the following	actions is requi	red to be performed?		
Α.	Enter SACRG-1, "Se	vere Accident (Control Room Guidelir	ne Initial Respo	nse," Step 1.
B.	Depressurize all S/G	s to atmospher	ic pressure.		
C.	Start a RCP after ver	ifying that an id	lle RCS cooling loop is	s available.	
D.	Start a RCP in both i	dle RCS cooling	g loops.		
	sed Answer: iical Reference(s):	_B			
Propo	sed references to be p	provided to appl	icants during examina	ntion: <u>FR-C.</u>	<u>1 pages 14-15</u>
017 In	ing Objective: -Core Temperature M ntrol room: (CFR: 41.7	onitor System (7 / 45.5 to 45.8)	ITM) A4 Ability to mar	available) nually operate a temperatures.	and/or monitor in
Quest	ion Source:	Bank # Modified Bank New		ete changes or a	attach parent)

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 022K3.01 2.9	SRO
Propo	sed Question: -/82				
	ant has experienced a		ed by an automatic SI xist:	initiation and c	ontainment
•	1D CRFC out of sen Containment pressu RHR pumps are in s The normal supply b	re = 40 psig tandby	ance 6 opened due to an u	nknown bus fa	ult
Which cooling	_	correctly descri	bes plant conditions w	vith regard to c	ontainment
۹.	There is adequate entemperature below d	•	ble to maintain the co	ntainment peal	k pressure and
3.	The containment per cannot be restored.	ak pressure and	l temperature limits co	ould be exceed	ed if 1D CRFC
C.	Operators should sta cooling water to oper		service water pump o	on Bus 14 to er	sure adequate
Ο.	The CRF should che the spraying of equip		tainment spray pumps iment.	s can be stoppe	ed to minimize
•	sed Answer: ical Reference(s):	_B			
Propos	sed references to be p	provided to appl	icants during examina	ntion: <u>Nor</u>	ne
022 Co		following: (CFR	3 Knowledge of the ef : 41.7 / 45.6) K3.01C		
Questi	on Source:	Bank # Modified Bank	:# (No	te changes or	attach parent)

New

-/82	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX_
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43

Exami	nation Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 061K2.01 3.2	SRO 	
Propos	sed Question: -/83					
Given	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.						
•	sed Answer: cal Reference(s):	_ <u>B</u>				
Propos	sed references to be p	rovided to appli	cants during examinat	ion: Non	<u>e</u>	
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 # (C061.0033) Modified Bank # (Note changes or attach par New			ittach parent)			
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge n or Analysis	<u>_x</u>		
10 CFF	0 CFR Part 55 Content: 55.417 55.43					

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 061G2.1.23 3.9	SRO
Propo	sed 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.	D. Any source of condensate grade water, city fire water, service water.				
Proposed Answer: C Technical Reference(s):					
Propos	sed references to be p	rovided to appli	cants during examina	tion: Non	<u>e</u>
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 # Modified Bank # New X (C061.0026) (Note changes or attach parent					ittach parent)
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge en or Analysis	<u>X</u>	
10 CFI	10 CFR Part 55 Content: 55.41 <u>10</u> 55.43				

ES-401

Exam	ination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO _2 _1 _068K6.10 _2.5	SRO
Propo	sed Question: -/85				
detern the R-	nined from the R-18 r 18 reading had excee	ecorder that the eded the alarm	r tank, R-18 alarms at e monitor alarm setpoi setpoint from the start . What are the HCO's	nt was imprope of the release	rly set and that at 0010 until the
Α.	Increase circulating deionized water, refe	water flow for n er to S-4.1U.	naximum dilution, flush	n the R-18 dete	ctor with
В.	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.				
O. Verify RCV-018 closed, re-sample the 'A' monitor tank, notify SS to refer to EPIP 1-0 and O-9.3.					
•	sed Answer: ical Reference(s):	_D			
Propos	sed references to be p	provided to app	licants during examina	tion: <u>AR-RM</u>	S-18
Learning Objective: (As available) (B8 Liquid Radwaste System (LRS) K6 Knowledge of the effect of a loss or malfunction on the collowing will have on the Liquid Radwaste System: (CFR:41.7 / 45.7) K6.10 Radiation monitors.					
Questi	on Source:	Bank # Modified Banl New	<# X (B00	68.0002)	
Questi	on Cognitive Level:		ındamental Knowledge on or Analysis	- <u>X</u>	
0 CFF	R Part 55 Content:	55.41 <u>7</u>			

Examination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 071K1.09 2.7	SRO 5
Proposed Question: -/86				
The plant is operating at 100 unplanned, monitored releas Main Weather (Meteorologic	se of radioacti	vity. What information	is obtained of	lirectly from the
A. Wind speed and dire	ection.			
B. Atmospheric stability	and radioacti	ve plume travel times.		
Wind direction and radioactive plume dispersion.				
D. Wind speed, wind di	rection and aff	ected emergency resp	onse plannin	g areas.
Proposed Answer: Technical Reference(s):	_A_			
Proposed references to be p	provided to ap	plicants during examina	ation: <u>N</u>	lone
Learning Objective: 071 Waste Gas Disposal Sy cause-effect relationships be (CFR: 41.2 to 41.9 / 45.7 to	etween the Wa	K1 Knowledge of the aste Gas Disposal Syst		
Question Source:	Bank # Modified Bar New	nk# (No	ote changes o	or attach parent)
Question Cognitive Level:	-	undamental Knowledg sion or Analysis	e <u>X</u>	
10 CFR Part 55 Content:	55.41 <u>9</u>	-		

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 071K4.06 2.7	SRO	
Propos	sed Question: -/87					
For a l	eaking waste gas deca	ay tank relief va	alve, which RMS moni	tor will be the f	irst to respond?	
A. R-14A, Plant Vent High Range Effluent, Channel 9.						
B.	R-13, Auxiliary Buildin	ng Particulate.				
C.	R-35, PASS Panel Wide Range Area Monitor.					
D. R-14, Auxiliary Building Noble Gas.						
Proposed Answer: D_ Technical Reference(s):						
Propos	sed references to be p	rovided to appl	icants during examina	tion: <u>Nor</u>	ne	
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.						
Questi	ion Source:	Bank # Modified Bank New	X(C07:	2.0019) te changes or a	attach parent)	
Questi	ion Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	e_X		
10 CF	10 CFR Part 55 Content: 55.41 <u>7</u> 55.43					

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 011A4.04 3.2	SRO —— ——	
Propo	sed 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.				
Propos	Proposed Answer:A_				
Propos	sed references to be provided to appl	icants during examina	tion: <u>Non</u>	<u>e</u>	
Learning Objective: O11 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 #

<u>X</u> (B010.0027)

-/88	
1	Modified Bank # (Note changes or attach parent New
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX
10 CFR Part 55 Content:	55.41 <u>7</u> 55.43

Exami	nation Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 011K6.04 3.1	SRO 	
Propo	sed Question: -/89					
Given	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					
	ONE of the following tor will see? (Assume		ns describes the indication)	ations the Head	i Control	
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.						
Questi	on Source:	Bank # Modified Bank New	# (C011	.0009) e changes or a	ittach parent)	
	Stion Cognitive Level: Memory or Fundamental Knowledge Comprehension or Analysis EFR Part 55 Content: 55.41 _ 7 55.43					

Exami	nation Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 063G2.1.32 3.4	SRO	
Propos	sed Question: -/90					
A plan batteri	t trip from full power a es be able to supply a	nd loss of all A0 dequate voltage	C power has just occu e to expected DC load	rred. How long	will the	
A.	2 hours.					
B.	4 hours.					
C.	8 hours.					
D.	12 hours.					
•	sed Answer: cal Reference(s):	_ <u>B</u>				
Propos	sed references to be p	rovided to appli	cants during examina	tion: None	e	
063 D.	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)					
Questi	on Source:	Bank # Modified Bank New	# (C063	3.0024) se changes or a	ttach parent)	
Questic	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	X		
10 CFF	R Part 55 Content:	55.41 <u>10</u> 55.43 <u>2</u>				

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 007A4.01 2.7	SRO 	
Propo	sed Question: -/91					
What	design feature provide	es cooling of the	e PRT following a POF	RV 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 ca	n be vented to	the waste gas header			
D.	Makeup water can b	e sprayed into	the tank.			
•	Proposed Answer:					
Propo	sed references to be	provided to app	licants during examina	ntion: <u>No</u>	ne	
Learning Objective: Other Description (As available) Other Description (As available) At Ability to manually operate (As available) At Ability to manually operate (As available)						
Questi	on Source:	Bank # Modified Bank New	X(INP((No	O 8315) te changes or	attach parent)	
Questi	on Cognitive Level:		ındamental Knowledge on or Analysis	e_X		
10 CF	R Part 55 Content:	55.41 <u>7</u> 55.43				

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 007A1.02 2.7	SRO 	
Propo	sed 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 dec	reasing.				
	sed Answer: ical Reference(s):	<u>B</u>				
Propos	sed references to be p	rovided to appl	icants during examina	tion: Non	e	
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.						
Questi	on Source:	Bank # Modified Bank New	X(INPO) 5465) te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	<u>X</u>		
10 CFI	R Part 55 Content:	55.41 <u>5</u> 55.43				

Exami	nation Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 041K4.18 3.4	SRO	
Propos	sed Question: -/93					
Which to a re	of the following corre- actor and turbine trip	ctly describes th from full power?	ne operation of the ste	am dump syste	em in response	
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 degrees F. with no de		en then all valves mod	ulate to restore	T-avg to 547	
D.	The first set of steam a 6-degree deadband		en then all valves mode s F.	ulate to restore	T-avg to within	
•	sed Answer: ical Reference(s):	_ <u>C</u> _				
Propos	sed references to be p	rovided to appli	cants during examinat	ion: <u>Non</u>	e	
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.						
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C041 (Not	0011) e changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u>X</u>		
10 CFF	R Part 55 Content:	55.41 _ 7				

55.43

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 076k1.16 3.6	SRO 	
Propos	sed Question: -/94					
Under	which ONE of the follo	owing condition	s 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 ge	nerator automa	atic start and undervol	tage on bus 14	or 16.	
D.	SI signal with a norm	al supply break	er open on bus 14 or	16.		
	sed Answer: cal Reference(s):	_D				
Propos	sed references to be p	rovided to appl	icants during examina	ition: <u>Non</u>	ie	
076 Secause-	ng Objective: ervice Water System (effect relationships be b) K1.16 ESF.	•	wledge of the physical			
Questi	on Source:	Bank # Modified Bank New	X(C076	6.0002) te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fu Comprehension	indamental Knowledge on or Analysis	e_X		
10 CFI	R Part 55 Content:	55.41 <u>2-9</u>				

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Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _3 _1 _G2.1.9 _2.5	SRO 	
Propo	sed Question: -/95					
ONE (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 r	nust be approve	ed by an on-shift licens	sed operator.		
C.	All electrical work ins	side the MCB re	quires Shift Superviso	r authorization.		
D.	If other electricians contribute to the work, the HCO must ensure that they sign the Access Authorization Log.					
Propo	sed Answer:	_ <u>C</u>				
Techn	ical Reference(s):	OPS-CON	IT-RM-CONDUCT			
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>Non</u>	e	
	Learning Objective: (As available) 2.1.9 Ability to direct personnel activities inside the control room. (CFR: 45.5 / 45.12 / 45.13)					
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C31	0.0240)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	<u> </u>		
10 CFI	R Part 55 Content:	55.41 <u>10</u> 55.43				

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Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 3 2 G2.2.30 3.5	SRO 	
Propo	sed Question: -/96					
Given	the following informat	ion:				
•	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 co	ntrol room oper	ators?	
A.	Sound the containme	ent evacuation a	alarm.			
B.	Dispatch personnel t	o verify contain	ment integrity is estab	lished.		
C.	Shift the auxiliary bui	lding ventilation	lineup to place the ch	narcoal filter in s	service.	
D.	Notify state and local	authorities, and	d the NRC.			
•	sed Answer: ical Reference(s):	_A				
Propos	sed references to be p	rovided to appli	icants during examina	tion: <u>Non</u>	<u>e</u>	
2.2.30 handlir	ng Objective: Knowledge of RO dut ng area, communicatio port of fueling operatio	on with fuel store	ol room during fuel had age facility, systems o	perated from the		
r		Bank # Modified Bank New	# <u>X</u> (C000	0.0977) te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fun Comprehension	ndamental Knowledge en or Analysis	- <u>X</u>		
10 CFI	10 CFR Part 55 Content: 55.41 <u>10</u> 55.43					

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Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 3 3 G2.3.2 2.5	SRO
Propos	sed Question: -/97				
radiolo the As	gical precautions have Low As Reasonably A red method for comple	e been taken ar Achievable (ALA	erformed on a system nd a pre-evolution brie ARA) guidelines, which lance? (Consider only	f has been com n ONE of the fo	npleted. Using llowing is the
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.				
•	sed Answer: cal Reference(s):	_C	<u> </u>		
Propos	sed references to be p	rovided to appli	cants during examina	tion: None	<u>e</u>
	ng Objective: (nowledge of facility A	LARA program.	(As (CFR: 41.12 /43.4 / 4	available) 5.9/45.10)	
Questi	on Source:	Bank # Modified Bank New		e changes or a 2001 #40)	ittach parent)
Questi	on Cognitive Level:	Memory or Ful Comprehensio	ndamental Knowledge n or Analysis	<u>_x</u>	
10 CFF	R Part 55 Content:	55.41 <u>12</u> 55.43			

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Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 3 4 G2.4.10 3.0	SRO 	
Propo	osed Question: -/98					
	n ONE of the following dures?	describes the	requirements for the u	se of Alarm R	esponse (AR)	
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.					
Propo	sed Answer:	_A_				
Techr	nical Reference(s):	OPS-MCE	B-ANNUNCIATORS	·····		
Propo	sed references to be	provided to ap	plicants during examina	ation: <u>No</u>	one	
	ing Objective:) Knowledge of annun	ciator respons	(As procedures. (CFR: 4	available) 1.10 / 43.5 / 4	5.13)	
Quest	ion Source:	Bank # Modified Bar New	X(INPo	•	r attach parent)	
Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis						

55.41 <u>10</u> 55.43 <u>5</u>

10 CFR Part 55 Content:

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 3 4 G2.4.17 3.1	SRO 	
Propo	sed 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 - Rese 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 ollowing 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).					
3.	RCS hot leg temperature > 550 deg F. and S/G wide range level < 35" (100" adverse CNMT).					
Э.	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.					
•	sed Answer: ical Reference(s):	B_ Backgrour	nd FR-H.1	-		
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>Nor</u>	<u>ne</u>	
earning Objective:2.4.17 Knowledge of EOP terms and definitions. (CFR: 41.10 / 45.13)						
Question Source: Bank # Modified I New		Modified Bank		te changes or 2001 #98)	attach parent)	
The state of the s		Memory or Fu Comprehension	ındamental Knowledge on or Analysis	• <u>X</u>		
0 CFR Part 55 Content: 55.41 _ 55.43 _						

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO <u>3</u> <u>4</u> <u>G2.4.29</u> <u>2.6</u>	SRO		
Propos	sed 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 minut	es.					
D.	1 hour; 1 hour.						
•	sed Answer: cal Reference(s):	_A					
Propos	sed references to be p	rovided to appli	cants during examina	tion: <u>Non</u>	<u>e</u>		
	ng Objective: Knowledge of the emo	ergency plan. ((As CFR: 43.5 / 45.11)	available)			
Questi	on Source:	Bank # Modified Bank New	# (C000	0.0015) te changes or a	attach parent)		
Questi	on Cognitive Level:	Memory or Fue Comprehension	ndamental Knowledge n or Analysis	- <u>X</u>			
10 CFF	R Part 55 Content:	55.41 <u>10</u> 55.43 <u>5</u>					

SRO Written

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 2_ 001AK3.0 3.2	SRO 1 1 1 01 4.3	
Propo	sed Question: 1/1					
180 st operat when	eps. For no apparent tor takes manual cont he attempts to drive n ing actions is appropri	t reason, bank D rol and rod motio ods in. Bank D	nt is presently at 80% starts stepping out coon stops but he received is now stationary at 18 ce with AR-C-30, "Roc	ontinuously. Thes an "urgent f 87 steps. Whic	he reactor failure" alarm th one of the	
A.	Control Tavg with boration/dilution/turbine load adjustments, notify the Operations Manager.					
B.	Attempt to control Ba	ank D rods with	individual bank select			
C.	Reduce reactor pow	er to < 75% RTF	within 2 hours.			
D.	Trip the reactor if roo band of 547-561 deg	d control cannot prees F.	be regained within 2 h	nours or if Tavg	j exceeds the	
Propos	sed Answer:	_A_				
Techni	ical Reference(s):	AR-C-30, A	P-RCC.1 "Continuous	Control Rod V	<u> Vithdrawal"</u>	
Propos	sed references to be p	provided to appli	cants during examina	tion: <u>No</u>	ne	
001 Co	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.					
Questi	on Source:	Bank # Modified Bank New	X(C000. #(Not	0255) te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u>X</u>		
10 CFF	R Part 55 Content:	55.41 <u>5, 1</u> 0				

55.41 <u>5, 10</u> 55.43 ____

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 003G2.2.2	SRO1	
Propo	sed Question: 2/					
The p	lant is at 100% power	when the follow	ving annunciators go ir	nto alarm:		
•	E-28, "Power Range Rod Drop Rod Stop -5%/5 SEC" C-14, "Rod Bottom Rod Stop"					
power	range nuclear instrur . What actions are re are the basis for those	quired for this e	ars to be working prop vent according to the	erly and N-42 in technical specif	ndicates 96% fications and	
A.	Verify SDM is within RTP within two hour not occur.	design limits an s; adjust therma	d reduce thermal pow I power so that exces	er to less than sive local linear	or equal to 50% heat rates will	
B.	Verify SDM is within RTP within two hours not occur.	design limits an s; adjust therma	d reduce thermal pow I power so that excess	er to less than sive local linear	or equal to 75% heat rates will	
C.	Verify SDM is within RTP within two hours than 12 steps.	design limits ans; the safety ans	d reduce thermal pow alysis does not allow re	er to less than od misalignmer	or equal to 75% nt of greater	
D.	Initiate boration and not allow rod misalig	be in Mode 2 wi nment of greate	th K _{eff} < 1.0 within six r than 12 steps.	hours; the safe	ty analysis does	
Propos	sed Answer:	_ <u>B</u> _				
Techni	ical Reference(s):	AR-C-14, AR	-E-28, TS			
Propos	sed references to be p	provided to appli	cants during examina	tion: <u>TS 3</u>	3.1.4	
APE: 0	ng Objective: 003 Dropped Control F ons for operations and		vledge of bases in tec	hnical specifica	tions for limiting	
Questi	on Source:	Bank # Modified Bank	# (Not	te changes or a	ttach parent)	

New

2/-		
C	uestion Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX
1	0 CFR Part 55 Content:	55.41 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 references to be provided to applicants during examination:

None

Learning Objective:

Proposed Answer:

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 <u>7</u>

55.43

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 005AA2.0	SRO 1 1 1 4.1	
Propo	sed Question: 4/					
The p	lant is at 95% reactor Imptom of a stuck cor	power with Ban trol rod and wh	k D control rods at 20 at would be the prope	0 steps. Which r operator resp	n of the following onse?	
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.					
Propo	sed Answer:	<u>_C</u>				
Techn	ical Reference(s):	AP-RCC.2 "I	RCC/RPI Malfunction,	" LP RAP13C		
Learni	ng Objective:	RAP132.20	<u> </u>	As available)		
they a	pply to the Inoperable	/Stuck Control	A2. Ability to determine Rod: (CFR: 43.5 / 45. S, in-core or loop temp	13) AA2.01 St	uck or	
Questi	on Source:	Bank # Modified Bank New	x# <u>X</u> (INF	PO 2747)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ındamental Knowledge on or Analysis	e		
10 CFI	R Part 55 Content:	55.41 55.43				

Examination Outline Cross-reference: Level RO SRO Tier# Group# 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? To prevent the SI pumps from injecting radioactive water into the RWST, causing a Α. 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: В 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 # (INPO bank 2971) Modified Bank #

Memory or Fundamental Knowledge

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 7
55.43 5

Question Cognitive Level:

New

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 1 015AK2.07 2.9	SRO 1 1 2.9	
Propo	osed Question: 6/4					
The p	lant is operating at 10 CP parameters indicat	0% power when te the following:	the 1B RCP standpip	e high level ala	arm (B-4) comes	
•	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 failur	es could lead to	these indications?			
A.	#2 seal failed closed					
B.	#2 seal failed open.					
C.	#1 seal failed closed	i.				
D.	#1 seal failed open.					
Propo	sed Answer:	<u>B</u>				
Techn	ical Reference(s):	AP-RCP.1	(Attach	if not previous	sly provided)	
APE: (Learning Objective: 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.					
Quest	ion Source:	Bank # Modified Bank New	# (B003	3.0002) te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Ful Comprehensio	ndamental Knowledge n or Analysis	<u></u>		

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

Exami	ination Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 029G2.2.25	SRO _1 _1 _5 	
Propo	sed 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	g the DNBR lim	its on the core.			
Propos	sed Answer:	_A				
Techni	ical Reference(s):	Background	FR-S.1, LP RFRS1C(<u>S)</u>		
029 Ar	ng Objective: nticipated transient wit ting conditions for ope	RFRS1C1.30 hout scram 2.2. erations and saf	25 Knowledge of base	available) es in technical s	specifications	
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (INPO	Bank 9255)		
Questi	on Cognitive Level:	Memory or Ful Comprehension	ndamental Knowledge on or Analysis	<u> </u>		
10 CFF	R Part 55 Content:	55.41 55.43 5				

Exami	nation Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	RO 040AA2.05	SRO 1 1 5 4.5	
Propos	sed 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 p	ressure, and RCS pre	ssure.		
D.	RCS pressure, RCS	subcooling, and	secondary heat sink.			
Propos	sed Answer:	<u>D</u>				
Techni	ical Reference(s):	_Background l	ES-1, ES-1.1 (Attach	if not previously	y provided)	
APE: 0 apply t	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.					
Questi	on Source:	Bank # Modified Bank New		D Bank 2693)		
Questi	on Cognitive Level:	Memory or Ful Comprehension	ndamental Knowledge n or Analysis	•X		
10 CFF	R Part 55 Content:	55.41 55.43 5				

Form ES-401-6 (R8, S1)

SRO Examination Outline Cross-reference: RO Level Tier# Group #

K/A # 040AA1.0 4.6 Importance Rating 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.
- Isolate both S/Gs and initiate feed and bleed of the RCS using the SI system. D.

Proposed Answer: В

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

(As available) Learning Objective:

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)
(Note changes or attach parent) Modified Bank #

New

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis

55.41 <u>7</u> 10 CFR Part 55 Content: 55.43 _____

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 057AA2.0	SRO 1 1 3 3.9
Propos	sed Question: 10/-				
429 (p	ressurizer pressure).	The plant expe	technicians are perform eriences a loss of off-s) is(are) activated from	ite power. Wh	at reactor
A.	High pressure react	or trip; enter E-0).		
B.	Low pressure reactor	or trip; enter E-0	.		
C.	Loss of pressure con	ntrol; enter AP-I	PRZR.1, "Abnormal Pr	essurizer Pres	sure."
D.	Loss of turbine EH of Required."	ontrol; enter AF	P-TURB.1, "Turbine Tr	ip Without Rea	ctor Trip
Propos	sed Answer:	B			
Techn	ical Reference(s):	LP R0901C,	PT-10, RGE-9 Syster	n Description_	
APE: 0		e Loss of Vital	nent Bus AA2. Ability AC Instrument Bus: (C		
Questi	on Source:	Bank # Modified Banl New	<# (No	ote changes or	attach parent)
Questi	on Cognitive Level:	•	undamental Knowledge on or Analysis	e	
10 CFI	R Part 55 Content:	55.41 55.43 5			

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 1 057AA1.0 3.7	SRO _1_ _1_ _1_ 	
Propo	sed Question: 11/6					
	of the following descr ution panel 1A is inter		ion of Inverter 1A whe transfer switch 1A:	n the 125 VDC	supply from DC	
Α.	Must be manually transferred to the alternate supply transformer, but will automatically transfer back to the inverter when 125 VDC is restored.					
В.	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 tra transfer back to the i		ernate supply transforn 25 VDC is restored.	ner, and will au	tomatically	
Propos	sed Answer:	C				
Techni	ical Reference(s):	RGE-9, Trair	ning System Description	on, LP R0901C		
APE: (Learning Objective: 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.					
Questi	on Source:	Bank # Modified Bank New	X_ (INPO I	Bank 1172)		
Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis						

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

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-	404
_	./11 17

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importar	nce Rating	RO 068/2.4.	SRO 1 1 49 4.0	
Propo	osed Question: 12/						
no inc	TA reports black billow dication of where the se esment. The crew attendiate actions for this e	moke is coming mpted to manu	g from or v ally trip th	vhether the a e reactor and	area is acces d failed. Wh	sible for any at are the cre	fire w's
A.	Commence emerge	ncy boration, ve	erify turbin	e stop valve:	s 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 react	or and turbine,	establish l	local operatir	ng stations.		
D.	Locally trip the react	or and turbine,	evacuate	control comp	olex.		
Propo	sed Answer:	<u>B</u> _					
Techr	ical Reference(s):	AP-CR.1, E	ER-FIRE.1				
068 C	ing Objective: ontrol Room Evacuati s that require immedia			orm without r		procedures th	iose
Quest	ion Source:	Bank # Modified Bank New	k# _ _	X(C000	,	or attach pare	ent)
Quest	ion Cognitive Level:	Memory or Fu Comprehensi			e_X_		
10 CF	R Part 55 Content:	55.41					

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10 CFR Part 55 Content:

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _1 068AK3.02 3.7	SRO 1 1 4.1
Propos	sed Question: 13/7				
The or	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 the AFW pumps at the		l flow can be adequate g panels.	ely controlled th	rough use of
Propos	sed Answer:	_C			
Techni	cal Reference(s):	AP-CR.1		<u>.</u>	
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.					
Questi	on Source:	Bank # Modified Bank New	# (Not	te changes or a	ittach parent)
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	- <u>X</u>	

55.41 <u>5, 10</u> 55.43 ____

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _1 069AK3.01 _3.8	SRO 1 1 4.2	
Propo	sed Question: 14/8					
Given	the following plant co	nditions:				
•	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 or path.	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 consequ	ences of excee	eding the containment	design pressure	e of 60 psig.	
C.	Take manual control	of containmen	t spray pumps to conse	erve RWST wat	er inventory.	
D.	Mitigate the hazard concentration.	of hydrogen det	onation by reducing co	ontainment hydr	ogen	
Propos	sed Answer:	_A				
Techni	cal Reference(s):	LP RFRZ1	C, FR-Z.1			
Learning Objective: 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.						
Questic	on Source:	Bank # Modified Bank	<#			
Questic	on Cognitive Level:	New Memory or Fu Comprehension	X ndamental Knowledge on or Analysis	<u> </u>		
10 CFF	R Part 55 Content:	55.41 5.10				

55.43

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO E01/2.4.6	SRO 1 1 4.0
Propo	sed Question: 15/				
Which	ONE of the following	describes the	mitigation strategy of	ES-0.0, "Rediag	nosis?"
Α.	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.				
Propos	sed Answer:	<u>D</u>			
Techn	ical Reference(s):	Backgrour	nd information ES-0.0		
	ng Objective: ediagnosis 2.4.6 Knov	vledge sympto	(As m-based EOP mitigati	s available) ion strategies.	
Questi	on Source:	Bank # Modified Bar New	nk# (No	ote changes or	attach parent)
Questi	on Cognitive Level:	-	undamental Knowledg ion or Analysis	e_X	
10 ÇFI	R Part 55 Content:	55.41 55.43 <u>5</u>	-		

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Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:	Level Tier # Group # K/A #	RO E01EK1.2	SRO 1 1	
	Importance Rating		<u>3.5</u>	
Proposed Question: 16/- (common K/A)				
During 100% power operations, radiation r	monitors R-15, R-19 ar	nd R-31 sudden	ılv alarme	

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

Injection/Rediagnosis.

- 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?

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.				
Propos	sed Answer:C				
Techn	ical Reference(s): E-0, ES-0.0, Background information ES-0.0				
E01 R	ng Objective:(As available) ediagnosis EK1Knowledge of the operational implications of the following concepts as pply 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

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

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _2 _E02EK3.1 _3.3	SRO 1 1 3.6
Propo	sed Question: 17/10				
	1, "SI Termination," is dance with Step 15. T		d. Normal letdown ha	s just been est	ablished in
•	Containment pressur Containment radiation RCS pressure - 1240 Core exit Tcs - 540 of Pressurizer level - 42	on - 72 mrem/hr 0 psig and decre degrees F.	easing slowly		
Which	ONE of the following	is required nex	t?		
A.	Adjust charging pum	p speed as neo	essary.		
B.	Control pressurizer h	neaters and spra	ay to stabilize RCS pre	essure.	
C.	Control steam dump	and total feed t	flow as necessary to s	tabilize RCS te	mperature.
D.	Manually operate SI Coolant," Step 1.	pumps as nece	essary and go to E-1, "	Loss of Reacto	r or Secondary
Propos	sed Answer:	_D			
Techn	ical Reference(s):	ES-1.1			
	sed references to be p nimum Subcooling	provided to appl	icants during examina	tion: <u>ES-1.1, s</u>	Steps 1-15; Fig.
E02 S the SI during oressu	Termination (CFR: 41 transient conditions, i	.5 / 41.10, 45.6 ncluding coolar	(As reasons for the follow, 45.13) EK3.1 Facility at chemistry and the efting limitations and rea	y operating cha fects of tempe	racteristics rature,
Questi	on Source:	Bank # Modified Bank New	X(B000	0.0333) te changes or a	attach parent)

Question Cognitive Level:

Memory or Fundamental Knowledge _____ Comprehension or Analysis ____X

10 CFR Part 55 Content:

55.41 <u>5, 10</u> 55.43 ____

SRO

3.8

Examination Outline Cross-reference:

Level RO Tier# Group # K/A # E02EA1.2 Importance Rating

3.6

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?

- Only indication of accurate temperature indication during natural circulation. A.
- B. Only indication still operable during loss of coolant accidents.

55.43

- C. Only indication of temperature using environmentally qualified indication.
- Only indication of conditions of hottest point in RCS that is not as susceptible to single D. loop effects.

Proposed Answer:	_D	
Technical Reference(s):		
Learning Objective: E02 SI Termination EA1. A Termination (CFR: 41.7 / 45	bility to operate an i.5 / 45.6) EA1.2 C	(As available) d / or monitor the following as they apply to the SI Operating behavior characteristics of the facility.
Question Source:	Bank # Modified Bank # New	X (C002.0119) (Note changes or attach parent)
Question Cognitive Level:	Memory or Funda Comprehension	amental Knowledge <u>X</u> or Analysis <u> </u>
10 CFR Part 55 Content:	55.41 7	

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO E04EA2.2	SRO _1 _1
Propo	sed Question: 19/				
Follow action	ving a safety injection (s) is(are) required if a	from a loss of ca a LOCA outside	oolant accident, deter of containment canno	mine which ope t be isolated.	erator procedural
A.	Transition from E-0 guidance.	to ECA-1.2, "LO	CA Outside Containm	ent," which give	es full recovery
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.	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.				
Propos	sed Answer:	<u>D</u>			
Techn	ical 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.					
Questi	on Source:	Bank # Modified Bank New		0.0139) te changes or a	ittach parent)
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge n or Analysis	<u></u>	
10 CFI	R Part 55 Content:	55.41 55.43 _5_			

Examination Outline Cross-reference:

Level
Tier #
Group #
K/A #
Importance Rating

RO SRO

1 1
1
E07EK1.3
3.2 3.6

Proposed Question: 20/12

10 CFR Part 55 Content:

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:	<u>D</u>	
Technical Reference(s):		
concepts as they apply to the	(Saturated Core Cooling) (CF	(As available) onal implications of the following FR: 41.8 / 41.10, 45.3) remedial actions associated with the
Question Source:	Bank # X Modified Bank # New	(C000.0854) _ (Note changes or attach parent) -
Question Cognitive Level:	Memory or Fundamental Know Comprehension or Analysis	wledge X

55.41 <u>8, 10</u> 55.43

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 ____

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 1 E08EA1.1 3.8	SRO 1 1
Propo	sed Question: 21/13				
exists cooldo termin the fol	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 t	he cold reactor	coolant and thereby d	ecreases the th	ermal stress.
B.	Raises RCS pressur stress.	e which reduces	s SI injection flow and	thereby decrea	ses the thermal
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.				
Propos	sed Answer:	_ <u>D_</u>			
Techn	ical Reference(s):		· · · · · · · · · · · · · · · · · · ·		
Learning Objective:					
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (B000	0.0262) se changes or a	ttach parent)
Questi	Question Cognitive Level: Memory or Fundamental Knowledge X				

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 1 E09EK1.1 3.0	SRO 1 1 3.4
Propo	sed Question: 22/14				
Which	of the items below de	escribes how to	increase natural circu	lation 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 s	etpoint to a high	er pressure, thus incr	easing the RCS	S - S/G delta-T.
D.	Decrease S/G ARV	setpoint to a low	er pressure, thus incr	easing the RCS	S - S/G delta-T.
Propos	sed Answer:	_D_			
Techn	ical 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.					
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (B0	00.0020)	
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge n or Analysis	<u>X</u>	
10 CF	R Part 55 Content:	55.41 <u>8, 10</u>	_		

55.43

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Exam	ination Outline Cross-reference	Tier# Group K/A#	# tance Rating	RO 	SRO 1 1 3.4	
Propo	osed Question: 23/- (common K	A)			·	
	performing ES-0.2, "Natural Ciuurizer level increasing rapidly.				rator notices	
•	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 limi	ts and continu	ue plant cooldov	vn.	
D.	Reduce the cooldown rate to s	tay within allo	wable limits.			
Propo	sed Answer:C_					
Techn	ical Reference(s): <u>ES-0.</u>	2				
Propo With S	sed references to be provided to Shroud Fans	applicants d	uring examina	ation: <u>Fig-3.0, N</u>	lat Circ C/D	
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.						
Quest	ion Source: Bank # Modified New	Bank#	X (B00	02.0024)		

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

55.41 <u>7</u> 55.43 ____ 10 CFR Part 55 Content:

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _1 	SRO _1 _1
Propo	sed Question: 24/16				
Given	the following plant co	nditions:			
•	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				
	ONE of the following ator level indication?		t that the loss of these vels will be:	cooling fans h	ave on steam
A.	Unaffected by the given	en conditions.			
B.	Lower than actual lev	/el.			
C.	Higher than actual le	vel.			
D.	Not able to be determ	nined.			
Propos	sed 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.					
Questi	on Source:	Bank # Modified Bank New	# (C000	0.1018) e changes or a	ittach parent)
Questi	Question Cognitive Level: Memory or Fundamental Knowledge Comprehension or AnalysisX				

10 CFR Part 55 Content:

55.41 <u>8, 10</u> 55.43 ____

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 1 2 007EK2.02 2.6	SRO 1 2 2.8	
Propo	sed 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 U\	/ coil on bypass	breaker A.			
В.	Energizing the shunt	trip on bypass l	breaker B.			
C.	Energizing the shunt	trip on bypass I	oreaker A.			
D.	Energizing the shunt trip on bypass breaker B and de-energizing the UV coil on bypass breaker B.					
Propos	sed Answer:	_A_				
Techn	ical Reference(s):	RPS_Syste	m 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.						
Questi	Question Source: Bank # Modified Bank # New X (INPO 4260) (Note changes or attach parent)					
Questi	Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis					

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

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E-0-4	u	ı

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference: Level RO SRO
Tier # 1 1
Group # 2

Group # <u>2 2</u>

K/A # <u>008G2.1.30</u>

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 b	olock 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.

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

10 CFR Part 55 Content: 55.41 10 55.43 5

Question Cognitive Level:

10 CFR Part 55 Content:

Examination Outline Cross-reference: Level RO SRO Tier# Group # **K/A#** 009EK1.01 Importance Rating 4.2 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 Utubes, 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. X (INPO Bank 3478) Question Source: Bank # Modified Bank # New

Memory or Fundamental Knowledge X

Comprehension or Analysis

55.41 <u>8, 10</u> 55.43 ____

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference: Le

 Level
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 SRO

 Tier #
 1
 1

 Group #
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 2

 K/A #
 009EK2.03

Importance Rating 3.0 3.3

Proposed Question: 28/20

10 CFR Part 55 Content:

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

55.41 <u>7</u> 55.43 ___

D. Core exit thermocouples - stable or decreasing

Proposed Answer:	_A_
Technical Reference(s):	EOP Attachment NC
Learning Objective: 009 Small Break LOCA K2 K the following: EK2.03 S/Gs	(As available) nowledge of the interrelations between the small break LOCA and
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

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Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO 1 2 3.5	
Propos	sed Question: 29/-					
429 fa	or power is 75%, PRZ ils low. What are the operational concern a	actions per AP-	trol selector is in its no PRZR.1, "Abnormal P failure?	ormal position. ressurizer Pres	Transmitter PT- sure," and what	
A.	Place controller 431l PCV-430 will not ope	K in MANUAL aren in AUTO whe	nd adjust output to res n PRZR pressure incr	tore PRZR pre eases to its OF	ssure; PORV PEN setpoint.	
B.	Place controller 4311 PORV will open in A	く in MANUAL ar UTO when PRZ	nd adjust output to res R pressure increases	tore PRZR pre to the OPEN se	ssure; neither etpoint.	
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, Failure;" neither POF setpoint.	"Reactor Protect RV will open in A	ction Bistable Defeat A LUTO when PRZR pre	fter Instrument ssure increase	ation Loop s to the OPEN	
Propos	ed Answer:	<u> </u>				
Techni	cal Reference(s):	LP RIC02C		_		
Learning Objective: 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.						
Questio	on Source:	Bank # Modified Bank New	#X_ (INPC) Bank 3486)		
Questic	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u></u>		
10 CFF	Part 55 Content:	55.41 <u>7</u> 55.43 <u>5</u>				

Form ES-401-6 (R8, S1)

2.8

Examination Outline Cross-reference:

Level RO SRO Tier# Group # 1 K/A # 027AK2.03 Importance Rating 2.6

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)	: <u>AP-PRZR.1</u>		
Proposed references to	be provided to applicant	s during examination:	AP-PRZR.1
AK2. Knowledge of the	Pressure Control System interrelations between the R 41.7/ 45.7) AK2.03 Con	e Pressurizer Pressure	n e Control Malfunctions
Question Source:	Bank # Modified Bank # New	(B010.00 (Note ch	22) anges or attach parent

30/21

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

10 CFR Part 55 Content: 55.41 _ 7 _ 55.43 _ ___

Exam	ination Outline Cross-	-reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _2 _033AA1.03 _3.0	SRO 1 2 3.2	
Propo	osed Question: 31/22					
intern this fa	ators were performing nediate range channel allure affects the reactor mentation System?	N36 failed high	 Which of the following 	ng statements o	describes how	
Α.	The reactor will trip on high IR flux, and source range Ni's will have to be manually reenergized.					
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 t	rip, and source	range NI's will have to	be manually re	e-energized.	
D.	The reactor will not t proper setpoint.	rip, and source	range Nl's will re-ener	gize when N35	reaches the	
Propo	sed Answer:	_A_				
Techn	ical Reference(s):	NIS System	Description			
APE: 0	ing Objective: 033 Loss of Intermedia or the following as they 41.7 / 45.5 / 45.6) AA	, apply to the Lo	ear Instrumentation A/ ess of Intermediate Ra	available) A1. Ability to op inge Nuclear In	erate and/or strumentation	
Questi	ion Source:	Bank # Modified Bank New		D Bank 2823) te changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	; 		

55.41 <u>7</u> 55.43 ____

Exam	ination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO 1 2 2 4.1	
Propo	sed Question: 32/-					
Which secon	n one of the following i dary leakage through	is the basis for t each steam ge	he Technical Specifica nerator?	ation limit for pr	imary-to-	
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 to a LOCA.	tube integrity is	maintained in the ever	nt of a main ste	am line rupture	
Propo	sed Answer:	<u>B</u> _				
Techn	ical Reference(s):	TS, E-3				
APE: 0	Learning Objective: (As available) APE: 037 Steam Generator (S/G)Tube Leak 2.2.22 Knowledge of limiting conditions for operations and safety limits.					
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (INP	O Bank 1141)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	- X		
10 CFI	R Part 55 Content:	55.41 55.432				

10 CFR Part 55 Content:

55.41 <u>5, 10</u> 55.43 ____

Exam	ination Outline Cross	-reference:	Level Tier # Group # K/A #	RO 1 2 037AK3.08	SRO 1 2	
			Importance Rating	4.1	4.3	
Propo	sed Question: 33/23					
What	is the basis for the R0	CP trip criteria of	E-3 "Steam Generate	or Tube Rupture	∍?"	
A.	To minimize coolant loss from the ruptured tube.					
B.	To minimize heat tra	ansfer to the rupt	tured S/G.			
C.	To prevent damage	to the RCPs from	m loss of seal differen	tial pressure.		
D.	To maintain RCPs in service if possible, but trip them if required by two phase flow separation/core uncovery considerations.					
Propo	sed Answer:	<u>D</u>				
Techn	ical Reference(s):					
APE: (espor	ng Objective: 037 Steam Generator oses as they apply to os Criteria for securing	the Steam Gene	(As k AK3. Knowledge of trator Tube Leak: (CF	available) the reasons fo R 41.5,41.10 / 4	r the following 15.6 / 45.13)	
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C000	0.0896) te changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Ful Comprehensio	ndamental Knowledge n or Analysis	X_		

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _2 038EK1.04 _3.1	SRO 1 2 3.3	
Propos	sed Question: 34/24					
contine unable	a natural circulation uses, causing steam vo to restore forced circ ning course of the eve	oids to form in the	ne steam generator U	-tubes. If the op	erators are	
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.			lequately remove dec fully entered the core		ong as	
D.	NC will decrease, but enough flow will continue to provide adequate decay heat removal for as long as necessary.					
Propos	sed Answer:	<u>A</u>				
Techni	cal Reference(s):					
EPE: 0 mplica	ng Objective: 138 Steam Generator tions of the following 1 Reflux boiling.	Tube Rupture (SGTR) EK1 Knowled	available) lge of the opera (CFR 41.8 /41.	tional 10 / 45.3).	
Questi	on Source:	Bank # Modified Bank		O Bank 5543)		

Memory or Fundamental Knowledge_ Comprehension or Analysis 10 CFR Part 55 Content: 55.41 <u>8, 10</u> 55.43

Question Cognitive Level:

New

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Form ES-401-6 (R8, S1)

Examir	nation Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	RO 060G2.2.25	SRO 1 2 3.7	
Propos	sed Question: 35/-					
	is a leaking Waste Ga t indication of this cor		relief valve in the plan	t. Which RMS r	nonitor will give	
A.	R14A, Plant Vent High Range Effluent, Channel 9					
B.	R13, Auxiliary Building Particulate					
C.	R35, PASS Panel Wi	ide Range Area	Monitor			
D.	R14, Auxiliary Buildin	ng Noble Gas			•	
Propos	ed Answer:	<u>D</u>				
Technic	cal Reference(s):	RMS Syste	em Description			
APE: 0 the Acc	cidental Gaseous Rad	lwaste Release	(As elease AK2. Knowledo and the following: (CF indications and the op	R 41.7 / 45.7)	AK2.01 ARM	
Questic	on Source:	Bank # Modified Bank New	# (C072	2.0019) te changes or a	ttach parent)	
Questic	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	• <u>X</u>		
10 CFR	R Part 55 Content:	55.41 <u>7</u> 55.43 <u>4</u>				

Form ES-401-6 (R8, S1)

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: APE: 065 Loss of Instrume apply to the Loss of Instrum instrument air to minimize of	nent Air: (CFR 41.7 / 4	(As available) operate and / or monitor the following as they 45.5 /45.6) AA1.02 Components served by
Question Source:	Bank # Modified Bank # New	X (B078.0014) (Note changes or attach parent)

36/25

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

10 CFR Part 55 Content: 55.41 _ 7 _ 55.43 _ ___

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _E03EA2.2	SRO _1 _2 	
Propo	sed Question: 37/-					
Major	1.2, "Post LOCA Cool Action Category is to lowing describes the p	"Depressurize tl	ne RCS to minimize R	mps are stopp CS subcooling	ed. The next ." Which one of	
A.	Minimize the chance of pressurized thermal shock by reducing pressure stress.					
B.	Reduce pressure to i	inject the accum	ulators.			
C.	Reduce pressure to	allow RHR to inj	ect into the RCS.			
D.	Minimize break flow	and reduce RCS	S makeup requirement	ts.		
Propos	sed Answer:	_D_				
Techni	ical 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.						
Questi	on Source:	Bank # Modified Bank New	(C000 (Not	0.0782) e changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u>X</u>		
10 CFF	R Part 55 Content:	55.41 55.435				

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Form ES-401-6 (R8, S1)

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Exam	ination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO E11EK3.3	SRO _1 _2 	
Propo	osed Question: 38/- (c	ommon K/A)				
entere isolate plant e contai	ed ECA-1.1, "Loss of I ed. The STA notes th conditions. Specifical	Emergency Coo at some of the ly, he states tha on (Steps 5 & 7	has occurred, and the plant Recirculation," be steps of ECA-1.1 do not at the steps to establish) do not make sense b juired?	cause the leak ot appear to ap h containment s	cannot be ply to present spray and	
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 e impact of performing	ffect until plant J Steps 5 & 7 u	management and eng nder these conditions.	ineering staff ca	an assess the	
D.	Perform all procedur are no directions ind	e steps. Althoricating that the	ugh they are not pertin y should be bypassed.	ent to current c	onditions, there	
Propos	sed Answer:	<u>D</u>				
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.						
Questi	ion Source:	Bank # Modified Ban New	<u>X</u> (B00	0.0280) te changes or a	attach parent)	
Questi	ion Cognitive Level:		undamental Knowledge on or Analysis	<u>X</u>		
10 CFI	R Part 55 Content:	55.41 5, 10				

55.41 <u>5, 10</u> 55.43 ____

10 CFR Part 55 Content:

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _2 E16EK3.2 2.9	SRO 1 2 3.3	
Propo	sed Question: 39/27					
	one of the following s onse to High Containr			ating strategy of	f FR-Z.3,	
Α.	The post-accident charcoal filters are checked to be in service (or placed in service) to reduce radiation levels.					
В.	Containment mini-pu	ırge (or purge) i	s initiated to reduce ra	adiation levels.		
C.	The containment auxiliary charcoal filter system is placed in service to reduce radiation levels.					
D.	Containment spray is levels.	s checked to be	in service (or initiated	l) to reduce cor	ntainment iodine	
Propo	sed Answer:	_A_				
Techn	ical Reference(s):					
E16 H they a	ng Objective: igh Containment Radi pply to the (High Cont mal and emergency op	ainment Radiati	wledge of the reasons on) (CFR:41.5 / 41.10), 45.6, 45.13)	EK3.2 Normal,	
Quest	on Source:	Bank # Modified Bank New	X(C000	0.0861)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	e_X_		

55.41 <u>5, 10</u> 55.43 ____

FS-40	1
_3-4 0	1

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _E16EA1.1	SRO 1 2 3.2	
Propo	esed Question: 40/- (co	ommon K/A)				
The fo	The following plant conditions exist with the unit in Mode 2:					
•	Containment radiation "Response to High Country Valve status light	on levels are 2.3 Containment Rac ts are BRIGHT.	itors responded using E4 R/hr and the opera diation Level." om emergency return f	tors entered FF	R-Z.3,	
Which above	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 sta	art the control ro	om emergency return	fan.		
D.	Verify the containme	nt radiation level	s before reporting the	information to	the TSC.	
	sed Answer: ical Reference(s):	B_ FR-Z.3, LP I Desc.	R-Z.3, Containment \	/entilation Trng	ı. System	
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.						
Questi	on Source:	Bank # Modified Bank	# X (INPC) Bank 4851)		
Questi	on Cognitive Level:		damental Knowledge	X_		
10 CFF	Comprehension or Analysis OCFR Part 55 Content: 55.41 _ 7					

55.43 5

Form ES-401-6 (R8, S1)

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:	<u>B</u>				
Technical Reference(s):	PZR P & L Train	ing System Description			
Learning Objective: 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 # New	X (B011.0006)			

41/-		
Question Cognitive Level:	Memory or Fundamental KnowledgeX	_
10 CFR Part 55 Content:	55.41 55.43 5	

10 CFR Part 55 Content:

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _1 _3 028AK2.03 _2.6	SRO _1 _3 	
Propo	sed Question: 42/29					
contro what e	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 cower is reduced to 30%?					
A.	Charging and letdow	n will remain ba	lanced and maintain l	evel at 49%.		
В.	Charging flow will inc	crease causing l	evel to increase to the	trip setpoint.		
C.	Charging flow will decrease causing level to decrease until letdown is isolated and heaters are tripped.					
Ο.	Charging flow will inc control at a slightly h	crease until the figher level.	low signal error equal	s the level sign	al error and will	
Propos	sed Answer:	_c_				
Гесhnі	cal Reference(s):					
APE: 0	Learning Objective: 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.					
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (B010	0.0026) se changes or a	ttach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u>X</u>		

55.41 <u>7</u> 55.43 ____

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Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 036AA2.01	SRO 1 3 3.9
Propos	sed 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?					
Α.	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 assembl assembly until it read	y over the "eme hes the bottom	rgency" location in the of the slot area.	transfer slot a	nd lower the
D.	Place the assembly in it is fully enclosed in	n the shipping c the shipping cas	ask area then lower a	nd unlatch the	assembly when
Propos	ed Answer:	<u>_C</u>			
Techni	cal Reference(s):	Proc RF-65.	4, Fuel Handling Accid	dent Instruction	IS
Propos	ed references to be p	rovided to appli	cants during examinat	ion: <u>Procedu</u>	re RF-65.4
APE 03	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.				
Questio	on Source:	Bank # Modified Bank New	# <u>X</u> (B034	1.0002)	
	on Cognitive Level:	Memory or Fur Comprehension 55.41 55.435.7	ndamental Knowledge n or Analysis	_X	

Question Cognitive Level:

10 CFR Part 55 Content:

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 001K1.04 3.2	SRO 2 1 3.4		
Propo	sed Question: 44/30						
	row range T-hot RTD to oulations must be done			e following swit	ch		
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 corresponding to the		he Tavg Defeat switch	nes to the positi	on		
Propo:	sed Answer:	<u>B</u> _					
Techn	ical Reference(s):	<u> </u>					
Syster -effect	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.						
Questi	ion Source:	Bank # Modified Bank New		6.0083) ote changes or a	attach parent)		

Memory or Fundamental Knowledge X

Comprehension or Analysis

55.41 <u>2 to 9</u> 55.43 ____

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 003K3.04 3.9	SRO 2 1 4.2
Propo	sed Question: 45/31				
Given	the following plant co	nditions:			
•	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 b	ecause power i	s greater than permiss	sive P-7.	t .
D.	The reactor will trip b	ecause power i	s less than permissive	P-8.	
Propos	sed Answer:	<u>B</u>			
Techn	ical Reference(s):	<u></u>			
003 Re	ng Objective: eactor Coolant Pump s ection of the RCPS will	System (RCPS) have on the fol	(As: K3 Knowledge of the llowing: (CFR: 41.7 / 4	available) effect that a lo 5.6) K3.04 RP	ss or S.
Questi	on Source:	Bank # Modified Bank New		2.0062) te changes or a	ittach parent)
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u>x</u>	
10 CFF	R Part 55 Content:	55.41 <u>7</u> 55.43 <u>—</u>			

Form ES-401-6 (R8, S1)

SRO

Examination Outline Cross-reference:

Level RO Tier# Group # 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.
- Decreases due to the density increase of the water in the downcomer being cooled by C. colder RCS water.
- Increases due to an increased steam flow to compensate for a lower enthalpy rise D. across the U-tubes.

Proposed Answer:	<u>C</u>	
Technical Reference(s):		
Learning Objective: 003 Reactor Coolant Pump parameters (to prevent exc including: (CFR: 41.5 /45.5	(As available) o System (RCPS) A1 Ability to predict and/or mon ceeding design limits) associated with operating the b) A1.05 RCS flow.	itor changes in ne RCPS controls
Question Source:	Bank # X (C331.0217) Modified Bank # (Note changes New	s or attach parent)
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX	
10 CFR Part 55 Content:	55.41 <u>X</u> 55.43	

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 004K5.14 2.5	SRO 2 1 2.9
Propo	sed 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.	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.	D. Operators should secure pressurizer heaters to minimize the concentration of boron in the pressurizer water volume.				
Propos	sed Answer:	<u> </u>			
Techn	ical Reference(s):	S-3.3K Pres	ssurizer Steam Space	Purge to the V	CT_
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).					
Questi	on Source:	Bank # Modified Bank New	# (Not	te changes or a	uttach parent)
Questi	Question Cognitive Level: Memory or Fundamental Knowledge Comprehension or Analysis				
10 CFI	10 CFR Part 55 Content: 55.41 <u>5</u> 55.43				

Form ES-401-6 (R8, S1)

Examination Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO _2 _1 _004A1.05 _2.9	SRO _2 _1 		
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	Power increases and charging flow increases.					
B. Power increases and	Power increases and charging flow decreases.					
C. Power decreases and	C. Power decreases and charging flow increases.					
D. Power decreases and	d 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 Banl New	<# (No	ote changes or	attach parent)		
Question Cognitive Level:	•	ındamental Knowledg on or Analysis	je			

55.41 <u>5</u> 55.43

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _2 _1 _013K2.01 _3.6	SRO 2 1 3.8	
Propo	sed 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.	 Verify Bus 14 D/G breaker closed. Adjust 1A D/G voltage to 480 volts using the manual rheostat. When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ. 					
B.	 Pull stop the Bus 18 D/G breaker. Open the Bus 18 normal feed breaker. Adjust 1A D/G voltage to 480 volts using the manual rheostat. When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ. 					
C.	 Adjust 1A D/G voltage to 480 volts using the manual rheostat. When load sequencing is complete, place the unit/parallel switch to "unit" and adjust frequency to 60 HZ. 					
D.	D. 1) Verify Bus 14 D/G breaker is closed.2) Verify Bus 14 loads sequence on as necessary.					
Propos	sed 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.						
	on Source:	Bank # Modified Bank New		te changes or a	attach parent)	
Questi	uestion Cognitive Level: Memory or Fundamental Knowledge					

Comprehension or Analysis

55.41 <u>7</u> 55.43 ____

Form ES-401-6 (R8, S1)

Examination Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 013K6.01 2.7	SRO 2 1 3.1		
Proposed Question: 50/36						
The plant experienced a sm cannot be manually started. "C" SI pump discharge valve operations.	Which of the f	ollowing statements d	escribes the re	esponse of the		
A. MOV-871A will close	MOV-871A will close, MOV-871B will remain open.					
B. MOV-871A and B wi	ll remain open.					
C. MOV-871B will open	, MOV-871A w	ill remain closed.				
D. MOV-871B will close	, MOV-871A w	ill remain open.				
Proposed Answer:	_A_					
Proposed references to be p	provided to app	licants during examina	ation: No	ne		
Learning Objective: 013 Engineered Safety Feat loss or malfunction on the fo Sensors and detectors.		System (ESFAS). K6				
Question Source:	Bank # Modified Ban New	X(C00	•	attach parent)		
Question Cognitive Level:	•	undamental Knowledg on or Analysis	e_X_			

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 014K3.02 2.5	SRO 2 1 2.8	
Propo	sed Question: 51/37					
			control room CRT sc required due to this fa		control rod	
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.				
Propo	sed Answer:	_ <u>D</u> _				
Propo	sed references to be	provided to appl	icants during examina	ation: <u>TS</u>	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.						
Questi	on Source:	Bank # Modified Bank New	(B00 (No	1.0015) ite changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	= <u>X</u>		

55.41 <u>7</u> 55.43 ____

Form ES-401-6 (R8, S1)

(Note changes or attach parent)

Exami	nation Outline Cross-refe	erence:	Level Tier # Group # K/A # Importance Rating	RO 2 1 017A2.01 3.1	SRO _2 _1 	
Propos	sed 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 t	the Dataliner t	for CET Channel A; no	action is nece	essary.	
D.	An Individual Point Temperature and Status message on the Dataliner; submit a report in 30 days for the inoperable channel.					
Propos	sed Answer: _	<u>B</u>				
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.						
Questi	on Source: B	Bank #				

Question Cognitive Level:

Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content:

55.41 _ 5 55.43 5

New

Modified Bank #

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO 2 1 2 4.1		
Propo	sed Question: 53/-						
inoper failure	able for routine maint	enance. Four h	ontainment recirculation nours later the "C" CRI rictions due to these e	FC shuts down	due to a breaker		
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-l 36 hours.	hour TSAS, if no	ot met must be in Mod	le 3 in 6 hours a	and Mode 5 in		
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-da hours.	ay TSAS, if not i	met must be in Mode	3 in 6 hours an	d Mode 5 in 84		
Propos	sed Answer:	_A_					
Techni	cal Reference(s):	TS 3.6.6					
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>TS</u>	3.6.6		
_earning Objective:(As available) D22 Containment Cooling System (CCS) 2.2.22 Knowledge of limiting conditions for operations and safety limits.							
Questi	on Source:	Bank # Modified Bank New	x# (No	te changes or a	attach parent)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	<u>X</u>			
0 CFF	R Part 55 Content:	55.41 55.432					

Form ES-401-6 (R8, S1)

Examination Outline Cro	ss-reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 022A4.04 3.1	SRO 2 1 3.2		
Proposed Question: 54/3	9					
Following a LOCA, the operation valves from CNM following states the cond Main Control Board?	T sump B are or	oen (MOVs 850 A&B, 8	51 A&B). Which	ch ONE of the		
A. MOVs 897 <u>AND</u> 8	98 (SI Recirc) m	nust be closed.				
B. MOV 897 <u>OR</u> 898 AND	(SI Recirc) mus	st be closed				
	325B (SI pump s	uction valves) must be	closed.			
AND	MOVs 897 <u>AND</u> 898 (SI Recirc) must be closed <u>AND</u> MOVs 896A <u>and</u> 896B (RWST to SI/CNMT spray) must be closed.					
AND	MOV 897 <u>OR</u> 898 (SI Recirc) must be closed <u>AND</u> MOV 896A <u>or</u> 896B (RWST to SI/CNMT spray) must be closed.					
Proposed Answer:	_D_					
Technical Reference(s):	System	Description, CS System	1			
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 Bai New	nk# (No	ote changes or	attach parent)		
Question Cognitive Level: Memory or Fundamental Knowledge Comprehension or AnalysisX						
10 CFR Part 55 Content: 55.41 _ 7 _ 55.43						

Exami	nation Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO 2 1 3.6		
Propos	sed Question: 55/-					
During	a large break LOCA the following co	onditions 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 e	emergency classification level does th	ne shift supervisor dec	lare and what is	s the basis for		
A.	Site area emergency based on loss containment.	of the RCS barrier and	d potential loss	of the		
B.	Site area emergency based on loss cladding.	of the RCS barrier and	d potential loss	of the fuel		
C.	General emergency based on loss of loss of the containment.	of the RCS barrier and	the fuel claddir	ng, and potential		
D.	General emergency based on loss of the RCS barrier, the fuel cladding and the containment.					
Proposed Answer:C_						
Techni	cal Reference(s): EPIP 1-0,	Ginna Station Event E	valuation and (<u>Classification</u>		
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 # New (Note changes or attach parer
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or AnalysisX
10 CFR Part 55 Content:	55.41 55.435

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-re	eference:	Level Tier # Group # K/A # Importan	ce Rating	RO _2 _2 _026K4.05 _2.8	SRO 2 1 3.3	
Propos	sed 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 debris from entering t		•	the CNMT	spray pump su	ction prevent	
Propos	sed Answer:	<u>B</u>					
Techn	ical Reference(s):	TS 3.5.2 8	3.6.6, CS	S System De	escription		
Learning Objective: O26 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.							
Questi	ion Source:	Bank # Modified Bank New	(# _ _	(No	ote changes or	attach parent)	
Questi	Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis						

55.41 <u>7</u> 55.43 ____

Form ES-401-6 (R8, S1)

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 059K4.16 3.1	SRO 2 1 	
Propos	sed Question: 57/41					
Which	one of the following w	rill result in an a	utomatic trip of a mair	n feedwater pui	mp?	
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.					
Propos	sed Answer:	_A_				
Propos	ed references to be p	rovided to appli	cants during examina	tion: <u>Non</u>	e	
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 # Modified Bank # New Modified Bank # New Modified Bank # Modified Bank #						
Questio	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	X		
10 CFF	R Part 55 Content:	55.41 <u>7</u> 55.43				

10 CFR Part 55 Content:

55.41 <u>5</u> 55.43 <u>5</u>

Examination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _2 _1 _059A2.05 _3.1	SRO 2 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 rap	idly to less than	8%.				
B. Verify turbine trip and	d go to AP-TUR	B.1, "Turbine Trip With	hout Reactor T	rip Required."		
C. Reduce reactor power	er to less than 2	% and continue with A	\P-FW.1.			
D. Enter E-0, "Reactor"	Trip or Safety In	jection."				
Proposed Answer:	<u>B</u>					
Proposed references to be p	provided to appli	cants during examina	tion: <u>Non</u>	<u>e</u>		
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 # Modified Bank New	# <u>X</u> (B000	.0379) e changes or a	ittach parent)		
Question Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	X			

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 063K2.01 2.9	SRO 2 1 3.1	
Propo	sed 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 s AC Instrument Busse	system is the no es.	rmal power supply (vi	a the inverters)	to two of the	
Propos	sed Answer:	<u>D</u>				
Techni	cal Reference(s):	LP R0901C	, Inst Bus and DC Pov	ver Supply Sys	tem	
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.						
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C063	3.0042) te changes or a	attach parent)	
Question Cognitive Level: Memory or Fundamental Knowledge X						

55.41 <u>7</u> 55.43 ____

Form ES-401-6 (R8, S1)

Examination Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 068A3.02 3.6	SRO 2 1 3.6			
Proposed Question: 60/44							
Which ONE of the following a release if its alarm setpoin			tomatically iso	late or terminate			
A. RM-21: Turbine, Ser	RM-21: Turbine, Service, and AVT Building Retention Tank.						
B. RM-20A: Spent Fuel	RM-20A: Spent Fuel Pit HX Service Water.						
C. RM-13: Auxiliary Buil	RM-13: Auxiliary Building Particulate.						
D. RM-10A: CNMT Ven	RM-10A: CNMT Vent lodine.						
Proposed Answer:	_A_						
Technical Reference(s):	RMS Sys	tem Description					
Learning Objective: 068 Liquid Radwaste Systen Radwaste System including:	n (LRS) A3 Ab (CFR: 41.7 / 4	ility to monitor automa	available) atic operation of isolation.	of the Liquid			
Question Source:	Bank # Modified Banl New		•	attach parent)			
Question Cognitive Level:	•	ındamental Knowledg on or Analysis	e_X				
IO CEP Part 55 Content:	EE 11 7						

55.43

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Ratin	RO _2 _1 	SRO _2 _1 		
Propos	sed Question: 61/45						
The area radiation monitoring system provides alarm(s) to plant personnel sthat 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.							
Questi	on Source:	Bank # Modified Bank New	# <u></u>	(Note changes or a	attach parent)		
Questi	stion Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis						
10 CFF	R Part 55 Content:	55.41 <u>5</u> 55.43					

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 1 072A3.01 2.9	SRO 2 1 3.1			
Propo	sed 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?								
۹.	A fire breaks out in the charcoal filter bank at the suction of the charcoal filter fans.							
3.	The containment gas monitor R-12 goes into alarm.							
C.	The HCO manually starts containment spray pump 1A on recirc for a surveillance test.							
) .	Containment recirc fan 1B trips on overload.							
Propo	sed Answer:	_B						
Гесhn	ical Reference(s):	LP R22010 Ventilation Sys	C, Containment, Auxi stems	liary and Contro	ol Bldg			
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.								
Quest	on Source:	Bank # Modified Bank New	# <u>X</u> (C02	9.0030) te changes or a	attach parent)			
Questi	on Cognitive Level:	Memory or Fu	ndamental Knowledge	9 X				

Comprehension or Analysis

55.41 <u>7</u> 55.43 ____

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 002K5.09 3.7	SRO _2 _2 	
Propo	sed Question: 63/47					
Which restor	n one of the following e ed within 1 hour of init	explains the bas iation of natura	sis for the caution that I circulation?	pressurizer h	eaters should be	
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	d decrease RC	S to saturation.			
D.	Tech Specs require hour.	cooldown to < 3	350 degrees if the hea	ters are not re	estored in one	
Propo	sed Answer:	_ <u>C</u>				
Propo	sed references to be p	provided to app	licants during examina	tion: <u>N</u>	one	
002 R followi	ing Objective: eactor Coolant Systen ng concepts as they a mperature for water s	pply to the RC	owledge of the operat S: (CFR: 41.5/ 45.7) K	available) ional implicat 5.09 Relation	ions of the ship of pressure	
Quest	ion Source:	Bank # Modified Banl New	(C00 <#(No		r attach parent)	
Quest	ion Cognitive Level:		ındamental Knowledge on or Analysis	• <u>X</u>		
10 CF	R Part 55 Content:	55.41 _ 5_				

55.43

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO _2 _2 _002K6.03 _3.1	SRO 2 2 3.6	
Propo	sed Question: 64/48					
Descr	ibe what occurs in the	RVLIS if SI pur	mps or RHR pumps ar	e 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 remove	ed from RVLIS calcula	tion.		
D.	Uses only RCS pres	sure as input fo	r all density calculatior	ns.		
Propo	sed Answer:	_A_				
Propo	sed references to be p	provided to appl	icants during examina	tion: Non	ne	
002 R	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 # Modified Bank # New X (C016.0130) (Note changes or attach parent)						
Question Cognitive Level: Memory or Fundamental Knowledge Comprehension or Analysis						
10 CFR Part 55 Content: 55.41 _ 7 _ 55.43						

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Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 010G2.1.14	SRO 2 2 1 3.3		
Propo	sed Question: 65/-						
The pl	ant is at 100% power. ation?	. Which ONE of	f the following will req	uire a one-hour	NRC		
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 va	alves are leaking	g such that RCS ident	ified leakage is	> 10 gpm.		
•	sed Answer: sed references to be p	_A_ provided to appl	icants during examina	ation: <u>Nor</u>	1e		
010 Pr	ng Objective: ressurizer Pressure Co which require the not		PZR PCS) 2.1.14 Kno	available) owledge of syst	em status		
Questi	on Source:	Bank # Modified Bank New	# (No	ite changes or a	attach parent)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	• _ <u>X</u> _			
10 CFI	R Part 55 Content:	55.41 55.435					

Question Cognitive Level:

10 CFR Part 55 Content:

Exam	ination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 010K2.01 3.0	SRO 2 2 2 3.4	
Propo	sed Question: 66/49					
	n statement is correct on signal is generated		ssurizer heater power	supplies when	a safety	
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 wher 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.					
Propo	sed Answer:	_B				
Techn	ical Reference(s):	480V Distr	ibution System Descrip	otion		
010 Pi	ng Objective: ressurizer Pressure C lowing: (CFR: 41.7)		PZR PCS) K2 Knowle	available) edge of bus po	wer supplies to	
Questi	ion Source:	Bank # Modified Ban New	k# (No	te changes or	attach parent)	

Memory or Fundamental Knowledge X

Comprehension or Analysis

55.41 <u>7</u> 55.43 ____

ES-401

55.41 <u>5</u> 55.43 <u>5</u>

Sample Written Examination Question Worksheet

Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 012A2.05 3.1	SRO _2 _2 		
Propo	sed Question: 67/50						
	upper detector fails l		stop signal(s) that wo r power initially at 98%				
Α.	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 motion; enter ER-NIS		nels would prevent AU ction."	TO and MANU	AL outward		
D.	Power Range at 103 ER-NIS.3, "PR Malfu		nels would prevent AU	TO outward me	otion only; enter		
Propos	sed Answer:	_ <u>C</u>					
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>Nor</u>	<u>ne</u>		
012 Re or ope contro	rations on the RPS; a , or mitigate the cons	nd (b) based or equences of the	(As o (a) predict the impact those predictions, us ose malfunctions or open of detectors and fur	e procedures to erations: (CFR	o correct, t: 41.5 / 43.5 /		
Questi	on Source:	Bank # Modified Bank New		2.0002) te changes or a	attach parent)		
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	- <u>X</u>			

55.41 <u>5</u> 55.43 ____

Exami	ination Outline Cross-l	reference:	Level Tier # Group # K/A # Importance Rating	RO _2 _2 _029A1.02 _3.4	SRO 2 2 2 3.4	
Propo	sed 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.					
Propos	sed Answer:	<u>B</u>				
Techni	ical Reference(s):	RGE-22 Co	ntainment Ventilation	System Descri	otion	
Propos	sed references to be p	rovided to appli	cants during examina	tion: <u>Non</u>	e	
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.						
Questi	on Source:	Bank # Modified Bank New	# (No	te changes or a	ittach parent)	
Question Cognitive Level: Memory or Fundamental Know Comprehension or Analysis				;_X		

Exami	nation Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 033A1.02 2.8	SRO _2 _2 _2 		
Propos	Proposed Question: 69/52						
Which	one of the following is	s true concernin	g process radiation m	onitors RM-20A	A and RM-20B?		
A.	The monitors alarm I	ocally and caus	e no automatic action	s.			
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 d flow capacities.	ifferent backgro	und levels and differe	nt setpoints due	to different		
D.	The monitors are red exchanger leak is ne		pent fuel pit low level and the monitors.	alarm since a la	arge heat		
Propos	sed Answer:	_ <u>C</u> _					
Techni	cal Reference(s):	RMS and	Spent Fuel Pool Cooli	ng System Des	criptions		
Propos	sed references to be p	rovided to appli	cants during examina	tion: Non	e		
033 Sp parame	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						
Questi	on Source:	Bank # Modified Bank New	# (Not	te changes or a	ittach parent)		
Questi	on Cognitive Level:	Memory or Ful Comprehensio	ndamental Knowledge n or Analysis	<u>X</u>			
10 CFF	R Part 55 Content:	55.41 <u>5</u> 55.43					

ES-40 ⁻	1
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Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 035K5.01 3.4	SRO _2 _2 2 	
Propo	osed Question: 70/53					
The pone of	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 steamli	ne flow.			
B.	T-avg decreases, re	actor power incr	eases but remains be	low trip setpoin	t.	
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 decreas unchanged.	ses as available	steam bypasses to th	e condenser; r	eactor power is	
Propo	sed Answer:	<u>B</u>				
Propos	sed references to be p	provided to appli	cants during examina	tion: None	e	
Learning Objective: O35 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.						
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C331	.0216) e changes or a	ttach parent)	
Questi	Question Cognitive Level: Memory or Fundamental Knowledge Comprehension or Analysis					

55.41 <u>5</u> 55.43

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 039K1.04 3.1	SRO 2 2 2 3.1		
Propo	Proposed Question: 71/54						
demar	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 trans reactivity causing rea		imary will cause Tavg ocrease.	to increase add	ding positive		
D.	Increased heat trans reactivity causing rea	fer out of the prince actor power to in	imary will cause Tavg ocrease.	to increase add	ding negative		
Propos	sed Answer:	_A_					
Propos	sed references to be p	provided to appli	cants during examinat	tion: Non	e		
039 Ma	Learning Objective: 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 # Modified Bank # New Modified Bank # New Modified Bank # Modi			ittach parent)				
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u>_x</u>			
10 CFF	R Part 55 Content:	55.41 <u>2</u> 55.43					

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Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO _2 _2 _2 	
Propo	sed Question: 72/-					
Given	the following condition	ns:				
•	 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 S/G -	ONE of the following Closed." The 'A' MSI	describes opera /:	ator actions for E-2, St	ep 1, "Check M	ISIV of Faulted	
A.	Failed open; an AO r DC solenoid valve.	must close the v	alve locally by manua	lly repositioning	the three-way	
B.	Failed closed; an AO	shall be positio	ned locally to ensure t	he valve remai	ns closed.	
C.	Failed as is; but can	still be closed by	y the MCB Main Steam	n Isolation pusł	nbutton.	
D.	Failed as is; an AO n	nust locally oper	n locked closed air ble	ed valves to clo	ose the MSIV.	
Propos	sed Answer:	_ <u>D</u> _				
Techni	ical 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.						
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C03	39.0041)		
Questi	on Cognitive Level:	Memory or Fur	ndamental Knowledge			
10 CFF	R Part 55 Content:	Comprehensio 55.41 55.435	n or Analysis	_X_		

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 073K3.01 3.6	SRO _2 _2 	
Propo	sed Question: 73/55					
blowd	g operation at hot shut own is aligned for disc s must be taken?	down conditions harge to the lak	s, R-19 "S/G blowdow e and S/G secondary	n monitor" fails. activity is 0.02	Assuming uc/gm, what	
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 ma	y continue provi	ded R-21 "retention ta	nnk monitor" is i	n service.	
D.	Terminate the releas continued until R-19		S/G blowdown valves	s. Releases ma	ay not be	
Propos	sed Answer:	_ <u>B</u>				
Techni	ical Reference(s):	ODCM Sect	ion 3.1			
Propos	sed references to be p	rovided to appli	cants during examina	tion: <u>ODC</u>	CM Sect. 3.1_	
073 Pr malfun	ng Objective: ocess Radiation Moni oction of the PRM syst t releases.	toring (PRM) Sy em will have on	stem K3 Knowledge	available) of the effect tha 11.7 / 45.6) K3	at a loss or .01 Radioactive	
Questi	on Source:	Bank # Modified Bank New	# (Not	te changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehensio	ndamental Knowledge n or Analysis	<u></u>		
10 CFF	R Part 55 Content:	55.41 _ 7				

55.43

55.41 <u>7</u> 55.43 ____

Sample Written Examination Question Worksheet

Exam	nination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO _2 _2 _075A4.01 _3.2	SRO 2 2 3.2	
Propo	osed Question: 74/56					
The c	perators are swapping ing the "B" pump, the	g running servic following condit	e water pumps. After ions exist:	starting the "A"	pump and then	
•	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 l	pe performed?			
A.	Isolate the "A" service	e water pump;	restart the "B" service	water pump.		
B.	Isolate the "B" service	e water pump a	and declare it inoperab	le.		
C.	Initiate a plant shutd	own in accordar	nce with O-2.1, "Norm	al Shutdown to	Hot Shutdown."	
D.	Trip the reactor and	enter EOP E-0.				
Propo	sed Answer:	<u>B</u>				
Techn	ical Reference(s):	SWS Syste	m Description			
Propo	sed references to be p	provided to appli	icants during examina	tion: <u>Non</u>	<u>e</u>	
Learni monito	ng Objective: 075 Cir or in the control room:	culating Water ((CFR: 41.7 /45.	System A4 Ability to n 5 to 45.8) A4.01 Eme	nanually operatergency/essenti	e and/or al SWS pumps.	
Quest	ion Source:	Bank # Modified Bank New	# (C07	76.0032) te changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge en or Analysis	- <u>X</u>		

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: Proposed references to	<u>C</u> be provided to applicant	s during examination:	None
Learning Objective: 079 Station Air System provide for the following	(SAS) K4 Knowledge of g: (CFR: 41.7) K4.01 Cro	(As availab SAS design feature(s) a ss-connect with IAS.	ole) and/or interlock(s) which
Question Source:	Bank # Modified Bank # New	(B078.0013 (Note char	3) nges or attach parent)

75/57

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

10 CFR Part 55 Content: 55.41 __7

55.43 _____

Form ES-401-6 (R8, S1)

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 079A2.01 2.9	SRO 2 2 2 3.2	
Propo	sed Question: 76/58					
Given	the following condition	ns:				
•	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 p	urpose for supplying p	power to bus 13	3?	
A.	The service air comp with instrument air w	oressor is started hich will be used	d on bus 13 so service d to allow control of th	e air can be cro e TDAFW pum	ss-connected p.	
B.	The service air comp with instrument air w	oressor is started hich will be used	d on bus 13 so service d to isolate RCP seal i	e air can be cro return.	ss-connected	
C.	A reactor compartme	ent cooling fan c	an be started to provi	de cooling to th	e source range	
D.	The instrument air co	ompressor is sta	rted to allow control o	f the TDAFW p	ump.	
Propos	sed Answer:	<u>B</u>				
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.						
Questi	on Source:	Bank # Modified Bank New	X(B079 (Not	0.0001) te changes or a	ittach parent)	
Questi	on Cognitive Level:	Memory or Fur	ndamental Knowledge			

10 CFR Part 55 Content: 55.41

Comprehension or Analysis 55.41 <u>5</u> 55.43 <u>5</u>

Exami	nation Outline Cross-	reference:	Level	RO	SRO	
			Tier # Group # K/A # Importance Rating	_2 _2 _086K1.02 _2.7	3.2	
Propos	sed 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 purmonitor EDG temper		cooling for both EDG	is; post an auxi	iliary operator to	
B.	Secure the operating Emergency D/Gs."	service water p	oump and enter ER-D/	G.2, "Alternate	Cooling for	
C.	Manually close the be water pump on that b	reaker to energi ous.	ze bus 18 from the 1A	EDG and star	t a service	
D.	Enter ER-D/G.2, "Alto to the 1A EDG.	ernate Cooling f	or Emergency D/Gs,"	and provide alt	ernate cooling	
Propos	sed Answer:	_ <u>D</u>				
Techni	cal Reference(s):	_ER-D/G.2, S	SWS System Descripti	on		
Propos	sed references to be p	rovided to appli	cants during examinat	ion: <u>Non</u>	<u>e</u>	
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.						
Questi	on Source:	Bank # Modified Bank New	# (Not	e changes or a	ittach parent)	
Questi	on Cognitive Level:		ndamental Knowledge			
10 CFF	Comprehension or Analysis X CFR Part 55 Content: 55.41 <u>2-9</u> 55.43					

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 2 086A3.01 2.9	SRO _2 _2 	
Propo	sed Question: 78/60					
The fo	ollowing plant condition	ns 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 pu	mp				
C.	Both the motor-drive	n and diesel-driv	ven pumps			
D.	Neither the motor-dri	ven nor the dies	sel-driven pump			
Propos	sed Answer:	_C_				
Techn	ical Reference(s):	Fire Protect	ion System Description	n	_	
Propos	sed references to be p	provided to appli	cants during examinat	ion: <u>Non</u>	<u>e</u>	
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						
Questi	on Source:	Bank # Modified Bank New	(C08 (Not	6.0007) e changes or a	ttach parent)	
Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis						

55.41 <u>7</u> 55.43 ____

10 CFR Part 55 Content:

Exam	ination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 103K3.01 3.3	SRO 2 2 2 3.7	
Propo	sed Question: 79/61					
The p	lant is in Mode 6 and ions will result in a lo	core alterations ss of containme	s are in progress. Which integrity?	ch ONE of the	following	
A.	Operation of an ope	rable Containm	ent Purge and Exhaus	t System.		
B.	Movement of mainte	enance personn	nel through the personr	nel air lock doo	ors.	
C.	The equipment hatch removed and a closure plate installed that restricts air flow from containment.					
D.	The "A" S/G second removed for mainter	ary manways re nance.	emoved and the assoc	iated atmosph	eric relief valve	
Propos	sed Answer:	_ <u>D</u>				
Techn	ical Reference(s):	O-15.2 Co	ontainment Integrity			
Propos	sed references to be	provided to app	licants during examina	tion: <u>No</u>	ne	
103 Co	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.					
Questi	on Source:	Bank # Modified Bank New	<# (No	te changes or	attach parent)	
Questi	on Cognitive Level:		ındamental Knowledge on or Analysis	- <u>X</u>		
10 CFF	R Part 55 Content:	55.41 <u>7</u> 55.43				

Form ES-401-6 (R8, S1)

Exami	ination Outline Cross-ı	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 005K6.03 2.5	SRO 2 3 2.6	
Propo	sed 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 S/G cold leg nozzles.		vill depress vessel lev	el and displace	water out the	
B.	Steam formation in the	ne hot legs will o	cause erroneous react	or vessel level	indication.	
C.	Steam formation in the more S/G hot leg noz		vill increase pressure	enough to blow	out one or	
D.	Steam formation in the the S/G hot leg many		resultant steam expa	nsion will displ	ace water out	
Propos	sed Answer:	_A_				
Propos	sed references to be p	rovided to appli	cants during examinat	tion: <u>Non</u>	<u>e</u>	
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.						
Questi	on Source:	Bank # Modified Bank New	# (INPC) Bank 9241) e changes or a	ittach parent)	
Question Cognitive Level: Memory or Fundamental Knowledge						

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 ____

Comprehension or Analysis

Examination Outline Cross-reference:

Level Tier#

Group #
K/A #

Importance Rating

RO SRO

 $\begin{array}{ccc}
2 & 2 \\
3 & 3
\end{array}$

041A3.03 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 applicant	s during examination: None
Learning Objective: 041 Steam Dump System (a operation of the SDS, include		(As available) pass Control A3 Ability to monitor automatic 5) A3.03 Steam flow.
Question Source:	Bank # Modified Bank # New	X (C041.0019) (Note changes or attach parent)
Question Cognitive Level:	Memory or Fundan Comprehension or	mental Knowledge AnalysisX
10 CER Part 55 Content:	55 41 7	

55.43 ____

	'				
Exami	nation Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	041G2.4.3	SRO 2 3 1 3.4
Propo	sed Question: 82/-				
The fo	llowing plant condition	ns exist:			
•	Reactor trip has occ Red channel T-avg t All other equipment All other T-avg chan	failed as-is durir is operable		l decreasing	
	ne no operator actions system?	s were taken. V	/hat is the effect of the	e T-avg failure	on the steam
۹.	Steam dump valves	will open and re	emain open until manu	ally closed.	
В.	Steam dump valves degrees F. and then		emain open until Avera	age T-avg decr	eases to 547
C.	Steam dump valves	will be closed a	nd can be opened in N	MANUAL only.	
O.	Steam dump valves selector switch is sel		nd can be opened onl SS INTERLOCK.	y if steam dum	p interlock
Propos	sed Answer:	<u>B</u>			
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>Nor</u>	ne
)41 St	ng Objective: eam Dump System (S dications, and use of t	SDS) and Turbir the response ins	e Bypass 2.4.31 Kno	available) wledge of anni	unciators alarms
Questi	on Source:	Bank # Modified Bank New	X(C0-	41.0021) te changes or a	attach parent)
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	- <u>X</u>	
0 CFF	R Part 55 Content:	55.41 55.435			

55.41 <u>7</u> 55.43 ____

Sample Written Examination Question Worksheet

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 2 3 076K2.01 2.7	SRO 2 3		
Propo	sed 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.						
Propo	Proposed Answer:C_						
Techn	ical Reference(s):	SWS Syste	m Description	<u> </u>			
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.							
Questi	ion Source:	Bank # Modified Bank New		76.0019) te changes or a	uttach parent)		
Questi	Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis						

Exam	ination Outline Cross-	-reference:	Level Tier # Group # K/A # Importance Rating	G2.1.6	SRO 3 1 4.3	
Propo	sed Question: 84/-					
both N 40% v increa decrea	vater," due to annunci /IFPs running. MFP s vhen the Control Ope ses main feedwater fl	ator G-3, "S/G '/ uction pressure rator takes manu ow to 50K lbm/h . With level at 2	ntered AP-FW.1, "Part A' level deviation +/-7% is 220 psig. S/G 'A' le ual control of the 'A' fe or above steam flow. S 0% and decreasing, w take?	%." Reactor po evel is decreasi ed regulating v S/G 'A' level co	wer is 63% with ng and is at alve and ntinues to	
A.	Shut the 'A' S/G MS	IV.				
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. 					
Propos	sed Answer:	_ <u>C</u> _				
	ical Reference(s): sed references to be p	AP-FW.1 provided to appli	cants during examinat	ion: <u>None</u>	e	
2.1.6 A	ng Objective: Ability to supervise and ons. (CFR: 43.5 / 45.	d assume a man 12 /45.13)	(As a gement role during p	available) blant transients	and upset	
Questi	on Source:	Bank # Modified Bank New	# (B000	.0378) e changes or a	ttach parent)	
Questi	on Cognitive Level:	Memory or Fur Comprehension	ndamental Knowledge n or Analysis	X		
10 CFF	R Part 55 Content:	55.41 55.435				

Form ES-401-6 (R8, S1)

3

1

3.9

Examination Outline Cross-reference:

Level RO SRO Tier# 3 Group # 1 K/A # G2.1.31 Importance Rating 4.2

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?

- 12 SW isolation MOVs close after the D/Gs re-energize busses 14 and 16; SW pump 'C' A. 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: Proposed references to	B_ be provided to applicant	s during examination:	None
	control room switches, co he desired plant lineup. (ble) nd to determine that they
Question Source:	Bank # Modified Bank # New	(Note cha	nges or attach parent)

Memory or Fundamental Knowledge __ Comprehension or Analysis __ **Question Cognitive Level:** 10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 ____

Examination Outline Cross-reference: Level RO SRO Tier# 3 Group # 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: В 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

55.41 55.43

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55.41

55.43 5

Sample Written Examination Question Worksheet

Exam	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO _3 _1 		
Propo	sed Question: 87/-						
pump	tripped and reactor pe	ower was rapidl	s for six months. Earli y reduced to 50% and ee hours after the load	l maintained at	that level. The		
•	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						
	ONE of the following eters do not change?		s associated with thes	se parameters	assuming the		
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.						
В.	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.						
Propos	sed Answer:	_ <u>C</u> _					
Propo:	sed references to be p	provided to appl	icants during examina	tion: <u>TS</u>	3.4.16		
2.1.34	ng Objective: Ability to maintain pri 41.10 / 43.5 /45.12).	mary and secor	(As ndary plant chemistry v	available) within allowabl	e limits.		
Questi	on Source:	Bank # Modified Bank New	X(B300 (No		attach parent)		
Questi	on Cognitive Level:	-	ndamental Knowledge on or Analysis	- <u></u>			

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Exami	nation Outline Cross-r	reference:	Level Tier # Group # K/A # Importance Rating	G2.2.23	SRO 3 2 3.8
Propo	sed Question: 88/- (co	mmon K/A)			
MDAF at 130	ant is at 100% power. W pump was declared 0 on 12/14. Assuming ng is the date/time at v	I inoperable at the 'B' MDAFV	1000 on 12/13. 'A' MĒ V pump remains inope	DAFW was declerable, which O	ared operable
A.	At 1000 on 12/16.				
B.	At 0700 on 12/18.				
C.	At 0700 on 12/17.				
D.	At 1000 on 12/20.				
Propos	sed Answer:	_B			
Techn	ical Reference(s):	TS 1.3, TS	3.7.5		
Propos	sed references to be p	rovided to appli	cants during examina	tion: <u>TS 1</u>	.3, 3.7.5
	ng Objective: Ability to track limiting	conditions for o		available)	
Questi	on Source:	Bank # Modified Bank New).0056) te changes or a	ttach parent)
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge on or Analysis	<u></u>	
10 CFI	R Part 55 Content:	55.41 55.432			

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	RO _G2.2.26	SRO -3 -2 -3.7	
Propos	sed Question: 89/-					
there is	edure O-15.1, "Admir s a step that requires to n the cavity. What is	two RHR loops	to be operable when			
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.					
-	sed Answer: sed references to be p	<u>B</u> rovided to appli	icants during examina	ition: <u>Non</u>	e	
	ng Objective: Knowledge of refuelin	g administrative		available) 43.5/ 45.13).		
Questi	on Source:	Bank # Modified Bank New	# <u>X</u> (C30	0.0250) te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Full Comprehension	ndamental Knowledge on or Analysis	e_X_		
10 CFF	R Part 55 Content:	55.41 55.435				

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO 3 2 3.3	
Propo	sed Question: 90/-					
during	fuel movement to en	sure that the ad	ded into the core. Wh dition of subsequent f and how is this paran	uel assemblies	will not cause	
A.	Inverse count rate ratio; normalized SR count rate divided by actual SR count rate.					
В.	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.					
Propo:	sed Answer:	_A_				
Techn	ical Reference(s):	Proc. RF-6	5.2			
Propos	sed references to be p	provided to appl	icants during examina	tion: <u>Nor</u>	<u>ne</u>	
Learning Objective: (As available) 2.2.32 Knowledge of the effects of alterations on core configuration (CFR: 43.6).						
Questi	on Source:	Bank # Modified Bank New	<# (No	te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fu Comprehension	indamental Knowledge on or Analysis	- <u>X</u>		
10 CFI	R Part 55 Content:	55.41 55.43 <u>6</u>				

55.41

55.43 6

Sample Written Examination Question Worksheet

Exam	nination Outline Cross	-reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO 3 2 2.9		
Propo	osed Question: 91/-						
	control rod bank insert fied in the COLR. Thi		and overlap limits mus	t be maintaine	ed within the limits		
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.						
	osed Answer: osed references to be	_A_ provided to ap	plicants during examina	ation: <u>No</u>	one		
	ning Objective: 3 Knowledge of contro	l rod program		available)			
Ques	tion Source:	Bank # Modified Ba New	nk#				
Ques	tion Cognitive Level:	_	Fundamental Knowledg sion or Analysis	e			

Form ES-401-6 (R8, S1)

Examination Outline Cross-reference:

RO **SRO** Level Tier# Group # G2.2.34 K/A#

Importance Rating

3.2 2.8

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	o during overningtion:	None
Proposed references to be	provided to applicant	s during examination.	None
Learning Objective: 2.2.34 Knowledge of the pr reactivity (CFR: 43.6).	ocess for determining	(As availab the internal and externa	
Question Source:	Bank # Modified Bank # New	X(B320.0049) (Note chan	ges or attach parent)
Question Cognitive Level:	Memory or Fundan Comprehension or	nental Knowledge AnalysisX_	
10 CFR Part 55 Content:	55.41 <u>5</u>		

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.				
Propo Learni 2.3.1 I	sed Answer: sed references to be p ing Objective: Knowledge of 10 CFR: 5.9 / 45.10).		(A	s available)	
Quest	ion Source:	Bank # Modified Bank # New	(N	lote changes or att	ach parent)
Quest	ion Cognitive Level:	Memory or Fundame	ental Knowled	ge	

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 12 55.43 4

ES-401

10 CFR Part 55 Content:

55.41

55.43 4

Sample Written Examination Question Worksheet

Exami	nation Outline Cross-r	eference:	Level Tier # Group # K/A # Importance Rating	G2.3.4	SRO _3 _3 	
Propos	sed Question: 94/-					
	ONE of the following on exposure above 10			inna regarding	emergency	
Α.	Exposures up to 100	Rem to save h	uman life are authoriz	ed.		
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.					
	sed Answer: sed references to be p	 provided to app	licants during examina	ition: <u>No</u> i	ne	
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).						
Questi	Muestion Source: Bank # Modified Bank # New Modified Bank # Modified					
Questi	Question Cognitive Level: Memory or Fundamental Knowledge X Comprehension or Analysis					

Exami	nation Outline Cross-re	eference:	Level Tier #	RO	SRO	
			Group # K/A # Importance Rating	G2.3.10	3.3	
Propos	sed Question: 95/-					
	ONE of the following of radiation exposure	•		must be followe	d to ensure	
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.					
Propos	sed Answer:	<u>D</u>				
Techni	cal Reference(s):	Radiation C	ontrol Manual Section	3.10.3		
Propos	sed references to be p	rovided to appl	icants during examina	tion: <u>Non</u>	e	
2.3.10	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).					
Questi	on Source:	Bank # Modified Bank New	# (No	te changes or a	attach parent)	
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	<u>X</u>		
10 CFF	R Part 55 Content:	55.41 55.434				

K/A #

Form ES-401-6 (R8, S1)

3.2

Examination Outline Cross-reference:

Level Tier# Group # RO SRO G2.3.11 2.7

Importance Rating

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?

- It may continue with the above given conditions. Α.
- 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:

Proposed references to be provided to applicants during examination:

None

Learning Objective:

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

(As available)

10 CFR Part 55 Content:

55.41

55.43

Form ES-401-6 (R8, S1)

(Note changes or attach parent)

Exami	nation Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO G2.4.1	SRO _3 _4
Propos	sed Question: 97/-			
A loss existed	of all AC power has occurred. Whe	en AC power was resto	red, the follow	ing plant status
Assun	Annunciators lost power S/G pressure - 960 psig RCS pressure - 1100 psig Core exit thermocouples - 550 deg Containment pressure - 3 psig Containment radiation - 3.7 mrem/ Pressurizer level - 31% Step 15 of ECA-0.0, "Loss of All All ONE of the following states which pressure if no information is provided, that ower Recovery Without SI Required; red")	hr C Power," is in progres procedure is entered fro t procedure steps are s	om ECA-0.0 ai atisfied. (ECA	-0.1, "Loss of All
Α.	ECA-0.1 is entered because condi	tions are stable.		
B.	ECA-0.2 is entered because of ina	dequate PRZR level.	,	
C.	ECA-0.2 is entered because of ina	dequate subcooling.		
D.	ECA-0.2 is entered because of cor	ntainment radiation leve	el.	
	sed Answer: <u>C_</u> sed references to be provided to ap <u>oling</u>	plicants during examina	ation: <u>Fig 1</u>	.0, Minimum
Learni 2.4.1 ł 45.13)	ng Objective: Knowledge of EOP entry conditions .	(As and immediate action s		1.10 / 43.5 /
Quest	ion Source: Bank#	<u>X</u> (B00	0.0019)	

Modified Bank#

New

Question Cognitive Level:

10 CFR Part 55 Content:

55.41

55.43 5

ES-401

Sample Written Examination Question Worksheet

Exami	nation Outline Cross-re	eference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO _3 _4 			
Propos	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 ed	quilibrium press	sure.					
C.	To maintain adequate	RCS inventor	y.					
D.	To stop primary-to-secondary leakage.							
	sed Answer: sed references to be p	<u>D</u> rovided to appl	icants during examina	ition: <u>Non</u>	ie			
Learning Objective: (As available) 2.4.7 Knowledge of event based EOP mitigation strategies (CFR: 41.10 / 43.5 / 45.13).								
Questi	on Source:	Bank # Modified Bank New	X(C00	0.0947) te changes or a	attach parent)			
Questi	on Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge on or Analysis	€ _X				
10 CFI	R Part 55 Content:	55.41 55.435						

ES-401

Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

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.

55.43

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

D. The Ree is water con	ia wiion allowa	ice to made for poor doc	naont transmitter errors.
Proposed Answer: Proposed references to be p	<u>C</u> rovided to appl	cants during examinatio	n: <u>None</u>
Learning Objective: 2.4.23 Knowledge of the bas emergency operations (CFR	es for prioritizir	• • • • • • • • • • • • • • • • • • • •	ailable) implementation during
Question Source:	Bank # Modified Bank New	# <u>X</u> (B000.0	326) changes or attach parent)
Question Cognitive Level:	Memory or Fu Comprehension	ndamental Knowledge _ n or Analysis	X
10 CFR Part 55 Content:	55.41 10		

Exami	ination Outline Cross-	reference:	Level Tier # Group # K/A # Importance Rating	RO 	SRO _3 _4_ 		
⊃ropo	sed Question: 100/-						
	ne a normal cooldown s in a loss of cooling.		at 250 degrees F. whe onditions exist:	n a loss of bot	h RHR pumps		
•	RCS is intact All other systems fur	nctioning in exp	ected line-up				
/ hich	Which ONE of the following would be a mitigating strategy for this condition?						
۹.	Establishing an SI pump as prime mover for RHR cooling.						
3.	Isolating letdown and any known drain paths.						
Э.	Establishing secondary heat sink for cooling.						
D.	Investigate the apparent cause of the loss of both pumps, and restart one pump as soor as possible.						
•	sed Answer: sed references to be p	<u>C</u> provided to appl	licants during examina	ition: <u>No</u> i	ne		
2.4.48 and ur	•		(As ations to verify the sta lirectives affect plant a	•	•		
Quest	ion Source:	Bank # Modified Bank New		0.0217) te changes or	attach parent)		
Quest	ion Cognitive Level:	Memory or Fu Comprehension	ındamental Knowledge on or Analysis	• <u> </u>			
10 CF	R Part 55 Content:	55.41 55.43 <u>5</u>					

55/-			
Question Source:	Bank # Modified Bank # New	X	(Note changes or attach parent)
Question Cognitive Level:	Memory or Fundam Comprehension or		ledge
10 CFR Part 55 Content:	55.41		