



New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (3)  
55.43           

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
6	Group #	1	
	K/A #	000022 AK1.02	
	Importance Rating	2.7	3.6

Knowledge of the operational implications of the relationship of charging flow to pressure differential

Proposed Question: Common #2

The position of HCV-142, Charging Line Flow Control Valve, is changed to vary RCP seal injection flow. IF HCV-142 is closed slightly, THEN:

	Charging Pump Discharge Press	RCP Seal Injection Flow	Charging Flow to Regen Hx
A.	Increases	Increases	Decreases
B.	Increases	Decreases	Increases
C.	Decreases	Increases	Decreases
D.	Decreases	Decreases	Increase

Proposed Answer:

A.	Increases	Increases	Decreases
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Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

IP2-SOD-18

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-030-30105/30106 (As available)

Question Source: Bank # INPO 26073  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Prairie Island 1 9/1/2003



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
7	Group #	1	
	K/A #	000025 AK1.01	
	Importance Rating	3.9	4.3

Knowledge of the operational implications of a loss of RHRS during all modes of operations

Proposed Question: Common #3

Given the following conditions:

- The Unit is in Mode 6.
- RCS temperature is 125°F.
- 21 RHR Pump and 21 RHR Heat Exchanger are in service.
- Reactor Vessel level is 68' with Reactor Head detensioned.

HVC-638, 21 RHR Heat Exchanger Flow Control Valve, drifts CLOSED due to an electrical problem.

Assuming NO action by the operating team, which one of the following describes the effect of this failure on plant operation?

- A. Decrease of NPSH to 21 RHR pump due to increased temperature.
- B. OPS actuation due to over pressurization of the RCS.
- C. Loss of RHR letdown resulting in loss of VCT level and operating charging pump.
- D. 21 RHR Pump will supply RCS cooling through 22 RHR Heat Exchanger.

Proposed Answer:

- A. Decrease of NPSH to 21 RHR pump due to increased temperature.

Explanation (Optional):

- A. Correct, RCS will heat up due to pumps heat and decay heat
- B. Incorrect, RCS pressure will not increase with Rx Head detensioned
- C. Incorrect, RHR letdown will NOT be lost since upstream of HVC-638
- D. Incorrect, 22 RHR Heat Exchanger would need to be manually aligned

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

IP2-SOD-020

Proposed References to be provided to applicants during examination: None

Learning Objective: SYS-C-042-115/126 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (8)  
55.43 \_\_\_\_\_

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
8	Tier #	1	
	Group #	1	
	K/A #	000026 AA1.07	
	Importance Rating	2.9	3.0

Ability to operate and/or monitor flow rates to the components and systems that are serviced by the CCWS; interactions among the components

Proposed Question: Common #4

Given the following conditions:

- A loss of all AC power has occurred
- After 15 minutes, power was restored to Busses 5A and 6A
- The actions of ECA-0.1, Loss of All AC Power Recovery Without SI Required, are being performed to start a CCW Pump

Why is MOV-789, RCP Thermal Barrier Return Isolation Valve verified closed prior to restarting the CCW Pump?

- Reduce CCW System heat loads to the minimum based on SW loads.
- Prevent damage to the RCP bearings due to excessive cooldown rate.
- Maximize flow to the CVCS components for reestablishing charging, letdown and seal return.
- Protect CCW System availability by precluding steam formation in the CCW piping.

Proposed Answer:

- Protect CCW availability by precluding steam formation in the CC piping.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 ECA-0.1 Background Step 1, Page 11  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 19416  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Kewaunee 1 12/11/2000

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

10 CFR Part 55 Content: 55.41 (7)(14)  
55.43 \_\_\_\_\_

Comments:



Question Source: Bank # INPO 25731  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Surry 1 3/14/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 \_\_\_\_\_

Comments:

Question, answer and distracters modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
114	Tier #	1	
	Group #	2	
	K/A #	0370EA2.12	
	Importance Rating	3.3	4.1

Ability to determine and interpret flow rate of leak as it applies to a Steam Generator Tube Leak.

Proposed Question: **Common #6**

The plant is evaluating a Steam Generator tube leak with the following plant parameters:

- Letdown flow is at 75 gpm.
- One (1) charging pump is running.
- Pressurizer level is STABLE.
- Seal injection is 29 gpm total
- Seal return flows are 5 gpm total
- Charging flow is 60 gpm.
- Preexisting RCS leakage was identified as 1 gpm to RCDT.
- LCV-112A is in the AUTO position.

Which ONE of the following is the approximate amount of primary to secondary leakage?

- A. 7 gpm
- B. 8 gpm
- C. 9 gpm
- D. 13 gpm

Proposed Answer:

- B. 8 gpm

Explanation (Optional):

- A. if identified leakage was subtracted from SG leakage
- B. correct
- C. if identified leakage was not accounted for
- D. if seal return was not accounted for

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: AOP025SG1-11312 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New NEW

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 \_\_\_\_\_

Comments:

Replacement question for Question #6

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
24	Group #	2	
Rev per TF	K/A #	000059 AK3.01	
	Importance Rating	3.5	3.9

Knowledge of the reasons for the termination of a release of radioactive liquid as it applies to the Accidental Liquid Radwaste Release

Proposed Question: Common #7

Given the following plant status:

- A release of 14 Waste Distillate Storage Tank (WDST) is in progress
- The release permit was approved for the release of the total contents of 14 WDST
- After proper recirculation of 14 WDST, chemistry obtained a sample of the tank contents to be used on the release permit
- At the start of the release, R-54, Unit 1 Liquid Waste Distillate Monitor, was in service

With the release still in progress, what are the required actions to be taken in accordance with SOP-5.1.5, Calculation and Recording of Radioactive Liquid Releases, should R-54 become inoperable?

- Continue with the release, declare R-54 inoperable, direct chemistry to commence taking periodic samples of 14 WDST for the duration of the release, and submit new release permit if any changes are found to existing permit
- Terminate the release, declare R-54 inoperable, verify actual volume released prior to termination is consistent for expected flow rate during release of 14 WDST, and then continue with the release.
- Terminate the release, have chemistry take two independent samples of 14 WDST, have two persons (RO/CRS) independently verify the discharge rate calculations and have two persons independently verify the discharge valve lineup prior to recommencing the release.
- Continue with the release since 14 WDST was sampled prior to release, and the sample results indicated a release activity less than the maximum normally allowable for the entire contents of the tank.

Proposed Answer:

- Terminate the release, have chemistry take two independent samples of 14 WDST, have two persons (RO/CRS) independently verify the discharge rate calculations and have two persons independently verify the discharge valve lineup prior to recommencing the release.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
SOP-5.1.2 Pages 1,2  
SOP-5.1.5 Pages 5, 7

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-051-137 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History: N/A

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

10 CFR Part 55 Content: 55.41 (5) (10)  
55.43 (4)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
2	Tier #	1	
	Group #	1	
	K/A #	000009 EA2.34	
	Importance Rating	3.6	4.2

Ability to determine or interpret conditions for throttling or stopping HPI as they apply to a small break LOCA

Proposed Question: Common #8

Given the following plant conditions:

- The Unit has tripped from 100% due to a small break LOCA.
- Conditions have stabilized and operators are evaluating the criteria for terminating Safety Injection.
- Containment pressure has stabilized at 1.5 psig.
- Containment Radiation levels peaked at 17 R/hr.

Which one of the following conditions would PREVENT SI termination per E-1, "Loss of Reactor or Secondary Coolant"?

- A. RCS subcooling is 25°F and stable.
- B. Pressurizer level is 10% and stable.
- C. Only one Steam Generator level is >10% narrow range.
- D. RCS pressure is 1700 psig. and stable

Proposed Answer:

- B. Pressurizer level is 10% and stable.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
E-1 Step 11  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-011-540 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
40	Group #	1	
Rev per TF - check	K/A #	056 A2.04	
	Importance Rating	2.6	2.8

Ability to (a) predict the impacts of a Loss of condensate pump on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of the loss of condensate pumps

Proposed Question: Common #9

Given the following initial plant conditions:

- Reactor power, 60%
- 21 and 23 Condensate Pumps in service
- 22 Condensate Pump in standby
- MBFP suction pressure, 450 psig
- All 4 SG levels, 48 - 49%
- Tave, 554°F

21 condensate pumps subsequently trips due to a motor fault.

How is the Condensate System affected by the loss of the condensate pump and what are the operator actions?

- A. No automatic start of 22 Condensate Pump; manually start 22 Condensate Pump and manually open Flexitest switches for 22 Condensate Pump
- B. 22 Condensate Pump starts automatically; manually open Flexitest switches for 22 Condensate Pump
- C. No automatic start of 22 condensate pump; must manually start 22 condensate pump, Flexitest switches for 22 and 23 Condensate Pumps will automatically open
- D. 22 Condensate Pump starts automatically, Flexitest switches for 22 and 23 Condensate Pump will automatically open

Proposed Answer:

- B. 22 Condensate Pump starts automatically; manually open Flexitest switches for 22 Condensate Pump

Explanation (Optional):

- A. 22 Cond Pumps starts automatically
- B. Correct
- C. 22 Cond Pumps starts automatically and Flexitest switches are only manually opened for 22 Cond Pump
- D. Flexetex switches only manually opened for 22 Cond Pump

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
2-POP-1.3 Page 34  
2-AOP-FW-1 Pages 25, 28  
2-SOP-20.2 Pages 6, 7, 13

Proposed References to be provided to applicants during examination: NONE

Learning Objective: AOP-C-FW1-11503 (As available)  
SYS-C-200-364

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 \_\_\_\_\_

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
25	Group #	2	
Rev per TF	K/A #	000068 AA1.03	
	Importance Rating	4.1	4.3

Ability to operate and / or monitor the S/G levels as they apply to the Control Room Evacuation

Proposed Question: **Common #10**

The Team has evacuated the Control Room in accordance with 2-AOP-SSD-1, CONTROL ROOM INACCESSABILITY SAFE SHUTDOWN CONTROL.

Which ONE of the following describes the preferred method of maintaining SG inventory during the cooldown per 2-AOP-SSD-1?

- A. Feed all 4 SGs to maintain corrected Wide Range level at approximately 63 - 68% to ensure symmetric heat removal
- B. Feed 21 and 22 SGs unless explicitly directed to steam from the intact SGs by the EOPs or FRPs since they are the only SGs with reliable backup level indication at the Safe shutdown Panel
- C. Feed 22 and 23 SGs unless explicitly directed to steam from the intact SGs by the EOPs or FRPs since they supply steam to 22 Auxiliary Boiler Feed Pump
- D. Feed any combination of SGs that ensures greater than 400 gpm total auxiliary feedwater flow to maintain adequate heat sink

Proposed Answer:

- B. Feed 21 and 22 SGs unless explicitly directed to steam from the intact SGs by the EOPs or FRPs since they are the only SGs with reliable backup level indication at the Safe shutdown Panel

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 2-AOP-SSD-1 Attachment 2 Page 5  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
37	Tier #	2	
	Group #	1	
	K/A #	026 K4.06	
	Importance Rating	2.8	3.2

Knowledge of the CSS design feature(s) and/or interlock(s) which provide for Iodine scavenging via the CSS

Proposed Question: **Common #11**

Tri-Sodium Phosphate (TSP) Baskets are located inside containment on the 46' EI. for introduction into the Containment environment during the recirculation phase in order to maintain the Containment Sump pH basic.

What is the reason for controlling the pH?

- A. Maintains Iodine in solution.
- B. Maintains Hydrogen in solution.
- C. Reduces Iodine concentration in solution.
- D. Reduces Hydrogen concentration in solution.

Proposed Answer:

- A. Maintains Iodine in solution.

Explanation (Optional):

Technical Reference(s):	(Attach if not previously provided)
ES-1.3 Background	Page 62
ES-1.2 Background	Page 79

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-102 - KR 158b (As available)

Question Source:	Bank #	INPO	20630
	Modified Bank #		(Note changes or attach parent)
	New		

Question History: Point Beach 1 2/2/02

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 \_\_\_\_\_

Comments: Question modified to make plant specific for  $\text{Na}_3\text{PO}_4$  baskets

Examination Outline Cross-reference:	Level	RO	SRO
5	Tier #	1	
	Group #	1	
	K/A #	000015 AK3.02	
	Importance Rating	3.0	3.1

Knowledge of the reasons for responses of CCW lineup and flow paths to RCP oil coolers during RCP malfunctions

Proposed Question: **Common #12**

Given the following:

- Unit 2 is operating at 100% power.
- MOV-784, RCP Bearing Discharge Isolation Valve Phase B closed 2 minutes ago due to an electrical short and cannot be opened.
- MOV-786, RCP Bearing Discharge Isolation Valve Phase B has remained open.
- Highest Upper Radial Bearing temperature is currently reading 190°F and rising.
- RCP Bearings Cooling Water Return High Temperature Alarm NOT illuminated.

In accordance with 2-AOP-CCW-1, Loss of Component Cooling, which one of the following actions, if any, is required and why ?

- A. Pumps can remain in service since CCW flow to oil coolers will be maintained through return valve MOV-786.
- B. Pumps can remain in service until RCP Bearings Cooling Water Return High Temperature alarm is received.
- C. Reactor must be tripped and ALL RCPs stopped due to loss of CCW flow to ALL RCP oil coolers.
- D. Reactor must be tripped and 21 and 22 RCPs stopped due to loss of CCW flow to their respective oil coolers.

Proposed Answer:

- C. Reactor must be tripped and ALL RCPs stopped due to loss of CCW flow to ALL RCP oil coolers.

Explanation (Optional):

MOV-784 and 786 are in series. Either one closes secures CCW flow to all RCP oil coolers

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 IP2-SOD-014  
 2-ARP-SGF Window 1-3

ARP SCF

Window 1-6

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-013-40/41 (As available)  
AOP-C-RCP1-1601039

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

Question History:

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

10 CFR Part 55 Content: 55.41 (3)(5)(10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
41	Group #	1	
	K/A #	061 K5.01	
	Importance Rating	3.6	

Knowledge of the operational implications of the relationship between AFW flow and RCS heat transfer

Proposed Question: Common #13  
A reactor trip occurs from 100% power due to a loss of main feedwater.

The following conditions exist:

- All RCPs are running.
- The turbine driven AFW pump is in service feeding all 4 SGs.
- Both motor driven AFW pumps tripped upon startup and remain unavailable.
- The turbine driven AFW pump speed has begun to slowly lower due to a malfunctioning governor.

Which one of the following describes the impact on Pressurizer level if the turbine driven AFW pump speed CONTINUES to lower?

Pressurizer level:

- A. rises due to increased primary to secondary heat transfer.
- B. rises due to decreased primary to secondary heat transfer.
- C. lowers due to increased primary to secondary heat transfer.
- D. lowers due to decreased primary to secondary heat transfer.

Proposed Answer:

- B. rises due to decreased primary to secondary heat transfer.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 25021  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Beaver Valley 1 12/01/02

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 \_\_\_\_\_

Comments:

Question modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
43	Tier #	1	
	Group #	2	
	K/A #	W/E07 G2.4.18	
	Importance Rating	2.7	3.6

Knowledge of the specific bases for EOPs

Proposed Question: **Common #14**

Step 1 of FR-C.3, "Response to Saturated Core Conditions", checks if the RHR system has been placed in service in the shutdown cooling mode.

Which of the following describes the basis for this step?

- A. To ensure an ORANGE or RED condition in Core Cooling will not arise while performing this procedure.
- B. If RHR is in service in the shutdown cooling mode, the saturated core cooling condition is a problem with RHR and this procedure will not address this condition.
- C. To verify RHR is aligned for long term cooling if the appropriate conditions are met
- D. If RHR is in service in the shutdown cooling mode, the saturated core cooling condition is a problem with RHR and this procedure will identify and isolate the affected train.

Proposed Answer:

- B. If RHR is in service in the shutdown cooling mode, the saturated core cooling condition is a problem with RHR and this procedure will not address this condition.

Explanation (Optional):

Technical Reference(s): FR-C.3 Background (Attach if not previously provided)  
Page 8

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 22526  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Diablo Canyon 1 10/1/2002

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
44	Group #	2	
	K/A #	W/E15 EK1.2	
	Importance Rating	2.7	2.9

Knowledge of the operational implications of normal, abnormal and emergency operating procedures associated with Containment Flooding

Proposed Question: **Common #15**

The following conditions exist:

- A large break LOCA has occurred.
- The plant is tripped and ECCS is operating as expected.
- Accumulators have discharged and are isolated.
- The SM directs performance of FR-Z.2, Containment Flooding.

Which one of the following describes the required actions per FR-Z.2 and their purpose?

- A. Secure all water sources from outside of containment to prevent damaging vital electrical equipment and diluting the containment water inventory.
- B. Secure all water sources from outside of containment to prevent overloading concrete containment structures and diluting the containment water inventory.
- C. Locate source of flooding in an attempt to prevent damaging vital electrical equipment and diluting the containment water inventory.
- D. Locate source of flooding in an attempt to prevent overloading concrete containment structures and diluting the containment water inventory.

Proposed Answer:

- C. Locate source of flooding in an attempt to prevent damaging vital electrical equipment and diluting the containment water inventory.

Explanation (Optional):

Technical Reference(s): FR-Z.2 (Attach if not previously provided)  
Page 3

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 24609  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (8,10)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
45	Tier #	1	
	Group #	2	
	K/A #	W/E16 EA2.2	
	Importance Rating	3.0	3.3

Ability to determine and interpret adherence to appropriate procedures and operation withing the limitations in the facility's license and amendments as they apply to High Containment Radiation.

Proposed Question: **Common #16**

Given the following plant conditions:

- A loss of coolant accident has just occurred.
- During the initial phases of the accident, containment pressure peaked at 32 psig and containment radiation dose rate peaked at 2.5E6 R/hr.
- The CRS has directed that adverse containment numbers be used during EOP implementation.
- Approximately 30 minutes later, containment pressure has lowered to 6 psig and containment radiation dose rate has lowered to 1E3 R/hr.

The CRS must direct that adverse containment numbers:

- A. still be used until containment pressure is less than 4 psig.
- B. still be used until relaxed by Technical Support Center personnel.
- C. not be used since the containment radiation level is no longer indicative of adverse containment conditions.
- D. not be used since the containment pressure is no longer indicative of adverse containment conditions.

Proposed Answer:

- B. still be used until relaxed by Technical Support Center personnel.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
OAP-012 Page 10  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
3	Group #	1	
	K/A #	000011 EK2.02	
	Importance Rating	2.6	2.7

Knowledge of the interrelations between pumps and a Large Break LOCA

Proposed Question: Common #17

Unit 2 is shutdown following a Loss of Offsite Power with a LOCA event. The operators are performing actions in E-1, Loss of Reactor or Secondary Coolant.

Which ONE of the following statements is the basis for placing ALL non-running CCW pump control switches in PULL-TO-LOCK prior to resetting the SI signal?

- A. Prevent Thermal shock to the RCP Thermal Barriers.
- B. Prevent an overload condition on the Emergency Diesel Generators.
- C. Prevent CCW System overpressure with all 3 CCW pumps starting simultaneously.
- D. Prevent steam formation in the RHR heat exchanger CCW side.

Proposed Answer:

- B. Prevent an overload condition on the Emergency Diesel Generators.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
E-1 Background Step 5, Page 47  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-011-540 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

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10 CFR Part 55 Content: 55.41 (7, 10)  
55.43                     

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
9	Group #	1	
	K/A #	000027 AA2.15	
	Importance Rating	3.7	4.0

Ability to determine and interpret the actions to be taken if PZR pressure instrument fails high

Proposed Question: Common #18

Given the following conditions:

- The plant is at 100% power.
- ALL control systems are in their normal automatic alignments.
- Pressurizer pressure channel PT-455 indicates 2275 psig and slowly rising.
- All other narrow range pressurizer pressure indications are 2220 psig and slowly dropping

Which of the following actions is required in accordance with 2AOP-INST-1?

- A. Place the affected PORV control switch in "CLOSE".
- B. Place the pressurizer pressure master controller in MANUAL and control RCS pressure.
- C. RESET and reenergize pressurizer heaters
- D. TRIP the reactor, enter E-0, Reactor Trip or Safety Injection.

Proposed Answer:

- B. Place the pressurizer pressure master controller in MANUAL and control RCS pressure.

Explanation (Optional):

- A. - Incorrect. Only for channels directly impacting PORVs
- B. - Correct. Controlling channel is failing
- C. - Incorrect. Heaters will not energize until pressure control in manual
- D. - Incorrect. Rx trip criteria not yet met

Technical Reference(s): 2-AOP-INST-1 (Attach if not previously provided)  
 Page 7

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-014-50 (As available)

Question Source: Bank # INPO 23382

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Indian Point Unit 3 3/10/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (5)

Comments:

Stem modified to make procedure plant specific

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
115	Group #	1	
	K/A #	000029 EK2.06	
	Importance Rating	2.9	3.1

Knowledge of the interrelations between the breakers, relays, and disconnects following an ATWS

Proposed Question: **Common #19**

Unit 2 is operating in Mode 1. An initiating event occurred such that an automatic Reactor Trip signal was generated, however the Reactor Trip Breakers did not open.

Which one of the following is the initiating event?

- A. With reactor power at 12%, an electrical fault caused the Main Generator F7-9 Disconnect to open while synchronized to the grid.
- B. With reactor power at 12%, 21 MSIV inadvertently closed during turbine roll-up.
- C. With reactor power at 28%, 22 RCP shaft seized causing an overload trip of its supply breaker.
- D. With reactor power at 28%, the RO inadvertently unblocked and energized the Source Range NIs.

Proposed Answer:

- C. With reactor power at 28%, 22 RCP shaft seized causing an overload trip of its supply breaker.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New YES



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
11	Group #	1	
	K/A #	000038 EA1.11	
	Importance Rating	3.8	3.9

Ability to operate and monitor SG level indicators as they apply to a SGTR

Proposed Question: Common #20

A SGTR on 24 SG caused an automatic SI on Unit 2.

- The operating team is in E-3, Steam Generator Tube Rupture, performing SI RESET actions
- 24 SG is isolated
- T<sub>AVE</sub> is stable
- 21, 22 and 23 SG NR levels were stable at 30%
- 23 SG NR level has started to rise with no change in AFW flow or steaming rate

Which one of the following describes the required action(s)?

- A. Continue performing the steps of E-3
- B. Return to E-3, Step 1
- C. Reduce AFW flow to 23 SG and monitor level while continuing in E-3
- D. Re-initiate SI and return to E-0, Step 1

Proposed Answer:

- B. Return to E-3, Step 1

Explanation (Optional):

(A) E-3 only isolates a ruptured SG if started from the beginning of the procedure, (B) Correct answer when a tube rupture in a second SG is identified, (C) This could mask another SG tube leak or rupture, (D) E-0 would only identify a SG tube rupture and initiate E-3 at step 1

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

E-3 foldout page

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 23122  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Salem Unit 1 11/04/2002

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
14	Tier #	1	
	Group #	1	
	K/A #	000056 G2.1.20	
	Importance Rating	4.3	4.2

Ability to execute procedure steps.

Proposed Question: Common #21

A Reactor Trip with Loss of Offsite power occurred from 100% power 30 minutes ago.

The current plant conditions are:

- ALL SGs are available.
- RCS subcooling is 26°F.
- Average of Qualified CETs is 530°F and rising slowly:
- Loop T-hots are 520°F and rising slowly.
- Loop T-colds are 490°F and rising slowly.

Which one of the following actions are to be taken in accordance with ES-0.1, Reactor Trip Response, to enhance natural circulation?

- A. Turn on available pressurizer heaters
- B. Initiate Auxiliary Spray
- C. Throttle open the Auxiliary Feed Water control valves
- D. Throttle open the Atmospheric Dump Valves

Proposed Answer:

- D. Throttle open the Atmospheric Dump Valves

Explanation (Optional):

Technical Reference(s): ES-0.1 (Attach if not previously provided)  
 Step 10 & Attachment 3

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-004-509 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
16	Group #	1	
	K/A #	W/E04 EK2.1	
	Importance Rating	3.5	3.9

Knowledge of the interrelations between the (LOCA Outside Containment and the components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: Common #22

The following plant conditions exist:

- The unit is in MODE 4
- RHR cooldown is in progress.
- RCS Temperature - 340°F slowly decreasing.
- RCS pressure - 300 psig decreasing.
- PZR level - 42% decreasing.
- Containment pressure - 0.2 psig and steady.
- PAB 98 ft. elevation radiation monitor R-5987 is alarming
- Plant vent monitors R-43 and R-44 are alarming
- All S/G Narrow Range levels are steady at approximately 42%
- S/G pressures are steady at approximately 125 psig

Based on the above conditions, what has occurred?

- A. A steam leak has occurred inside containment.
- B. The Low Temperature Overpressure Protection (LTOP) system has actuated.
- C. Letdown line pressure control valve, PCV-135 has failed open.
- D. A LOCA has occurred on the suction of the RHR pump.

Proposed Answer:

- D. A LOCA has occurred on the suction of the RHR pump.

Explanation (Optional):

- A, B - inside containment
- C - Incorrect (wrong lineup)
- D.- Correct (radiation levels indicate LOCA in PAB)

Technical Reference(s):

(Attach if not previously provided)

ARP SAF-1 window 2-8

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 24608  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (5)

Comments:

Question modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
18	Group #	1	
Rev per TF	K/A #	000065 G2.1.2	
	Importance Rating	3.0	4.0

Knowledge of operator responsibilities during all modes of plant operation.

Proposed Question: **Common #23**

Given the following conditions:

- The plant is at 100% power.
- A Loss of Instrument Air pressure has occurred
- The CRS has directed entry to 2-AOP-AIR-1, Loss of Instrument Air

Which of the following plant conditions will require a reactor trip in accordance with 2-AOP-AIR-1?

- A. Steam Generator Levels 45% and decreasing slowly
- B. VCT Level 4% and decreasing slowly
- C. Pressurizer Level is 55% and increasing slowly
- D. Instrument Air header pressure is 85 psig and decreasing slowly

Proposed Answer:

- B. VCT Level 4% and decreasing slowly

Explanation (Optional):

A - Rx trip required for >10% level change from program

B - Correct (<5% Trip Rx)

C - >5% above program requires plant S/D

D - No trip required for low air pressure only required to check other parameter if <95 psig

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-AIR-1

Pages 7, 8, 9

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-292-474 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History: New Question

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
19	Group #	1	
	K/A #	W/E05 EK1.2	
	Importance Rating	3.9	4.5

Knowledge of the operational implications of normal, abnormal and emergency operating procedures associated with the (Loss of Secondary Heat Sink)

Proposed Question: Common #24

The following plant conditions exist:

- The team is responding to a LOCA in accordance with E-1, Loss of Reactor or Secondary Coolant.
- A RED path occurs on the "Heat Sink Critical Safety Function Status Tree".
- The team transitions to FR-H.1, "Response to Loss of Secondary Heat Sink".
- Total available AFW flow is 200 gpm.
- RCS pressure is 525 psig and STABLE.
- Containment pressure is 10 psig and INCREASING.
- SG pressures are all 950 psig and STABLE.
- SG wide range levels are 45% and DECREASING.

Which of the following actions are required?

- A. Transition back to E-1, "Loss of Reactor or Secondary Coolant"
- B. Attempt to establish feed to the SG using the Main Boiler Feed Pumps
- C. Attempt to establish feed to the SG using the Condensate Pumps
- D. Steps 9 through 15 are to be performed immediately to establish bleed and feed

Proposed Answer:

- A. Transition back to E-1, "Loss of Reactor or Secondary Coolant"

Explanation (Optional):

RCS pressure is less than all non-faulted SGs. Secondary heat sink is not required. Note, "Adverse Conditions" DO NOT change pressure setpoints

Technical Reference(s): FR-H.1 (Attach if not previously provided)  
Page 2

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-044-3561 (As available)

Question Source: Bank # INPO 24715  
Modified Bank # YES (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (5)

Comments:

Question and distracters Modified

Examination Outline Cross-reference:	Level	RO	SRO
21	Tier #	1	
	Group #	2	
	K/A #	000028 AK2.02	
	Importance Rating	2.6	2.7

Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and sensors and detectors

Proposed Question: Common #25

The plant is operating at 100% power with all control systems operating normally. The reference leg of LT-460 has just developed a leak where the reference leg connects to the D/P cell. LT-459/460 is selected for PZR level control and alarm (Level 3 in DEFEAT).

Which one of the following best describes the plant response from this leak?

- A. LT-459 - indication will decrease, LT-460 indication will increase, LT-461 - indication will increase, charging flow will increase.
- B. LT-459 - indication will decrease, LT-460 indication will increase, LT-461 - indication will decrease, charging flow will decrease
- C. LT-459 - indication will increase, LT-460 indication will decrease, LT-461 indication will decrease, backup heaters will deenergize.
- D. LT-459 - indication will decrease, LT-460 indication will decrease, LT-461 indication will increase, backup heaters will energize.

Proposed Answer:

- B. LT-459 - indication will decrease, LT-460 indication will increase, LT-461 - indication will decrease, charging flow will decrease

Explanation (Optional):

LT-460 will indicate high, 460 is in control and 459 is in alarm with defeat switch to defeat channel 3 (461), charging pump speed will decrease and actual level will decrease

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-INST-1

IP2 SOD 007

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 24612  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 \_\_\_\_\_

Comments:

Question, answer and distracters modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
30	Tier #	2	
	Group #	1	
	K/A #	003 K5.05	
	Importance Rating	2.8	3.0

Knowledge of the operational implications of the dependency of RCS flow rates upon the number of operating RCPs

Proposed Question: Common #26

The Plant is in MODE 3 with all Steam Generators available. Which statement describes the effect on the Reactor Coolant System (RCS) of the number of operating Reactor Coolant Pumps (RCPs)?

- A. Fifteen minutes after shutting off ALL RCPs there will be NO flow in the RCS, and margin to DNB will be reduced.
- B. Operating ALL RCPs raises RCS flow rate, but results in a reduction in DNB margin due to pump heat input.
- C. Reducing the number of operating RCPs lowers the RCS flow rate causing a REDUCTION in DNB margin.
- D. Reducing the number of operating RCPs lowers the RCS flow rate causing a RISE in DNB margin.

Proposed Answer:

- C. Reducing the number of operating RCPs lowers the RCS flow rate which causes a REDUCTION in DNB margin.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 26298  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

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Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43           

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
31	Tier #	2	
	Group #	1	
	K/A #	004 A4.15	
	Importance Rating	3.6	3.7

Ability to manually operate and/or monitor in the control room Boron concentration

Proposed Question: Common #27

Given the following conditions:

- Unit 2 is at 100% power.
- Core Burnup is 11,000 MWD/MTU.
- Rod Control is in MANUAL.
- All other plant controls are in their normal configuration.
- AUTO makeup initiated to the VCT.
- The boron addition rate is set 5 gpm higher than required for present RCS conditions.

Assuming NO operator action, what will be the effect on the following parameters 15 minutes after the auto makeup is complete?

	Reactor Power	RCS Tave	Main Generator Electrical Output
A.	Lower	Lower	Higher
B.	Higher	Higher	Lower
C.	Higher	Higher	Higher
D.	Lower	Lower	Lower

Proposed Answer:

D. Lower Lower Lower

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 24074  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Salem Unit 1 5/05/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
50	Group #	1	
	K/A #	010 A3.02	
	Importance Rating	3.6	3.5

Ability to monitor automatic operation of PZR PCS, including: PZR pressure.

Proposed Question: Common #28

Given the following:

- PRZR Pressure Control System in position "DEFEAT 3 & 4"
- Both PORV Block Valves CLOSED with control switches in AUTO
- Both PORVs CLOSED with control switches in AUTO
- All PRZR Heater control switches in AUTO
- PRZR Spray Valve controllers in AUTO
- PRZR Pressure Master Controller in AUTO

Which ONE of the following statements describes the RCS/Pressurizer system response should PRZR pressure transmitter PT-455, Channel 1, fail LOW? {ASSUME: NO operator action.}

- A. ALL pressurizer heaters turn ON and Both PORVs available to automatically cycle for control of pressurizer pressure.
- B. ALL pressurizer heaters turn ON and Only 1 PORV available to automatically cycle for control of pressurizer pressure
- C. ALL pressurizer heaters turn ON and Spray valves cycle to control pressurizer pressure.
- D. ALL pressurizer heaters turn ON and Reactor trips on high pressurizer pressure condition.

Proposed Answer:

- B. All pressurizer heaters turn ON and Both PORVs available to cycle to control pressure

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

IP2-SOD-007

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-014-54 (As available)

Question Source: Bank # INPO 20120  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Cook 1 9/10/2001

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

10 CFR Part 55 Content: 55.41 (3,5,7)  
55.43 \_\_\_\_\_

Comments:

Questions, answer and distracters modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
52	Tier #	2	
	Group #	1	
	K/A #	012 K1.02	
	Importance Rating	3.4	3.7

Knowledge of the physical connections and/or cause effect relationships between the RPS and the 125VDC System.

Proposed Question: Common #29

The plant is operating at 100% when a loss of 125VDC control power occurs.

Which one of the following describes the effect, if any, on the Reactor TRIP and BYPASS breakers?

- A. All TRIP and BYPASS breakers will open automatically
- B. The BYPASS breakers will open automatically but the TRIP breakers will NOT automatically open
- C. The TRIP breakers will automatically open but the BYPASS breakers will NOT automatically open
- D. All TRIP and BYPASS breakers will NOT open

Proposed Answer:

- D. All TRIP and BYPASS breakers will NOT open

Explanation (Optional):

Technical Reference(s): 2-AOP-DC-1 (Attach if not previously provided)  
 Pages 99,125

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-161-277 (As available)  
SYS-C-271B-6454

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (6)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
66	Tier #	2	
	Group #	2	
	K/A #	011 K5.15	
	Importance Rating	3.6	4.0

Knowledge of the operational implications of the PZR level indication when RCS is saturated

Proposed Question: Common #30

During a natural circulation cooldown, which of the following pressurizer level responses would indicate the presence of a void in the reactor vessel upper head?

- A. A Pressurizer level increase when charging flow is directed through the auxiliary sprays.
- B. A Pressurizer level decrease when charging flow is directed through the auxiliary sprays.
- C. A Pressurizer level increase when charging flow is directed into the cold legs.
- D. A Pressurizer level decrease when there is an increase in the cooldown rate.

Proposed Answer:

- A. A Pressurizer level increase when charging flow is directed through the auxiliary sprays.

Explanation (Optional):

Auxiliary spray flow would decrease the pressure in the pressurizer and cause a steam void to form in the upper head resulting in water being displaced to the pressurizer

Technical Reference(s): ES-0.3 Background (Attach if not previously provided)  
Pages 18-22

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-008-3531 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New Yes

Question History:

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

10 CFR Part 55 Content:	55.41	<u>(3,8,14)</u>
	55.43	<u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
67	Tier #	2	
	Group #	2	
	K/A #	014 A1.03	
	Importance Rating	3.6	3.8

Ability to predict and/or monitor changes in parameters associated with operating the RPIS controls, including PDIL, PPDIL

Proposed Question: Common #31

Which one of the following instrument failures would directly cause a change in the computer calculated rod insertion limits?

- A. An impulse pressure channel failing HIGH.
- B. A T<sub>HOT</sub> RTD channel failing HIGH.
- C. A Power Range NIS channel failing HIGH.
- D. A Pressurizer pressure channel failing LOW.

Proposed Answer:

- B. A T<sub>HOT</sub> RTD channel failing HIGH.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_

\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-163-292/293/295 (As available)

Question Source: Bank # INPO 20629  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Point Beach 1 2/02/2002

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

10 CFR Part 55 Content:	55.41	<u>(6)</u>
	55.43	<u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
69	Tier #	2	
	Group #	2	
	K/A #	017 A2.02	
	Importance Rating	3.6	4.1

Ability to (a) predict the impacts of core damage on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of core damage

Proposed Question: **Common #32**

A severe accident has occurred and the operating team is currently implementing the Emergency Operating Procedures. The following conditions exist:

- All RCPs are off.
- PZR level is off scale low.
- RVLIS, Natural Circ Range, is 68%
- RCS pressure is 400 psig.
- Core exit thermocouples are reading 750°F.

What course of action will the operating team take and why?

- A. Transition to FR-C.1, Response to Inadequate Core Cooling, because core damage is occurring.
- B. Transition to FR-C.1, Response to Inadequate Core Cooling, because core uncover is likely occurring.
- C. Transition to FR-C.2, Response to Degraded Core Cooling, because core damage is occurring.
- D. Transition to FR-C.2, Response to Degraded Core Cooling, because core uncover is likely occurring.

Proposed Answer:

- D. Transition to FR-C.2, Response to Degraded Core Cooling because core uncover is likely occurring.

Explanation (Optional):

- A. FR-C.1 requires >1200°F for core damage
- B. FR-C.1 requires >700°F with RVLIS <41% for core damage imminent
- C. Core damage occurs >1200°F
- D. Correct

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 F-0.2  
 \_\_\_\_\_  
 FR-C.1 Background

FR-C.2

Background

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-001-500 (As available)  
EOP-C-018-576, 3539  
EOP-C-019-3540

Question Source: Bank # INPO 21574  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Kewaunee 1 9/06/2002

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

10 CFR Part 55 Content: 55.41 (7, 14)  
55.43 \_\_\_\_\_

Comments:  
Minor modification to Question given parameters



Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (7)  
55.43           

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
116	Group #	1	
	K/A #	000054 AA1.02	
	Importance Rating	4.4	4.4

Ability to operate and / or monitor the manual startup of electric and steam-driven AFW pumps as they apply to the Loss of Main Feedwater

Proposed Question: Common #34

Given the following conditions:

- 15% Reactor Power
- Main Generator Breakers 7 and 9 CLOSED
- 21 MBFP in service supplying all required feedwater
- 22 MBFP secured
- 21,22 and 23 ABFPs aligned for normal at power operations

A loss of 21 MBFP occurs and the Team trips the Reactor as directed in 2-AOP-FW-1, Loss of Feedwater.

Which one of the below indicates the automatic response of the Aux Feedwater Pumps following the Reactor Trip?

- A. 21, 22 and 23 ABFPs secured
- B. 21, 22, and 23 ABFPs running
- C. 21 and 23 ABFPs running, 22 ABFP secured
- D. 21 and 23 ABFPs secured, 22 ABFP running

Proposed Answer:

- C. 21 and 23 ABFPs running, 22 ABFP secured

Explanation (Optional):

Power level to low to cause SG levels to decrease to start AFW pumps from AMSAC or normal low water level. Only start signal is MBFP trip which starts only the motor drive pumps only.

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-210-378 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 \_\_\_\_\_

Comments:



Question History: Salem Unit 1 5/05/2003

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

10 CFR Part 55 Content: 55.41 (5)(10)  
55.43 (5)

Comments:

Answer and distracters completely changed

Examination Outline Cross-reference:	Level	RO	SRO
117	Tier #	1	
	Group #	2	
	K/A #	W/E03 EK1.1	
	Importance Rating	3.4	4.0

Knowledge of the operational implications of the components, capacity, and function of emergency systems.

Proposed Question: Common #36

A post-LOCA cooldown and depressurization is in progress following a small-break LOCA, and the following conditions exist:

- Safety Injection pumps 21 and 22 are running.
- RCS subcooling is 56°F
- T<sub>C</sub> is 550°F.
- PZR level is below the indicating range.
- Reactor coolant pumps are operating.
- The operating crew is on step 9 of ES-1.2, Post-LOCA Cooldown and Depressurization, which directs them to refill the PZR by depressurizing the RCS using normal spray.

Why will depressurizing the RCS refill the PZR?

- A. The water in the RCS will expand at lower pressure, forcing water into the PZR.
- B. The lower RCS pressure will increase SI flow, refilling the PZR.
- C. Voiding throughout the RCS will displace water into the PZR
- D. Accumulator injection will force water into the PZR.

Proposed Answer:

- B. The lower RCS pressure will increase SI flow, refilling the PZR.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
ES-1.2 Background

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-012-3347 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New Yes \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (8) \_\_\_\_\_  
55.43 \_\_\_\_\_

Comments:

New Question for Question 3#6

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
32	Group #	1	
	K/A #	004 K3.08	
	Importance Rating	3.6	3.8

Knowledge of the effect that a loss or malfunction of the CVCS will have on RCP Seal Injection

Proposed Question: Common #37

The following plant conditions exist on Unit 2:

- Unit 2 is at 90% power.
- All systems are in normal at power condition.
- The instrument air line to operating charging pump has just broken loose.

How will charging flow and seal injection flow respond?

	Charging Flow	RCP Seal Inj. Flow
A	Increases	Decreases
B	Decreases	Increases
C	Increases	Increases
D	Decreases	Decreases

Proposed Answer:

C	Increases	Increases
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Explanation (Optional):

Charging pumps fails to maximum speed on loss of Instrument Air

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-AIR-1

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SOD-18

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 22965  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Prairie Island 2 8/16/2002

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 \_\_\_\_\_

Comments:

Question and Answer modified to make plant specific



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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (1)

Comments:

730/731 interlock only prevents opening if pressure is >450 psig

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
118	Group #	1	
	K/A #	006000 K4.14	
	Importance Rating	3.9	4.2

Knowledge of ECCS design features(s) and/or interlock(s) which provide for Cross-Connection of HPI/LPI/SIP

Proposed Question: Common #39

Which valve(s) must the operator OPEN when aligning the SI System for Cold Leg Recirculation due to inadequate Low Head Flow?

- A. SI Pump Suction from RWST Isolation Valve MOV-1810
- B. RHR Heat Exchanger Outlet to SI Pumps Valves MOV-888A,/B
- C. SI Cold Leg Injection Valves MOV-856A/C/D/E
- D. Mini Flow Isolation Valves MOV-842 and 843

Proposed Answer:

- B. RHR Heat Exchanger Outlet to SI Pumps Valves MOV-888A and 888B

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 ES-1.3 Step 26  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYSD-C-101-147 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New YES

Question History:

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

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

Comments:

New Question to replace #39

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
38	Group #	1	
	K/A #	039 A2.05	
	Importance Rating	3.3	

Ability to predict the impacts of increasing steam demand, its relationship to increases in reactor power operation on the MRSS

Proposed Question: **Common #40**

The Unit is operating at 80% power EOL with all systems in automatic. One Group of condenser steam dump valves fail full OPEN.

Assuming that NO operator action occurs, what will be the approximate Rx power level 5 minutes after the valves fail open?

- A. 0%
- B. 70%
- C. 80%
- D. 90%

Proposed Answer:

- D. 90%

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
46	Tier #	<u>2</u>	<u>          </u>
	Group #	<u>1</u>	<u>          </u>
	K/A #	<u>003 A1.10</u>	<u>          </u>
	Importance Rating	<u>2.5</u>	<u>2.7</u>

Ability to predict and/or monitor changes in parameters associated with operating the controls including RCP standpipe levels

Proposed Question: Common #41

The Unit is operating at 100% power.

Which one of the following will cause RCP Standpipe level(s) to rise?

- A. Failure of #1 Seal.
- B. Failure of #3 Seal.
- C. MOV-222, RCP Seal Return Isolation Stop Valve, fails closed.
- D. HCV-142, Charging Line Flow Control Valve, fails closed.

Proposed Answer:

- A. Failure of #1 Seal.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-S-013-31/41 (As available)

Question Source: Bank # INPO 23064  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (3)(5)  
55.43                     

Comments: Question Distracters modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
48	Tier #	2	
	Group #	1	
	K/A #	007 A1.01	
	Importance Rating	2.9	3.1

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with maintaining quench tank water level within limits

Proposed Question: Common #42

Which ONE of the following describes the adverse affects, if any, of NO operator action with a leaking pressurizer PORV?

- A. There are NO adverse affects. The PRT is designed to handle continuous in-leakage.
- B. The cyclic temperature stresses in combination with inner wall erosion on the PORV tailpipe may lead to premature piping failure
- C. Mechanical breakdown of the PORV seating surface may cause the PORV to fail when needed for overpressure protection.
- D. The PRT rupture disc may break with subsequent elevated radiation, temperature and pressure indications in containment.

Proposed Answer:

- D. The PRT rupture disc may break with subsequent elevated radiation, temperature and pressure indications in containment.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-014-49/62 (As available)

Question Source: Bank # INPO 22895  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Cook 1 12/9/2002

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

10 CFR Part 55 Content: 55.41 (3, 14)  
55.43 \_\_\_\_\_

Comments:





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

Ability to manually operate and/or monitor in the control room valves in the CCS.

Proposed Question: Common #44

Given the following conditions:

- The plant is operating at 100% power.
- 21, 23, and 25 FCUs are in service to provide Containment Cooling.

Subsequently, reactor trip and Loss of Off-Site power occur. All equipment functions as designed.

Which one of the following describes the resulting Containment Cooling lineup?

- A. FCUs must be started manually. Cooling water flow is raised by providing a Service Water flow path parallel to TCV-1103, CNTMT BLDG Air Temperature controller..
- B. FCUs must be started manually. Cooling water flow is maintained by TCV-1103.
- C. Only 21, 23, and 25 FCUs will be in service. Cooling water flow is raised by providing a Service Water flow path parallel to TCV-1103.
- D. All FCUs will be in service. Cooling water flow is maintained by TCV-1103

Proposed Answer:

- B. FCUs must be started manually. Cooling water flow is maintained by TCV-1103.

Explanation (Optional):

- A. Incorrect. Parallel flow path only provided in safeguards mode
- B. Correct. All previously running fans will restart
- C. Incorrect. All fans start only in safeguards mode and no parallel flow path is provided
- D. Incorrect. All fans start only in safeguards mode.

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-102-161 (As available)

Question Source: Bank # INPO 23215 IP2  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Indian Point 2 (Unit) 3/10/2003

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

10 CFR Part 55 Content: 55.41 (4)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
15	Group #	1	
	K/A #	000057 AK3.01	
	Importance Rating	4.1	4.1

Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus Actions contained in EOP for loss of vital AC electrical instrument bus

Proposed Question: Common #45

Given the following conditions:

- The plant is at 80% power.
- A loss of Instrument Bus 21 has occurred.

Which one of the following statements describes why the HI-HI Containment Pressure relays are blocked when performing the appropriate attachment in accordance with 2AOP-IB-1, Loss of Instrument Bus?

- Blocks inadvertent actuation of Containment Spray in the case of a redundant channel failure
- Provides a channel trip of Containment Spray to change the coincidence to 1 out of 3 for Spray actuation
- Makes up part of the coincidence circuitry for Spray initiation, since Containment Spray relays are energized to actuate
- Blocks the actuation signal from the channel supplied from the de-energized instrument bus from causing an inadvertent Phase B containment isolation signal

Proposed Answer:

- Makes up part of the coincidence circuitry for Spray initiation, since Containment Spray relays are energized to actuate

Explanation (Optional):

- A-Incorrect. Makes up part of trip coincidence
- B-Incorrect. Logic does not change
- C-Correct
- D-Incorrect. Channel is energize to actuate

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 2AOP-IB-1  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 23258  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Indian Point Unit 2 3/10/2003

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

10 CFR Part 55 Content: 55.41 (5)(10)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
39	Group #	1	
OK per TF	K/A #	059 K3.04	
	Importance Rating	3.6	3.8

Knowledge of the effect that a loss or malfunction of the MFW will have of the RCS

Proposed Question: Common #46

Given the following conditions:

- 83% Reactor power.
- Both Main Feedwater pumps are operating in AUTOMATIC.
- Steam Generator Water Level Controls are in AUTOMATIC.

Which ONE of the following failures will cause RCS  $T_{AVE}$  to INITIALLY INCREASE?

- A. 21 SG Level Channel, 417B, fails HIGH
- B. 21 Steam Flow Channel, 419B, (CONTROLLING) Fails HIGH
- C. 21 Feed Flow Channel, 418B, (CONTROLLING) Fails LOW
- D. 21 Steam Pressure Channel, 419C, Fails LOW

Proposed Answer:

- A. 21 SG Level Channel, 417B, fails HIGH

Explanation (Optional):

- A. Feedflow decreases due to high SG level, Tcold 21 loop increases, Tave increases
- B. Feedflow increases to match SF, Tcold decreases, Tave decreases
- C. Feedflow increases to match SF, Tcold decreases, Tave decreases
- D. Atmos 21 SG opens, SF increases, Tcold decreases, Tave decreases

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-012-27 (As available)  
SYS-C-211-3983  
SGOPSAOP8-1601066

Question Source: Bank #

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (7, 14)  
55.43 \_\_\_\_\_

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
49	Tier #	2	
	Group #	1	
	K/A #	006 K6.18	
	Importance Rating	3.6	3.9

Knowledge of the effect that a loss or malfunction of the ECCS will have on Subcooling Margin Indicators

Proposed Question: Common #47

A small break LOCA has occurred on Unit 2.

- ES-1.2, Post LOCA Cooldown and Depressurization, is in progress.
- Safety Injection Pump 21 has just been stopped in accordance with Step 11.
- Safety Injection Pumps 22 and 23 are running.

The following conditions are noted:

- Subcooling Monitor, Channel A 75°F and stable
- Subcooling Monitor, Channel B 10°F and stable
- RCS Wide Range Pressure 1335 psig
- Core Exit Thermocouple avg 570°F
- Containment pressure 5 psig
- Containment rad levels 4 R/hr

After comparing the subcooling readings with RCS pressure and CETs, the team will determine that:

- Subcooling Monitor Channel A is reading inaccurately, Safety Injection Pump 21 will be started to restore subcooling.
- Subcooling Monitor Channel B is reading inaccurately, Safety Injection Pump 22 or 23 will be stopped since adequate subcooling exists.
- Subcooling Monitor Channel A is reading accurately, Safety Injection Pump 21 will NOT be started, the team will continue in ES-1.2.
- Subcooling Monitor Channel B is reading accurately, Safety Injection Pump 22 or 23 will be stopped since adequate subcooling exists.

Proposed Answer:

- Subcooling Monitor Channel A is reading inaccurately, Safety Injection Pump 21 will be started to restore subcooling.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
ES-1.2  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: Steam Tables

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (10,14)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
56	Group #	1	
Rev per TF	K/A #	076 A4.01	
	Importance Rating	2.9	2.9

Ability to manually operate and/or monitor in the control room SWS Pumps

Proposed Question: Common #48

Given the following plant conditions:

- Unit 2 at 100%
- 24/25/26 Essential Service Water Header
- Three Header Service Water System Operation
- Operating Service Water Pumps prior to Rx Trip
  - a. 21
  - b. 22 powered from 2A
  - c. 25 powered from 3A
  - d. 26

From the list below, determine the service water pump combination for 22 and 25 Service Water Pumps that would result following a Reactor Trip with a Station Blackout:

SWP	22	25
A.	Running – 2A	Running – 2A
B.	Stopped	Running -2A
C.	Running -2A	Running -3A
D.	Stopped	Running -3A

Proposed Answer:

- B. Stopped Running -2A

Explanation (Optional):

- A. No Non-essential SWP receives a start signal
- B. Correct – 25 SWP receives start signal first for bus 2A
- C. 25 SWP will only start on bus 3A if 2A start failed
- D. No Non-essential SWP receives a start signal and 25 SWP will only start on bus 3A if 2A start failed

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
SD-10.0 \_\_\_\_\_ Pages 25, 26  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-240-393 (As available)  
SYS-C-271A-2832 \_\_\_\_\_

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (4, 7, 8)  
55.43 \_\_\_\_\_

Comments:



10 CFR Part 55 Content: 55.41 (4, 7)  
55.43           

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
61	Tier #	2	
	Group #	1	
	K/A #	063 K3.02	
	Importance Rating	3.5	3.7

Knowledge of the effect that a loss or malfunction of the DC Electrical System will have on the following: Components using dc control power.

Proposed Question: Common #50

A loss of which ONE of the following DC panels will result in the majority of the Control Room Supervisory Alarm Panels losing power?

- A. 21 DC Power Panel
- B. 22 DC Power Panel
- C. 23 DC Power Panel
- D. 24 DC Power Panel

Proposed Answer:

- D. 24 DC Power Panel

Explanation (Optional):

Technical Reference(s): 2-AOP-ANNUN-1 (Attach if not previously provided)  
 Pages 25, 33

Proposed References to be provided to applicants during examination: NONE

Learning Objective: AOP-ANNUN-27141 (As available)

Question Source: Bank # INPO 20912  
 Modified Bank # YES (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Palisades 1 12/21/2001

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>

Comments:

Question, Answer and distracters changed to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
111	Tier #	2	
	Group #	1	
	K/A #	078 K3.02	
	Importance Rating	3.4	3.6

Knowledge of the effect that a loss or malfunction of the IAS will have on systems having pneumatic valves and controls

Proposed Question: Common #51

Given the following conditions:

- Unit 2 is in Mode 3
- 21 and 23 ABFP maintaining SG levels
- ABFP suction aligned to the CST
- Nitrogen Backup in the Aux Feed Building is isolated
- A complete loss of instrument air to the City Water supply valves to the ABFPs occurs

Which one of the following describes the suction valve alignment for 21 and 23 ABFPs?

- A. PCV-1187/1188, CW Supply to 21/23 ABFPs CLOSE and FVC-1205A, CW ABFPs OPEN
- B. PCV-1187/1188, CW Supply to 21/23 ABFPs OPEN and FVC-1205A, CW ABFPs CLOSE
- C. PCV-1187/1188, CW Supply to 21/23 ABFPs CLOSE and FVC-1205A, CW ABFPs CLOSE
- D. PCV-1187/1188, CW Supply to 21/23 ABFPs OPEN and FVC-1205A, CW ABFPs OPEN

Proposed Answer:

- A. PCV-1187/1188, CW Supply to 21/23 ABFPs CLOSE and FVC-1205A, CW ABFPs OPEN

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-AIR-1

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Proposed References to be provided to applicants during examination: NONE



Examination Outline Cross-reference:	Level	RO	SRO
17	Tier #	1	
	Group #	1	
	K/A #	000058 AA2.03	
	Importance Rating	3.5	3.9

Ability to determine and interpret DC loads lost; impact on ability to operate and monitor plant systems as they apply to the loss of DC Power

Proposed Question: Common #52

Which one of the following describes how a loss of 125VDC to the Reactor Trip Relays Train A affects the Reactor Trip Breaker, RTA?

- A. The loss of voltage de-energizes the UV coil and the breaker OPENS.
- B. The loss of 125VDC will prevent ALL trip signals to RTA.
- C. The breaker is NOT capable of opening on a signal to the UV trip coil of RTA
- D. The loss of voltage de-energizes the shunt coil and the breaker OPENS.

Proposed Answer:

- A. The loss of 125VDC Train A relay power will cause a Reactor Trip.

Explanation (Optional):

125VDC power is used to power the shut trip coil for Reactor Trip Breakers. This is in addition to the Undervoltage Trip which is also on each reactor trip breaker. Power is not required to trip the UV portion of breaker, but power is supplied to energize the shunt trip coil as a backup to the UV trip.

Technical Reference(s): 2-AOP-DC-1 (Attach if not previously provided)  
 Page 125

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-161-277  
SYS-C-271B-6454

Question Source: Bank # INPO 24061  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Salem Unit 1 5/5/2003

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
95	Tier #	3	
	Group #	2	
	K/A #	G2.2.22	
	Importance Rating	3.4	4.1

Knowledge of limiting conditions for operations and safety limits.

Proposed Question: Common #53

Given the following plant conditions:

- Unit 2 is at 100% power.
- 22 ABFP is tagged out for maintenance.
- Engineering has just notified the Shift Manager that a common electrical problem has been discovered in the controllers for the motor driven ABFP flow control valves, FCV-406A, through FCV-406D
- The Shift Manager has declared 21 and 23 ABFPs inoperable.

In addition to initiating action to restore the flow control valves to service, which of the following statements describes an action required for Unit 2?

- A. A reactor shutdown to Mode 2 is required.
- B. A reactor shutdown to Mode 3 is required.
- C. A reactor shutdown to Mode 4 is required.
- D. Maintain stable plant conditions

Proposed Answer:

- D. Maintain stable plant conditions

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

T.S. 3.7.5, Condition D

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-210-383 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41

55.43 (2)

Comments:

New Question

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

Ability to control radiation releases.

Proposed Question: Common #54  
 Given the following information:

- Plant is operating at 100% power
- R-46, FAN CLR UNIT SERVICE WTR HI RAD/TROUBLE, is in alarm
- Increased activity from 22 FCU service water has been confirmed

What action is required to be taken?

- Isolate Service Water flow for 22 FCU and raise the R-46 High setpoint above existing reading to clear the alarm
- Stop all FCUs and isolate service water flow to 22 FCU to prevent the spread of contamination in containment
- Initiate Containment Ventilation Isolation to prevent an unmonitored release to the environment.
- Initiate a Containment Purge and monitor a release of the Containment environment to the plant vent.

Proposed Answer:

- Isolate Service Water flow for 22 FCU and raise the R-46 High setpoint above existing reading to clear the alarm

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 2-ARP-SAF-1 Window 1-9  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-120-120120 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (12)  
55.43           

Comments:

New Question to replace existing question #96 in this file (Test Question #54)

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

Knowledge of 10 CFR: 20 and related facility radiation control requirements.

Proposed Question: Common #55

During a plant emergency an operator receives a radiation exposure of 10 REM to the lenses of both eyes.

Regarding 10 CFR 20, "Standards for Protection Against Radiation" and Entergy's administrative radiation control limits, which, if any, of these limits have been exceeded?

- A. NEITHER of the exposure limits listed have been exceeded.
- B. BOTH 10CFR20 AND plant admin. limits have been exceeded.
- C. Plant quarterly administrative limits only, have been exceeded, but NOT 10CFR20 limits.
- D. Plant annual limits have been exceeded, but not 10CFR20 limits..

Proposed Answer:

- A. NEITHER of the exposure limits listed have been exceeded.

Explanation (Optional):

Entergy limits are 80% of 10CFR20 resulting in limits of 12 REM to the lens of the eyes

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
10CFR20.1201  
IP-SMM-RP-201 Pages 8 &9

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 26338  
 Modified Bank # YES (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Palisades 1 8/01/2003

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

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10 CFR Part 55 Content:	55.41	<u>(12)</u>
	55.43	<u>(4)</u>

Comments:

Question and Answer modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
110	Tier #	2	
	Group #	1	
	K/A #	008 K1.03	
	Importance Rating	2.8	3.3

Knowledge of the physical connections and / or cause-effect relationships between the CCWS PRMS

Proposed Question: Common #56

A Reactor Coolant Pump thermal barrier heat exchanger rupture occurred approximately 10 minutes ago. Given the following indications:

- High Radiation alarm on CCW Radiation Monitor R-47
- CCW Surge Tank level indicates OFFSCALE HIGH
- NPO reports the CCW Surge Tank Relief Valve is lifting periodically
- FCV-625, RCP Thermal Barrier CCW Return Valve indicates OPEN
- MOV-789, RCP Thermal Barrier CCW Return Isolation Valve indicates OPEN
- RCV-017, CCW Surge Tank Vent Valve indicates CLOSED

Determine which one of the following explains the given status of the CCW System? (Assume NO operator actions have been taken)

- A. RCV-017 has failed to automatically OPEN
- B. MOV-789 has failed to automatically CLOSE
- C. FCV-625 has failed to automatically CLOSE
- D. CCW Surge Tank Level Transmitter has failed high

Proposed Answer:

- C. FCV-625 has failed to automatically CLOSE

Explanation (Optional):

Technical Reference(s): ARP SAF-1 (Attach if not previously provided)  
2-AOP-LICCW-1 Window 3-8  
 Pages 7-17

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-041-102 (As available)

Question Source: Bank # IP2 SYSC041-15  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (3, 7)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
55	Group #	1	
	K/A #	062 K2.01	
	Importance Rating	3.3	3.4

Knowledge of bus power supplies to the major system loads.

Proposed Question: Common #57

Which one of the choices lists only equipment powered from 480V 3A?

- A. 21 RHR Pump  
21 Recirc Pump  
22 Charging Pump  
23 Fan Cooler Unit
- B, 21 Aux Feedwater Pump  
21 RHR Pump  
22 Charging Pump  
24 Fan Cooler Unit
- C. 21 RHR Pump  
22 CCW Pump  
MCC-211  
24 Fan Cooler Unit
- D. 25 SW Pump  
MCC-24A  
22 Charging Pump  
21 Aux Feedwater Pump

Proposed Answer:

- B, 21 Aux Feedwater Pump  
21 RHR Pump  
22 Coolant Charging Pump  
24 Fan Cooler Unit

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
E-1, Attachment 1 Page 21  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source:	Bank #	<u>INPO</u>	23183
	Modified Bank #	<u>YES</u>	(Note changes or attach parent)
	New	_____	

Question History: Salem Unit 1      11/04/2002

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	_____

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

Comments:

Question, answer and distracters modified to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
64	Tier #	2	
	Group #	1	
	K/A #	103 A3.01	
	Importance Rating	3.9	4.2

Ability to monitor automatic operation of the containment systems including containment isolation

Proposed Question: Common #58

An inadvertent Safety Injection Actuation and automatic Reactor Trip has occurred. It was noted during the performance of E-0, Reactor Trip or Safety Injection, that Letdown Isolation Valve, 201 failed to automatically close as required, and had to be manually closed. SI has subsequently been placed in DEFEAT and has been RESET in ES-1.1, SI Termination. However, Containment Isolation (CIA) Phase A could NOT be reset when attempted.

Which one of the following could be a cause for the failure of CIA, Phase A, to reset?

- A. Letdown Isolation Valve, 201 failed to AUTOMATICALLY close as required.
- B. Control switch for the Weld Channel & Penetration Pressurization System (WCPPS) is OPEN.
- C. Equipment Hatch Solenoid control switch is in NORM.
- D. Isolation Valve Seal Water System valves (1410, 1413, SOV-3518, and SOV-3519) control switches are OPEN.

Proposed Answer:

- C. Equipment Hatch Solenoid control switch is in NORM.

Explanation (Optional):

- A. Daisy Chain made up from switch position not valve position
- B. Control switch for WCPPS not Phase A valves
- C. Correct, switch needs to be in INCIDENT to make up Daisy Chain
- D. IVSWS valves switches should be open for Daisy Chain

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 E-0, Attachment 1, step 12 Page 29  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-107-107108 (As available)

Question Source: Bank # IP2 SYSC107-29  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (7,9)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
68	Tier #	2	
	Group #	2	
	K/A #	001 K4.07	
	Importance Rating	3.2	3.4

Knowledge of the CRDS design feature(s) and/or interlock(s) which provide for the rod stops

Proposed Question: Common #59

The following plant conditions exist on Unit 2:

Unit 2 is at 20% power.  
Control rods are in MANUAL control.

*Deleted, Ref facility comment and NRC resolution*

WHICH ONE of the following describes two conditions that will prevent MANUAL OUTWARD movement of Control Bank D rods?

- A. Power Range Nuclear Power 20% (1/4), Overtemperature  $\Delta T$  variable setpoint (1/4) exceeded
- B. Intermediate Range Nuclear Power 20% equivalent (1/2), Overpower  $\Delta T$  variable setpoint (1/4) exceeded
- C. Overtemperature  $\Delta T$  variable setpoint (1/4) exceeded,  $T_{AVE} - Avg T_{AVE} (\pm 5^{\circ}F)$
- D. Overpower  $\Delta T$  variable setpoint (1/4) exceeded, First Stage Turbine Impulse Pressure, PT-412A, less than 15% power equivalent (1/1)

Proposed Answer:

- B. Intermediate Range Nuclear Power 20% equivalent (1/2), Overpower  $\Delta T$  variable setpoint (1/4) exceeded

Explanation (Optional):

- A. PR only provides 106% rod stop and 5%/5sec rod stop,  $OT_{\Delta T}$  correct
- B. Correct
- C.  $OT_{\Delta T}$  correct,  $T_{AVE} - Avg T_{AVE} (\pm 5^{\circ}F)$  Auto withdrawal rod stop not manual withdrawal
- D.  $OP_{\Delta T}$  correct, PT-412A Auto withdrawal block not manual block

Technical Reference(s):	(Attach if not previously provided)
ARP SAF	Windows 1-8, 2-8
ARP FCF	Windows 1-2, 1-3, 1-4

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-161-289 (As available)

Question Source: Bank # INPO 22962  
Modified Bank # YES (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Prairie Island 2 8/16/2002

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

10 CFR Part 55 Content: 55.41 (6,7)  
55.43 \_\_\_\_\_

Comments:

Question, answer and distracters modified

Examination Outline Cross-reference:	Level	RO	SRO
70	Tier #	2	
	Group #	2	
	K/A #	033 K4.03	
	Importance Rating	2.6	2.9

Knowledge of design features(s) and/or interlock(s) which provide for anti-siphon devices

Proposed Question: Common #60

Which one of the following statements describes a design feature that prevents excessive loss of level in of the spent fuel pool through the spent fuel pool cooling (SFPC) System?

- A. SFPC pumps will automatically trip when the low SFP level alarm is annunciated.
- B. SFPC discharge piping has a siphon breaker slightly below the normal water level.
- C. Deepest SFPC piping extends only 6 feet down into the SFP.
- D. Primary makeup valve to the SFP automatically opens on a low level in the SFP.

Proposed Answer:

B. SFPC discharge piping has a siphon breaker slightly below the normal water level.  
 C. Distractor C also correct, per facility comment \*  
 Explanation (Optional): and NRC resolution.

- A. There is no auto trip from low level for the SFP Pumps
- B. Correct
- C. Discharge piping extends to within 5'4" of top of the spent fuel racks
- D. Primary makeup to SFP is manual

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

SOD - 004

SD-4.3

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-043-2630 (As available)

Question Source: Bank # INPO 25137  
 Modified Bank # YES (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Millstone 2 12/04/2002

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (7)  
55.43 \_\_\_\_\_

Comments:

Question, Answer and distracters modified to make plant specific

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

Knowledge of operational implications of the effect of secondary parameters, pressure, and temperature on reactivity

Proposed Question: Common #61

Given the following plant conditions:

- Turbine load is at 100%.
- CD-19, "23/24/25, Feedwater Heater Bypass Valve" is inadvertently opened.

How and why will reactor power respond to this condition?

- Reactor power will decrease for a very short time due to less steam leaving the turbine extraction lines.
- Reactor power will decrease due to the decrease in steam generator pressure caused by the colder feedwater entering the feed ring.
- Reactor power will increase due to the colder water entering the steam generators.
- Reactor power will increase for a very short time due to MTC adding negative reactivity, but then decrease as the steam generator pressure increases.

Proposed Answer:

- Reactor power will increase due to the colder water entering the steam generators causing  $T_{COLD}$  to drop; MTC will add positive reactivity.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 20633  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

Question History: Point Beach 1 2/02/2002

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (5, 14)  
55.43

Comments:

Minor modifications to question and distracters to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
51	Group #	1	
	K/A #	010 K6.01	
	Importance Rating	2.7	3.1

Knowledge of the effect that a loss or malfunction of the Pressure Detection systems will have on the PZR PCS

Proposed Question: Common #62

The unit is at 100% power, steady state, normal operating temperature and pressure. The Pressurizer Pressure Master Controller setpoint fails to 2185 psig. Assume a step change in the setpoint and assume that pressurizer pressure control remains in automatic.

Which of the following is the immediate automatic response of the system?

- A. PORV 455C opens, Spray valves open, Variable Heaters energize.
- B. Spray valves open, Variable Heaters energize.
- C. Spray valves close, Variable Heaters de-energize.
- D. Spray valves open, Variable Heaters de-energize

Proposed Answer:

- D. Spray valves open, Variable Heaters de-energize

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-014-55 (As available)  
SGOPSAOP8-1601066

Question Source: Bank # INPO 19189  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Braidwood 1 10/20/2000

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

10 CFR Part 55 Content: 55.41 (3,7)  
55.43 \_\_\_\_\_

Comments:

Question modified to change correct answer

Examination Outline Cross-reference:	Level	RO	SRO
72	Tier #	2	
	Group #	2	
	K/A #	041 G2.1.10	
	Importance Rating	2.7	3.9

Knowledge of conditions and limitations in the facility license.

Proposed Question: Common #63

Which one of the following is considered to be the most limiting event (time critical) concerning operation of the Atmospheric Dump Valves?

- A. Inadequate Core Cooling accident with off site power available.
- B. Main Steam Line Break accident inside containment with a loss of off site power.
- C. Small Break Loss of Coolant accident with off site power available.
- D. Steam Generator Tube Rupture accident with a loss of off site power.

Proposed Answer:

- D. Steam generator Tube Rupture accident with a loss of off site power.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: TAA-C-009-TO325, EO2623 (As available)

Question Source: Bank # INPO 26186  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Point Beach 1 9/29/2003

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

10 CFR Part 55 Content: 55.41 (4,5)

55.43

(1)

Comments:

Minor modification to distracter

Examination Outline Cross-reference:	Level	RO	SRO
73	Tier #	2	
	Group #	2	
	K/A #	045 A1.06	
	Importance Rating	3.3	3.7

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including expected response of secondary plant parameters following T/G trip

Proposed Question: Common #64

The following plant conditions exist:

- The plant is operating at 100%.
- All systems are lined up in their normal lineups.
- All control systems are in automatic.
- A fault signal occurs from MO Disconnect Switch F7-9.

Which one of the following describes the immediate plant response?

- A. S/G pressure initially increases as main turbine is lost, S/G levels initially decrease due to shrink, feed flow initially increases.
- B. S/G pressure initially increases as main turbine is lost, S/G levels initially decrease due to shrink, feed flow initially decreases.
- C. S/G pressure initially decreases as main turbine is lost, S/G levels initially increase due to lower steam pressure, feed flow initially decreases.
- D. S/G pressure initially decreases as main turbine is lost, S/G levels initially decrease due to shrink, feed flow initially increases.

Proposed Answer:

- B. S/G pressure initially increases as main turbine is lost, S/G levels initially decrease due to shrink, feed flow initially decreases.

Explanation (Optional):

D - correct - initially (prior to steam dumps opening), steam header pressure increases due to the loss of steam demand. The increased back-pressure in the S/Gs partially suppresses boiling which causes shrink to occur in the S/Gs. The reduced steam demand inputs to the feed controller to reduce feed thus feed flow decreases.

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: TAA-C-005-2503 (As available)

Question Source: Bank # INPO 24696  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (5, 14)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
74	Tier #	2	
	Group #	2	
	K/A #	075 G2.1.8	
	Importance Rating	3.8	3.6

Ability to coordinate personnel activities outside the control room

Proposed Question: Common #65

Switching CW Pump speed from HIGH to LOW or LOW to High requires which one of the following items?

- A. An operator imposed 20 second delay when switching from high to LOW
- B. The pump to be stopped prior to switching speeds
- C. No delay when switching from LOW to HIGH
- D. The pump recirculation valve to be opened

Proposed Answer:

- B. The pump to be stopped prior to switching speeds

Explanation (Optional):

Technical Reference(s): SOP-23.1 (Attach if not previously provided)  
Page 1

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-240-230109 (As available)

Question Source: Bank # IP2 SYSC230-6  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content:	55.41	<u>(7, 10)</u>
	55.43	<u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
62	Group #	1	
	K/A #	064 G2.1.28	
	Importance Rating	3.4	3.3

Knowledge of the purpose and function of the major system components and controls

Proposed Question: **Common #66**

Select the ONE answer that describes EDG governor and voltage control with the EDG paralleled to the BUS and the UNIT-PARALLEL switch in PARALLEL.

- A. Increasing the governor will INCREASE bus frequency and Increasing the voltage rheostat will INCREASE bus voltage.
- B. Increasing the governor will INCREASE EDG load and Increasing the voltage rheostat will INCREASE bus voltage.
- C. Increasing the governor will INCREASE EDG load and Increasing the voltage rheostat will INCREASE lagging VARs.
- D. Increasing the governor will INCREASE bus frequency and Increasing the voltage rheostat will INCREASE leading VARs.

Proposed Answer:

- C. Increasing the governor will INCREASE EDG load and Increasing the voltage rheostat will INCREASE lagging VARs.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-273-2790 (As available)

Question Source: Bank # \_\_\_\_\_ Taskmaster SYSC273-3  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (8)  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
78	Group #	1	
	K/A #	073 K1.01	
	Importance Rating	3.6	3.9

Knowledge of the physical connections and/or cause-effect relationships between the PRM system and those systems served by PRMs

Proposed Question: Common #67

What conditions must be met to reset a Containment Ventilation Isolation after a high containment air particulate or radiogas alarm has isolated the Containment Purge and Containment Pressure Relief lines in accordance with 2-SOP-5.4.3, Vapor Containment Purge?

- A. The containment air particulate and radiogas alarms, R41/42, are the only signals that must be clear prior to resetting the Containment Ventilation Isolation.
- B. Containment Phase A and R41/42 and R44 must be below the isolation setpoint prior to resetting the Containment Isolation.
- C. Safety Injection must be reset and R41/42 and R44 must be below the isolation setpoint prior to resetting the Containment Isolation.
- D. No conditions need to be met, the Containment Purge and Pressure Relief Lines do not close on a high containment air particulate or radiogas alarm.

Proposed Answer:

C. Safety Injection must be reset and R41/42 and R44 must be below the isolation setpoint prior to resetting the Containment Isolation.

✦ A. Distractor A also correct per facility comment  
 Explanation (Optional): and NRC resolution.

Technical Reference(s): 2-SOP-5.4.3 (Attach if not previously provided)  
 Page 23

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-120-120112 (As available)

Question Source: Bank # IP2 SYSC120-20  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (7,8,9,  
11) \_\_\_\_\_  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
92	Group #	1	
	K/A #	G2.1.29	
	Importance Rating	3.4	3.3

Knowledge of how to conduct and verify valve lineups.

Proposed Question: Common #68

During an independent verification a valve is found out of position. How is the verifier to handle the component out of position situation in accordance with OAP-19, Component Verification and System Status Control?

- A. Do NOT change valve position. Notify the Shift Manager of the discrepancy.
- B. Do NOT change valve position. Notify the initial valve positioner of the discrepancy.
- C. Correct the valve position. Have Shift Manager obtain new verifier for independent verification for that valve only.
- D. Correct the valve position. Have the initial valve positioner perform the independent verification for that valve only.

Proposed Answer:

- A. Do NOT change valve position. Notify the Shift Manager of the discrepancy.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
OAP-019 Page 6  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 26135  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Prairie Island 1 10/3/2003

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

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10 CFR Part 55 Content: 55.41 (10)  
55.43           

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
77	Tier #	2	
	Group #	1	
	K/A #	064 A4.01	
	Importance Rating	4.0	4.3

Ability to manually operate and/or monitor in the control room local and remote operation of the ED/G

Proposed Question: Common #69

Determine the affect on Emergency Diesel Generator operation if the Jacket Water Pump on an Emergency Diesel Generator had a broken shaft and the Emergency Diesel Generator received an AUTO start signal?

- A. The Emergency Diesel Generator would start and continue to run, but the field would not 'flash' so there would be no generator output
- B. Without jacket water pressure the Emergency Diesel Generator would start, run for 2 minutes and shut down normally
- C. The Emergency Diesel Generator would run until it overheated, then low oil pressure would trip the 86 device
- D. The Emergency Diesel Generator would start but only run for about 37 seconds, then the 86 would trip

Proposed Answer:

- D. The Emergency Diesel Generator would start but only run for about 37 seconds, then the 86 would trip

Explanation (Optional):

- A. Jacket water pressure is used to allow field flash but the EDG would S/D
- B. Normal shutdown would not occur with 86 trip
- C. 37 seconds is not long enough for EDG to overheat
- D. Correct - Overcrank is sensed from Jacket Water Pressure

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 2-ARP-003 Window 1-2  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-273-2797/2798 (As available)

Question Source: Bank # IP2 27300301

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (7,8)  
55.43 \_\_\_\_\_

Comments:

Minor modification to question

Examination Outline Cross-reference:	Level	RO	SRO
93	Tier #	3	
	Group #	1	
	K/A #	G2.1.7	
	Importance Rating	3.7	4.4

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Proposed Question: Common #70

The following plant parameters exist:

- RCS pressure is 1600 psig and lowering.
- Pressurizer level is slowly lowering.
- PORVs and spray valves are closed.
- All steam generator water levels are normal
- Plant ventilation radiation monitors are rising.
- Containment pressure and sump levels are normal.

Which one of the following is the correct plant condition?

- A. Faulted Steam Generator
- B. Ruptured Steam Generator
- C. LOCA Inside Containment
- D. LOCA Outside Containment

Proposed Answer:

- D. LOCA Outside Containment

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 20585  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

\_\_\_\_\_  
\_\_\_\_\_

Question History: Point Beach 1 2/2/2002

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

\_\_\_\_\_  
X  
\_\_\_\_\_

10 CFR Part 55 Content: 55.41 (5)  
55.43 (5)

Comments:



Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

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

10 CFR Part 55 Content: 55.41 (6)  
55.43 (6)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
98	Tier #	3	
	Group #	4	
	K/A #	G2.4.16	
	Importance Rating	3.0	4.0

Knowledge of EOP implementation hierarchy and coordination with other support procedures.

Proposed Question: Common #72

A reactor trip has occurred. During the CRS read-through of E-0, Reactor Trip Or Safety Injection, Step 3, an Orange Path condition is observed by the Watch Engineer to exist on a Critical Safety Function (CSF) Status Tree.

Transition to the Orange Path procedure is to take place:

- A. immediately after confirming the Orange Path condition NO Red Path condition is verified to exist on remaining status trees.
- B. immediately after the CRS completes reading step 4 and NO Red Path condition is verified to exist on remaining status trees.
- C. when transitioning to another E-series procedure and NO Red Path condition is verified to exist on remaining status trees.
- D. as soon as NO Red Path condition is verified to exist on remaining status trees.

Proposed Answer:

- C. when transitioning to another E-series procedure.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 OAP-012 Page 11  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 26142  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Prairie Island 1 10/03/2003

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
99	Group #	4	
	K/A #	G2.4.6	
	Importance Rating	3.1	4.0

Knowledge symptom based EOP mitigation strategies

Proposed Question: Common #73

Given the following plant conditions:

- Following a series of plant malfunctions, operators are currently implementing ECA 0.0, Loss of All AC Power.
- The operators have reached the point in the procedure where they are to begin depressurization of the Steam Generators.

Which of the following statements indicates the reason that a secondary depressurization is performed?

- A. To ensure the reactor remains subcritical and does not result in a restart accident.
- B. To remove stored energy in the Steam Generators to prevent a secondary side Safety Valve from lifting.
- C. To minimize RCS inventory loss through the RCP seals, which maximizes time to core uncover.
- D. To depressurize the RCS in order to prevent a challenge to the "Integrity" Critical Safety Function Status Tree which is being monitored for implementation.

Proposed Answer:

- C. To minimize RCS inventory loss through the RCP seals, which maximizes time to core uncover.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 ECA-0.0 Background Page 104  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
100	Tier #	3	
	Group #	4	
	K/A #	G2.4.1	
	Importance Rating	4.3	4.6

Knowledge of EOP entry conditions and immediate action steps.

Proposed Question: Common #74

The following conditions exist:

- The plant has sustained an ATWS.
- The team has entered FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, from E-0, Reactor Trip or Safety Injection, step 1.
- The OTC operator was unable to trip the turbine by pressing the Manual Turbine Trip pushbutton.

What is the OTC's next action?

- A. Open the Generator breaker.
- B. Manually run back the turbine.
- C. Close MSIVs.
- D. Commence Emergency Boration of RCS

Proposed Answer:

- B. Manually run back the turbine.

Explanation (Optional):

Technical Reference(s): FR-S.1 (Attach if not previously provided)  
Step 2

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-002-503 (As available)

Question Source: Bank # INPO 24659  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
108	Tier #	3	
	Group #	1	
	K/A #	G2.1.20	
	Importance Rating	4.3	4.2

Ability to execute procedure steps.

Proposed Question: Common #75

Unit 2 is operating at 100% power when a sequence of annunciators actuate, indicating a loss of feedwater and a reactor trip, but NO reactor trip occurs. The following plant status is noted:

- All attempts to perform a manual reactor trip fail.
- An urgent failure prevents all rod motion.
- All auxiliary feedwater pumps are operating.
- The turbine remains on-line (AUTO turbine trip did not occur).
- Reactor power remains near 100%.
- Reactor coolant system temperature and pressure slowly increase from 100% power values.

Which one of the following correctly states the action that the operator is to take to mitigate the transient?

- A. Reduce turbine load slowly to avoid a rapid reactor coolant system temperature and pressure increase, leading to opening of a pressurizer safety valve.
- B. Trip the turbine to conserve the secondary coolant inventory to allow future RCS cooldown and depressurization.
- C. Open the PORVs immediately because the increasing pressure will take the pressurizer solid, resulting in insufficient water relief.
- D. Align maximum auxiliary feedwater flow to one steam generator to maintain it as a heat sink for cooldown of the reactor coolant system.

Proposed Answer:

- B. Trip the turbine to conserve the secondary coolant inventory to allow future RCS cooldown and depressurization.

Explanation (Optional):

Technical Reference(s): FR-S.1 (Attach if not previously provided)  
FR-S.1 Background Step 2  
 Page 64

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-042-3559/4633 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
107	Tier #		3
	Group #		4
	K/A #	G2.4.6	
	Importance Rating	3.1	4.0

Knowledge of symptom based EOP mitigation strategies

Proposed Question: Common #76 SRO-only

Given the following sequence of events:

- The plant was initially operating at 35% power.
- High containment pressure resulted in Safety Injection, Steamline Isolation and Containment Spray Actuation.
- RCS Pressure is 0 psig
- Containment Pressure is 25 psig
- No ABFPs can be started from the control room
- All SG Narrow Range Levels indicate 15%.
- All SG pressures have stabilized at 700 psig

Which one of the following describes the correct sequence of EOP implementation?

The team will initially enter E-0, Reactor Trip or Safety Injection and then transition to:

- A. E-1, Loss of Reactor or Secondary Coolant, FR-H.1, Loss of Heat Sink, from Status Trees, after SG levels lower to less than 10% Narrow Range
- B. FR-H.1, Loss of Heat Sink, when no Aux Feedwater Flow can be established, then back to E-0, with RCS pressure less than SG pressure
- C. FR-H.1, Loss of Heat Sink, when no Aux Feedwater Flow can be established, then to E-1, with RCS pressure less than SG pressure
- D. E-1, Loss of Reactor or Secondary Coolant, then to ES-1.3 when RWST level drops below 9.24 feet

Proposed Answer:

- B. FR-H.1, Loss of Heat Sink, when no Aux Feedwater Flow can be established, then back to E-0, with RCS pressure less than SG pressure

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

E-0	Step 7
FR-H.1	Step 1

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source:	Bank #	<u>INPO IP2</u>	<u>23309</u>
	Modified Bank #	<u>YES</u>	<u>(Note changes or attach parent)</u>
	New	_____	_____

Question History: Indian Point 2      3/10/2003

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>

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

Comments:

Question, Answer and Distracters modified

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
42	Group #		2
Rev per TF	K/A #	002 K5.07	
	Importance Rating	3.3	3.6

Knowledge of the operational implications of reactivity effects of RCS boron, pressure and temperature as they apply to the RCS

Proposed Question: Common #77 SRO-only

The unit is in MODE 6 for a refueling outage. Fuel movements are in progress to reload the reactor core.

Chemistry's sample of the RCS indicates that the boron concentration of the reactor coolant is 1960 ppm. What TS ACTION is required?

- A. Continue with CORE ALTERATIONS, suspend any positive reactivity additions and initiate actions to restore boron concentration limit
- B. Immediately lower any suspended fuel assemblies back into reactor vessel and initiate action to restore boron concentration limit
- C. Immediately suspend all core reload operations, core offload operations may continue provided actions to restore boron concentrations limit is commenced
- D. Immediately suspend CORE ALTERATIONS, suspend positive reactivity additions and initiate action to restore boron concentration limit

Proposed Answer:

- D. Immediately suspend CORE ALTERATIONS, positive reactivity additions and initiate action to restore boron concentration limit

Explanation (Optional):

- A. Must suspend all core alterations
- B. Lowering suspended fuel into core is required for decreasing cavity level
- C. Must suspend all core alterations even offload
- D. Correct

Technical Reference(s): Tech Spec 3.9.1, Cond A (Attach if not previously provided)  
COLR Page 3.9.1-1  
 Page 5

Proposed References to be provided to applicants during examination: COLR Page 5

Learning Objective: ITS-C-012-0393, 0394 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 (2, 6, 7)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
58	Group #		1
	K/A #	000009 EK2.03	
	Importance Rating	3.0	3.3

Knowledge of the interrelations between the small break LOCA and the Steam Generators.

Proposed Question: Common #78 SRO-only

The following plant conditions exist:

- A reactor trip with SI has occurred.
- The team transitioned from E-0, Reactor Trip or Safety Injection, to FR-H.1, Loss of Secondary Heat Sink, from step 7, based on AFW flow <400 gpm and all SG levels <10%
- RCS pressure is 700 psig and slowly decreasing.
- All S/G pressures are approximately 950 psig and stable.

Which of the following summarizes plant conditions and what procedure is to be implemented?

- A. Remain in FR-H.1 until feed is restored then transition to E-1 where a depressurization of the secondary is prescribed to increase the heat transfer between the RCS and S/Gs.
- B. Heat transfer in the RCS during this event is such that the S/Gs are currently not functioning as a heat sink. Remain in FR-H.1 to restore S/G levels to normal band.
- C. Heat transfer in the RCS during this casualty is such that the S/Gs are currently not functioning as a heat sink and therefore not required. Transition back to E-0, Reactor Trip or Safety Injection, step 7.
- D. Heat transfer in the RCS during this casualty is such that the S/Gs are currently not functioning as a heat sink and therefore not required. Transition to E-1, Loss of Reactor or Secondary Coolant, step 1.

Proposed Answer:

- C. Heat transfer in the RCS during this casualty is such that the S/Gs are currently not functioning as a heat sink and therefore not required. Transition back to E-0, Reactor Trip or Safety Injection, step 7.

Explanation (Optional):

Technical Reference(s):	(Attach if not previously provided)
<u>E-0</u>	Step 7
<u>FR-H.1</u>	Step 1

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-044-3561 (As available)

Question Source:	Bank #	<u>INPO</u>	<u>24717</u>
	Modified Bank #	<u>YES</u>	<u>(Note changes or attach parent)</u>
	New	<u></u>	<u></u>

Question History: Seabrook 1      5/30/2003

Question Cognitive Level:	Memory or Fundamental Knowledge	<u></u>
	Comprehension or Analysis	<u>X</u>

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
59	Group #		1
	K/A #	000015/017	A2.02
	Importance Rating	2.8	3.0

Ability to determine and interpret abnormalities in RCP air vent flow paths and/or oil cooling system as they apply to the Reactor Coolant Pump Malfunction

Proposed Question: Common #79 SRO-only

A Component Cooling water leak inside containment has caused reduced flow to the RCPs. The following conditions exist:

- Unit 2 is at 100% power.

Temperatures / RCP #	21	22	23	24
Motor Bearing	189°F	205°F	177°F	181°F
Stator Winding	220°F	225°F	215°F	229°F
Seal Inlet	195°F	185°F	205°F	200°F
Annunicator RCP Hi Vibration	Not Lit	Not Lit	Not Lit	Not Lit

Which ONE of the following set of actions must be taken?

- A. Trip Reactor, secure all RCPs, Initiate E-0
- B. Trip Reactor, secure 22 RCP, Initiate E-0
- C. Trip Reactor, secure 23 RCP, Initiate E-0
- D. Perform a rapid plant shutdown, secure RCPs as necessary to isolate CCW leak

Proposed Answer:

- B. Trip Reactor, secure 22 RCP, Initiate E-0

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-RCP-1, Step 1

Proposed References to be provided to applicants during examination: NONE

Learning Objective: AOP-C-RCP1-1601040 (As available)

Question Source: Bank # INPO 22799  
Modified Bank # YES (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Cook 1 12/9/2002

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (5)

Comments:

Question, answer and distracters modified

Examination Outline Cross-reference:	Level	RO	SRO
60	Tier #		1
	Group #		1
	K/A #	000040 G2.4.6	
	Importance Rating	3.1	4.0

Knowledge of symptom based EOP mitigation strategies

Proposed Question: Common #80 SRO-only

You have entered ECA-2.1, "Uncontrolled Depressurization of All Steam Generators" and are performing SI Termination. Steam generator #24 pressure suddenly begins to rise.

Which one of the following actions is correct?

- A. Once the SI termination is complete, ECA-2.1 is complete and you are returned to procedure step in effect.
- B. Continue performing SI Termination and complete remaining steps of ECA- 2.1, the RCS is now cooled to a point that the steam generators are beginning to fill.
- C. Stop performing SI Termination and go to E-2 because the pressure boundary has been established in steam generator #24.
- D. Complete performing SI Termination and then go to E-2, because the pressure boundary has been established in steam generator #24.

Proposed Answer:

- D. Complete performing SI Termination and then go to E-2, because the pressure boundary has been established in steam generator #24.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
ECA-2.1 – Foldout Page  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-026-3546 (As available)

Question Source: Bank # INPO 19545  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Cook 1 5/21/2001

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 \_\_\_\_\_

Comments:

Minor modifications to answer and distracters

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
47	Group #		2
Replaced per TF	K/A #	G2.2.25	
	Importance Rating	2.5	3.7

Equipment Control; Knowledge of bases in technical specifications for limiting conditions for operations and safety limits

Proposed Question: Common #81 SRO-only

It is determined that the Containment Spray System and FCU TS LCO (TS 3.6.6) is not met due to 480VAC Bus 6A being declared inoperable.

Which one of the following describes when a safety function determination must be performed?

- A. When the support system's Required Actions direct entry into Conditions and Required Actions for the supported system.
- B. When the support system's Required Actions direct the supported system to be declared inoperable.
- C. When the Conditions and Required Actions associated with the supported system LCO are NOT entered.
- D. When the Conditions and Required Actions associated with the support system LCO are NOT entered.

Proposed Answer:

- C. When the Conditions and Required Actions associated with the supported system LCO are NOT entered.

Explanation (Optional):

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. In this event, an evaluation shall be performed in accordance with TS 5.5.13.

Technical Reference(s):	(Attach if not previously provided)
TS 5.5.13	Pages 5.5-13 & 14
TS Section 3.0, LCO 3.0.6	Page 3.0-2
Section 3.0.6 Bases	Pages 3.0-8 & 9

Proposed References to be provided to applicants during examination: NONE

Learning Objective: ITS-C-001-0103 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History: New

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (2)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
76	Group #		1
	K/A #	W/E11 EA2.2	
	Importance Rating	3.4	4.2

Ability to determine and interpret adherence to appropriate procedures and operation within the limitations in the facility's license and amendments as they apply to Loss of Emergency Coolant Recirculation

Proposed Question: Common #82 SRO-only

The following sequence of events occurs:

- Unit 2 was operating at 100% power
- Small break LOCA occurred 25 minutes ago.
- The Team is currently implementing ECA 1.1, Loss of Emergency Coolant Recirculation due to loss of recirculation capability.
- RCS Pressure is 450 psig
- Containment pressure is 4 psig.

Given the attached reference from ECA 1.1, Loss Of Containment Sump Recirculation, which of the following indicates the REQUIRED correct combination of Containment Fan Cooler Units and Containment Spray Pumps that are required to be operating under these conditions?

- A. 4 FCUs, 0 Spray Pumps
- B. 1 FCU, 1 Spray Pump
- C. 0 FCU, 1 Spray Pump
- D. 0 FCU, 2 Spray Pumps

Proposed Answer:

- D. 0 FCU, 2 spray Pumps

Explanation (Optional):

25 minutes from start of small break LOCA with no RHR pumps injecting, the RWST level will be >9.24 ft. With VC pressure 4 psig, Table Step 4 requirements only met with 0 FCUs and 2 Spray Pumps

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 ECA-1.1 Step 4 Table  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: ECA-1.1, Step 4 Table

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
79	Group #		1
	K/A #	000038 EK2.02	
	Importance Rating	2.4	2.5

Knowledge of the interrelations between sensors and detectors and a SGTR

Proposed Question: Common **#83 SRO-only**

After a Reactor Trip the following parameter values and trends are noted:

- Pressurizer Level is 0%.
- RCS Pressure is 1500 psig and lowering.
- RCS T<sub>COLD</sub> is 530°F and slowly trending down.
- Containment pressure is 0.2 psiv and steady.
- Containment Average Temperature is 105°F and lowering.
- Main Steam Line Radiation Monitor R29 is in alarm and trending up.

	21	22	23	24
SG				
Wide Range Level	46% trending up	31% trending down	47% trending up	45% trending up
AFW Flow	205 stable	200 stable	200 stable	210 stable

Assuming that all other equipment responded as designed,

Which one of the following statements describes the events in progress and what is the correct procedural flowpath after transitioning from E-0, Reactor Trip Or Safety Injection?

- Main Steam Line Break outside Containment and Steam Generator Tube Rupture; E-2, Faulted Steam Generator Isolation, to ECA-3.1, SGTR With Loss of Reactor Coolant – Subcooled Recovered Desired.
- Main Steam Line Break outside Containment and Steam Generator Tube Rupture; E-2 Faulted Steam Generator Isolation, to E-3 Steam Generator Tube Rupture.
- Steam Generator Tube Rupture and isolated LOCA in Letdown; E-3, Steam Generator Tube Rupture, to E-1, Loss of Reactor Coolant or Secondary Coolant.
- Steam Generator Tube Rupture and Loss of Coolant Accident outside Containment; E-3, Steam Generator Tube Rupture, to ECA-1.1, Loss of Emergency Coolant Recirculation.

Proposed Answer:

- Main Steam Line Break outside Containment and Steam Generator Tube Rupture.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-032-635 (As available)

Question Source: Bank # INPO 25582  
Modified Bank # YES (Note changes or attach parent)  
New \_\_\_\_\_

Question History: ANO, Unit 2 7/11/2003

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (5)

Comments:

Question modified to make plant specific and add procedure decisions per TF

Examination Outline Cross-reference:	Level	RO	SRO
80	Tier #		1
	Group #		1
	K/A #	000054 AK1.01	
	Importance Rating	4.1	4.3

Knowledge of the operational implications of a MFW line break depressurizes the S/G concepts as it applies to a Loss of Main Feedwater

Proposed Question: Common #84 SRO-only

The following conditions exist immediately following a reactor trip from 50% power:

- Pressurizer Level 38% (lowering)
- Pressurizer Pressure 2150 psia (lowering)
- Containment sump levels rising
- Containment temperature 145°F (rising)
- Containment pressure 2.6 psig (rising)
- Containment area radiation monitors R41/42 - 2.1E-11  $\mu$ Ci/cc
- Containment wide range area radiation monitors R25/26 - 1.1 R/hr

LOOP	21	22	23	24
T <sub>COLD</sub>	539°F lowering	538°F lowering	539°F lowering	533°F lowering
Stm Gen NR Level	21 14% lowering	22 12% lowering	23 15% lowering	24 0% stable
WR Level	58% increasing	57% increasing	59% increasing	34% decreasing
Pressure	910 psig	915 psig	912 psig	800 psig

Which of the following is indicated by the given plant conditions and what procedure must be implemented?

- Pressurizer Steam Space Leak; 2-AOP-LEAK-1, Sudden Increase in Reactor Coolant System Leakage
- Loop 24 Main Feedwater Break Inside Containment; E-2, Faulted Steam Generator Isolation
- Loop 24 Main Feedwater Break Outside Containment; 2-AOP-FW-1, Loss of Main Feedwater
- Loop 24 Cold Leg Small Break LOCA; E-1, Loss of Reactor or Secondary Coolant

Proposed Answer:

B. Loop 24 Main Feedwater Break Inside Containment; E-2, Faulted Steam Generator Isolation

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source:	Bank #	<u>INPO</u>	<u>25583</u>
	Modified Bank #	<u>YES</u>	(Note changes or attach parent)
	New	_____	_____

Question History: ANO, Unit 2      7/11/2003

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	<u>(8, 10)</u>
	55.43	<u>(5)</u>

Comments:

Question, Answer and Distracters modified

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
119	Group #		1
	K/A #	000056 G2.4.6	
	Importance Rating	3.1	4.0

Knowledge symptom based EOP mitigation strategies

Proposed Question: Common #85 SRO-only

A loss of off-site power caused a Unit 2 reactor trip. NO emergency diesel generators energized their respective busses and the operating team entered ECA-0.0, Loss of All AC Power.

The following conditions now exist:

- All S/G NR levels are between 15-25%
- S/G Pressure is 940 psig
- 22 AFW Pump is running
- The team was depressurizing intact S/Gs when 480V Bus 5A was energized from 21 EDG
- 24 SW Pump has been started
- 21 and 22 FCUs are running
- RCP seals have been isolated
- PZR Level is 17%
- Low Pressure SI was blocked during the Cooldown
- RCS Pressure lowered to 1750 psig during the cooldown
- Hottest In-core Thermocouple – 530°F

Which one of the following identifies the next procedure to be implemented?

- A. E-0, Reactor Trip or Safety Injection
- B. ES-0.1, Reactor Trip Response
- C. ECA-0.1, Loss of All AC Recovery without SI required
- D. ECA-0.2, Loss of All AC Recovery with SI Required

Proposed Answer:

- C. ECA-0.1, Loss of All AC Recovery without SI required

Explanation (Optional):

Technical Reference(s):

(Attach if not previously provided)

ECA-0.0

Step 27

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_

(Note changes or attach parent)

New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (10)

55.43 (5)

Comments:

New Question to replace #85

Examination Outline Cross-reference:	Level	RO	SRO
120	Tier #		
	Group #		
	K/A #	000001 AA2.03	
	Importance Rating	4.5	4.8

Ability to determine and interpret the proper actions to be taken as they apply to Continuous Rod Withdrawal.

Proposed Question: **Common #86 SRO-only**

Unit 2 power escalation was in progress. The OTC withdrew control rods to increase  $T_{AVE}$ . When the OTC released the Rod Control IN-OUT switch the control rods continued to withdraw. The OTC placed Rod Control Bank Selector Switch to AUTO.

The following conditions were noted:

- Nuclear Instrumentation Power Range Channels 15% and rising
- Power Range Low Power Trip NOT Blocked
- Intermediate Range Trip NOT Blocked
- Control rods withdrawing at 66 steps per minute

Which ONE of the following actions are required in accordance with 2-AOP-ROD-1, Rod Control and Indication System Failure?

- A. Place Rod Control in Manual, if rod motion does not stop, Trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- B. Place Rod Control in Manual, if rod motion does not stop, place rod control in Individual Bank Select, if rod motion does not stop, Trip the reactor and go to E-0.
- C. Place Rod Control in Manual, if rod motion does not stop, Open MOV-333, Emergency Boration Valve, Trip the reactor, and go to E-0.
- D. Place Rod Control in Manual, if rod motion does not stop, place shim switch to the IN direction and drive rods in to rod height prior to unwarranted rod motion.

Proposed Answer:

- A. Place Rod Control in Manual, if rod motion does not stop, Trip the reactor and go to E-0, Reactor Trip or Safety Injection.

Explanation (Optional):

Technical Reference(s): 2-AOP-ROD-1 (Attach if not previously provided)  
Step 4.2

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source:	Bank #	<u>INPO</u>	<u>22797</u>
	Modified Bank #	_____	(Note changes or attach parent)
	New	_____	

Question History: Cook 1                      112/9/2002

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	_____
	55.43	<u>(5)</u>

Comments:  
New Question to replace #86

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
84	Group #		2
	K/A #	W/E 01 EK1.2	
	Importance Rating	3.4	4.0

Knowledge of the operational implications of normal, abnormal and emergency operating procedures associated with Reactor Trip or Safety Injection / Rediagnosis

Proposed Question: Common **#87 SRO-only**

The plant has undergone a Reactor Trip and Safety Injection. The Team transitioned to E-3, Steam Generator Tube Rupture, from E-0, Reactor Trip or Safety Injection, due to elevated Steam Generator Radiation levels from a previous 0.5 gpm Steam Generator tube leak. The CRS has transitioned to ES-0.0, Rediagnosis, to evaluate if the Team is in the correct guideline.

Given the following:

- All SI pumps and 21 RHR pump are running
- RCS press is 1900 psig and rising slowly
- PZR level is 30 % and rising slowly
- T<sub>AVE</sub> is 544°F and rising slowly
- SG radiations levels same as from SG tube leak
- All SG Pressures are 1000 psig and stable
- All SG Levels are 5% NR and rising slowly
- AFW Flow is 200 gpm to each SG

Based on the given plant conditions, the CRS is required to transition to which of the following procedures?

- A. ES-1.1, SI Termination, Step 1
- B. E-0, Reactor Trip or Safety Injection, Step 1
- C. E-1, Loss of Reactor or Secondary Coolant, Step 1
- D. E-3, Steam Generator Tube rupture, Step 1

Proposed Answer:

- C. E-1, Loss of Reactor or Secondary Coolant, Step 1

Explanation (Optional):

- A. SI termination criteria met for given plant conditions but must first transition to E-1
- B. E-0 was already completed prior to transition to E-3
- C. Correct, there is no faulted SG or SG with uncontrolled increase in level or abnormal radiation levels





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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (3)

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
87	Tier #		2
	Group #		1
	K/A #	004 K5.19	
	Importance Rating	3.5	3.9

Knowledge of the operational implications of the concept of SDM as it applies to the CVCS

Proposed Question: Common #89 SRO-only

Given the following:

- The Unit is in Mode 3
- Plant cooldown is in progress
- RCS temperature is 520°F
- RCS Boron Concentration is 600 ppm
- Reactor Engineering informs the control room that the SDM is 1.2%

Using the attached COLR, determine what action, if any, is required to be performed for the given conditions.

- A. Initiate boration to restore SDM to within limits within 15 minutes
- B. Initiate boration to restore SDM to within limits within 1 hour
- C. Cooldown may continue but do not enter Mode 4 until SDM within limits
- D. No action required, SDM within limits of COLR for given conditions

Proposed Answer:

- A. Initiate boration to restore SDM to within limits within 15 minutes

Explanation (Optional):

- A. Correct, TS 3.1.1, Condition A, required SDM from COLR Figure 2 is 1.5
- B. Completion time is 15 minutes to restore SDM
- C. TS 1.1.1 is applicable in Modes 2 with  $K_{eff} < 1.0$  and 3, 4 & 5
- D. SDM required to be above curve of COLR Figure 2

Technical Reference(s): TS 3.1.1 (Attach if not previously provided)  
Graph RPC-5 Page 3.1.1-1  
 COLR Figure 2

Proposed References to be provided to applicants during examination: Graph RPC-6 COLR Figure 2

Learning Objective: SYS-C-030-30105/30114 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 (1, 2)

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
88	Tier #		2
	Group #		1
	K/A #	005 A2.03	
	Importance Rating	2.9	3.1

Ability to predict the impacts of RHR pump/motor malfunctions or operations on the RHRS and based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations

Proposed Question: Common #90 SRO-only

The Unit is in Mode 6 for Vessel Head O-Ring repair with 21 RHR pump in service providing core cooling. A loss of 21 RHR occurs and 2-AOP-RHR-1, Loss of RHR, is implemented.

Given the following plant conditions:

- Reactor Vessel level is 68 ft.
- Reactor Vessel Head has been de-tensioned
- Reactor has been shutdown for 48 hours
- The plant is at 600 EFPDs
- RCS temperature is 130°F and stable

Determine the amount of time remaining to reach 200°F and the required actions the team must take.

- A. 8 minutes; evacuate ALL personnel from containment
- B. 8 minutes; evacuate ALL NON-Essential personnel from containment
- C. 28 minutes; evacuate ALL personnel from containment
- D. 28 minutes; evacuate ALL NON-Essential personnel from containment

Proposed Answer:

- B. 8 minutes; evacuate ALL NON-Essential personnel from containment

Explanation (Optional):

- A. Correct time; incorrect evacuation
- B. Correct from Graph ACS-2C, RCS level at 66'; correct evacuation
- C. Time to 200°F using Graph ACS-2D, Reactor Cavity level at 92'; incorrect evacuation
- D. Incorrect time; correct evacuation

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-RHR-1

Graph ACS 2C Rev 9

Graph ACS 2D Rev 8

Proposed References to be provided to applicants during examination: Graph ACS-2C, 2D

Learning Objective: SYS-C-042-114 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 (5)

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
89	Tier #		2
	Group #		1
	K/A #	008 A2.02	
	Importance Rating	3.2	3.5

Ability to predict the impacts of High/low surge tank level malfunction or operations on the CCWS and based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations

Proposed Question: Common #91 SRO-only

Given the following plant conditions:

- Unit 2 was operating at 100% power when a loss of coolant event occurred.
- The operating Team has just entered ES-1.3, Transfer To Cold Leg Recirculation.
- Shortly after initiating ES-1.3, a CCW leak on the bottom of the CCW Surge Tank has caused the surge tank to empty.
- The CRS directs that all 3 CCW pumps be placed in pullout.
- All other equipment is operating per design.

Based on these conditions, which of the following correctly describes the impact of these events during subsequent actions to establish cold leg recirculation?

- A. Alignment for cold leg Recirc will continue without CCW. Attempt to start 2 CCW pumps while performing ES-1.3.
- B. Alignment for cold leg recirculation will NOT continue without CCW. A transition to ECA-1.1, Loss of Emergency Coolant Recirculation, must be made immediately.
- C. Immediately enter 2-AOP-CCW-1, Loss of Component Cooling Water, to address the CCW leak. ES-1.3 will be utilized as a secondary priority until CCW is restored.
- D. Alignment for cold leg recirculation will continue without CCW. Auxiliary Component Cooling Water Pumps will be verified running.

Proposed Answer:

- D. Alignment for cold leg recirculation will continue without CCW. Auxiliary Component Cooling Water Pumps will be verified running.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 ES-1.3, step 7 \_\_\_\_\_ Page 5  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-013-3535 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
86	Group #		2
	K/A #	W/E09 EA2.2	
	Importance Rating	3.4	3.8

Ability to determine and interpret adherence to appropriate procedures and operation within the limitations in the facility's license and amendments as they apply to Natural Circulation Operations

Proposed Question: Common #92 SRO-only  
 Given the following plant conditions:

- Loss of Offsite power has occurred.
- A plant cooldown is in progress per ES-0.2, "Natural Circulation Cooldown"
- Adequate RCS subcooling is being maintained
- The Control room operators suspect void formation in the reactor vessel head due to large variations in Pressurizer level
- Cooldown and Depressurization with vessel void formation is NOT desirable

Which of the following is used to collapse the void?

- A. Exit ES-0.2 and transition to ES-0.3, Natural Circulation Cooldown with Steam Void In Vessel, and increase RCS pressure by starting additional charging pumps to collapse the void.
- B. Stay in ES-0.2 and increase Reactor Coolant System (RCS) pressure using Pressurizer Heaters to collapse the void
- C. Exit ES-0.2 and transition to ES-0.3 and increase RCS pressure by starting Safety Injection Pumps to collapse the void.
- D. Stay in ES-0.2 and decrease RCS temperature while maintaining RCS pressure constant to collapse the void

Proposed Answer:

- B. Increase Reactor Coolant System (RCS) pressure using pressurizer heaters.

Explanation (Optional):

- A. ES-0.3 only used if C/D and Depressurization required to be done at rate that will produce a void, Note prior to step 12.
- B. Correct
- C. Cooldown is stopped only if subcooling is lost, step 13
- D. Safety Injection pumps are not used in ES-0.2

Technical Reference(s):

(Attach if not previously provided)

Proposed References to be provided to applicants during examination: NONE

Learning Objective: EOP-C-007-3530 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
90	Group #		1
	K/A #	062 K4.01	
	Importance Rating	2.6	3.2

Knowledge of AC distribution system design features and/or interlocks which provide for Bus lockouts

Proposed Question: **Common #93 SRO-only**

Unit 2 was operating at 100% power when a winding short developed on 21 RCP. The overcurrent conditions caused a loss of 6.9KV Bus section 1.

Determine the required operator action, if any, and the electrical plant configuration, 480V Bus, 60 seconds after the fault on 6.9KV Bus section.

- A. Manually transfer 6.9KV Bus 2 to Bus 5 and energize Bus 2A from Station Service Transformer (SST) 2; 480V Buses 2A, 3A, 5A & 6A energized from SST 2, 3, 5 & 6
- B. Manually energize bus 2A from EDG; 480V Buses 3A, 5A & 6A energized from SST 3, 5 & 6 and 480V Bus 2A energized for EDG.
- C. No operator action required; 480V Buses 3A, 5A & 6A energized from SST 3, 5 & 6 and 480V Buses 2A de-energized.
- D. No operator action required; 480V Buses 2A, 3A, 5A & 6A energized from EDGs 21, 22 & 23.

Proposed Answer:

- B. Manually energize bus 2A from EDG; 480V Buses 3A, 5A & 6A energized from SST 3, 5 & 6 and 480V Bus 2A energized for EDG.

Explanation (Optional):

Loss of Bus Section 1 will cause single loop loss of flow Rx trip. Loss of bus section 1 will cause loss of auto transfer of Bus section 2 due to loss of sync check. Bus sections 5 & 6 will remain powered from Station Aux Trans. And Buses 3 & 4 will auto transfer to Bus section 6. 480V buses 3A, 5A & 6a remain powered from Bus Sections 3, 5 & 6 due to no Blackout signal present. Buses 2A will be de-energized. All 3 EDGs start but do not auto close onto the buses. ES-0.1 directs operator to energize all 480V buses from EDG if not powered from offsite.

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: SYS-C-271-426/427 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 (7)  
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
91	Group #		2
	K/A #	034 A2.01	
	Importance Rating	3.6	4.4

Ability to predict the impacts of a dropped fuel element on the Fuel Handling System and based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations

Proposed Question: Common #94 SRO-only

The following conditions exist:

- There is a core off-load in progress.
- The fuel handler was moving irradiated fuel to a location in the spent fuel pool.
- You are notified that the spent fuel bundle was accidentally dropped in the spent fuel pool.
- The fuel handler reports the fuel bundle fell into the correct pool location.
- R44, Plant Vent radiation monitor reads  $4E-3$   $\mu\text{Ci}/\text{cc}$  and is steady.

What actions, if any, are required?

- A. Enter procedure 2-AOP-FH-1, Fuel Damage or Loss of SFP/Refueling Cavity Level. Evacuate non-essential personnel from the FSB, place FSB ventilation in service and monitor R44.
- B. Enter procedure 2-AOP-FH-1, Fuel Damage or Loss of SFP/Refueling Cavity Level. Suspend ALL fuel handling operations in FSB, Evacuate non-essential personnel from the FSB, secure FSB ventilation and monitor R44.
- C. Enter procedure 2-AOP-FH-1, Fuel Damage or Loss of SFP/Refueling Cavity Level. Suspend ALL fuel handling operations in FSB, Evacuate ALL personnel from the FSB, dispatch an operator to close ALL FSB doors and monitor R44.
- D. Enter procedure 2-AOP-FH-1, Fuel Damage or Loss of SFP/Refueling Cavity Level. Suspend ALL fuel handling operations in FSB, Evacuate ALL personnel from the FSB and dispatch an operator to independently verify proper fuel bundle location and monitor R44.

Proposed Answer:

- C. Enter procedure 2-AOP-FH-1, Fuel Damage or Loss of SFP/Refueling Cavity Level. Suspend ALL fuel handling operations in FSB, Evacuate ALL personnel from the FSB, dispatch an operator to close ALL FSB doors and monitor R44.

Explanation (Optional):

All personnel must be evacuated, ventilation is not secured and independent verification of location not required

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
2-AOP-FH-1 Pages 7, 9, 11  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: AOP032FH1-17304 (As available)

Question Source: Bank # INPO 24712  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook 1 5/30/2003

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

10 CFR Part 55 Content: 55.41 (5)  
55.43 (5, 7)

Comments:  
Minor modifications to make plant specific

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
101	Group #		2
	K/A #	000076 G2.1.28	
	Importance Rating	3.2	3.3

Knowledge of the purpose and function of major system components and controls

Proposed Question: Common #95 SRO-only

Given the following:

- Unit 2 is at 100% power.
- 2-AOP-HIACT-1, "High RCS Activity," has been implemented due to an increase in RCS activity.

WHICH ONE of the following is the required action and reason for the adjustment?

- A. Increase letdown flow to maximum so that more water can flow through the cation bed ion exchangers.
- B. Increase letdown flow to maximum so that more RCS water can be diverted and processed by the waste management system.
- C. Increase letdown flow to maximum so that more water can flow through the mixed bed ion exchangers.
- D. Increase letdown flow so that a maximum amount of water can flow into the VCT to increase sparging of the radioactive gases from the top of the VCT.

Proposed Answer:

- C. Increase letdown flow to maximum so that more water can flow through the letdown ion exchangers.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
2-HIACT-1 Page 9  
2-HIACT-1 Background Page 2

Proposed References to be provided to applicants during examination: NONE

Learning Objective: AOP031HIA1-28981/28982 (As available)

Question Source: Bank #

Modified Bank # \_\_\_\_\_

(Note changes or attach parent)

New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41 (7)

55.43 (5)

Comments:

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

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications

Proposed Question: Common #96 SRO-only

Given the following plant conditions:

- Unit 2 is at 80% power.
- Bank D step counter indicates 200 steps.
- AFD verified outside target band for 45 minutes in last 24 hours
- CBD Rod H-8 position is verified at 185 steps
- 21 SG Activity verified at 0.1  $\mu\text{Ci}/\text{gm}$  I-131 equivalent
- 21 SG Tube leakage verified at 0.2 gpm

Based on the above conditions, which one of the following statements is correct?

- A. AFD outside target band excess amount of time; reduce power to <50%
- B. Rod H-8 out of position; realign rod H-8
- C. SG activity in excess of allowable limits; commence plant shutdown and cooldown to <500°F
- D. SG tube leakage in excess of allowable limits; commence plant shutdown

Proposed Answer:

- D. 21 SG Tube leakage verified at 0.2 gpm

Explanation (Optional):

- A. TS 3.2.3  $\leq 1$  hour is limit
- B. TS 3.1.4  $\leq 24$  steps is limit
- C. TS 3.7.14  $\leq 0.15$   $\mu\text{Ci}/\text{gm}$  I-131 equivalent is limit
- D. TS 3.4.13 150 gpd is limit (0.2 gpm = 288 gpd)

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)

2-AOP-HIACT-1

TS 3.1.4

TS 3.2.3

TS 3.4.13

TS 3.7.14

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New YES

Question History:

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 (2, 3)

Comments:  
New Question

Examination Outline Cross-reference:	Level	RO	SRO
112	Tier #		3
	Group #		1
	K/A #	G2.1.6	
	Importance Rating	2.1	4.3

Ability to supervise and assume a management role during plant transient and upset conditions  
 Proposed Question: Common #97 SRO Only

As the Shift Manager, you have been informed by the National Weather Service, that a Hurricane Warning for the Mid Atlantic Coast of the United States has just been issued.

In accordance with OAP-008, Severe Weather Preparations, which of the following are you required to perform ?

- A. Declare a Notification of Unusual Event (NUE), commence a plant shutdown, notify NRC of forced plant shutdown
- B. Call in Staffing Level II personnel, coordinate with Consolidated Edison to remove the unit from the system
- C. Notify the Unit 2 OM, designate a Storm Coordinator, review the Emergency Plan to determine if emergency classification exists for conditions.
- D. Monitor storm progress and take no actions until the National Weather Service issues a Hurricane Warning for the Peekskill area.

Proposed Answer:

- C. Notify the Unit 2 OM, designate a Storm Coordinator, review the Emergency Plan to determine if emergency classification exists for conditions.

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 OAP-008 Page 4, 9  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

YES

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41

55.43 (6)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
105	Tier #		3
	Group #		3
	K/A #	G2.3.4	
	Importance Rating	2.5	3.1

Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized

Proposed Question: Common #98 SRO-only

Given the following conditions on Unit 2:

- A LOCA outside containment occurred
- A Site Area Emergency was declared
- The broken line was manually isolated locally, but the operator performing the task was injured and cannot leave the area on his own
- Initial dose estimates are 110 R/hr gamma
- The rescue time for a 2-man team is estimated to be 5 minutes with a maximum of 10 minutes

In accordance with IP-EP-630, On Site Medical Emergency, the injured person:

- A. is to be moved immediately, by risk-informed volunteers, unless moving the individual is life threatening.
- B. is NOT to be moved immediately, because moving the individual could cause serious medical complications.
- C. is to be moved, by risk-informed volunteers, as soon as Emergency Medical Technician / First Aid Responder authorizes.
- D. is NOT to be moved until after dose levels are reduced, by any means, to less than 10 R/hr gamma.

Proposed Answer:

- A. should be moved immediately, by risk-informed volunteers, unless moving the individual is life threatening.

Explanation (Optional):

Technical Reference(s): IP-EP-630 (Attach if not previously provided)  
Page 6

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source:	Bank #	<u>INPO</u>	<u>26167</u>
	Modified Bank #	<u>YES</u>	(Note changes or attach parent)
	New	_____	

Question History:

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	_____
	55.43	<u>(4)</u>

Comments:

Modified Question

Examination Outline Cross-reference:	Level	RO	SRO
106	Tier #		3
	Group #		4
	K/A #	G2.4.27	
	Importance Rating	3.0	3.5

Knowledge of fire in the plant procedures

Proposed Question: Common #99 SRO-only

There is a fire in the plant that cannot be brought under control in a reasonable amount of time.

In accordance with SMM-DC-901, IPEC Fire Protection Program Plan, the Fire Brigade Leader is to:

- A. request additional fire fighting qualified plant personnel to assist in fighting the fire.
- B. call the Verplanck Fire Department directly for assistance.
- C. call the Buchanan Fire Department directly for assistance.
- D. request the CRS notify the Verplanck Fire Department for assistance.

Proposed Answer:

- D. request the CRS notify the Verplanck Fire Department for assistance.

Explanation (Optional):

Technical Reference(s): SMM-DC-901 (Attach if not previously provided)  
Page 37

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # INPO 26168  
 Modified Bank # YES (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Prairie Island 1 9/01/2003

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

10 CFR Part 55 Content: 55.41 (10)  
55.43 (5)

Comments:

Question, Answer and Distracters modified

Examination Outline Cross-reference:	Level	RO	SRO
104	Tier #		3
	Group #		2
	K/A #	G2.2.26	
	Importance Rating	2.5	3.7

Knowledge of refueling administrative requirements

Proposed Question: **Common #100 SRO-only**

The RCS is being drained to 63 feet for vacuum refill following refueling. The current RCS level is 66 feet. The operable level indicators are the CCR Foxboro and the Mansell Level Monitoring System. During the draindown the hard drive on the Mansell fails resulting in a loss of indication from this instrument.

What actions, if any, are required?

- A. No actions required, continue with the draindown using the CCR Foxboro.
- B. Stop the draindown; ensure the CCR Foxboro is still tracking accurately, then continue with the draindown.
- C. Stop the draindown and evaluate conditions. Shift Manager approval required and is sufficient before resuming.
- D. Stop the draindown and evaluate conditions. Operations Manager approval required and is sufficient before resuming.

Proposed Answer:

- D. Stop the draindown and evaluate conditions. Operations Manger approval required before proceeding

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
SOP-4.2.2 Pages 2 & 3  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # IP2 SYS171-3  
 Modified Bank # YES (Note changes or attach parent)

New

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Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis

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X

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10 CFR Part 55 Content: 55.41

55.43 (5)

Comments: