Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	003 K6.14	
	Importance Rating	2.6	

Knowledge of the effect of a loss or malfunction on the following will have on the RCPS: Starting requirements.

Proposed Question: RO Question # 1

Which one of the following explains why closing of MOV-759A or MOV-759B, CCW from RCPs, would lead to high RCP vibration alarms?

A. Loss of RCP seal cooling causes the seals to rub

B. Loss of cooling to thermal barrier cause metal expansion and rubbing

C. Loss of cooling to pump bearings

D. Loss of cooling to motor bearings

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because seals rubbing would cause vibration. Incorrect because closing MOV-759A/B will not cause a loss of seal cooling.

B. Incorrect. Plausible because if the thermal barrier is required to function and loses cooling, the RCP seals will overheat and cause vibration. Incorrect because loss of cooling to the thermal barrier has no impact unless it is accompanied by a loss of seal injection, which is not indicated in this case.

C. Incorrect. Plausible because a problem with the pump bearing could result in vibrations. Incorrect because pump bearing cooling is not provided by CCW.

D. Correct. Closing MOV-759A/B isolates CCW cooling to the motor bearings. With no cooling these bearings will overheat and cause vibration.

Technical Reference(s): AP-CCW.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: ATT 3, S-2.1

Learning Objective: R1302S 1.03 (As available)

Question Source: Bank # C008.0062
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 4
55.43

Secondary coolant and auxiliary systems that affect the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	007 EK1.02	
	Importance Rating	3.4	

Knowledge of the operational implications of the following concepts as they apply to the reactor trip: Shutdown Margin.

Proposed Question: RO Question # 2

O-3.2, Shutdown Margin for an Operating Reactor, states that Tavg must be at program Tavg.

If O-3.2 is performed at 100% power with Tavg = 577°F (and control rods in Manual), the amount by which the reactor would be shut down on a subsequent reactor trip would be:

__(1)__ than the calculated Shutdown Margin because the power defect would add more __(2)__ reactivity on the reactor trip.

A. (1) Higher; (2) positive

B. (1) Higher; (2) negative

C. (1) Lower; (2) positive

D. (1) Lower; (2) negative

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the second part is true and the examinee mistake the more positive reactivity as greater SDM. Incorrect because more positive reactivity means less SDM.

B. Incorrect. Plausible because the examinee could mistakenly take the negative sign from the power defect curve and forget to multiple it by the negative power change, resulting in adding negative reactivity instead of positive reactivity. This would result in greater SDM.

C. Correct. Higher Tavg would result in more positive reactivity inserted upon reactor trip and less SDM.

D. Incorrect. Plausible because the examinee could mistakenly take the negative sign from the power defect curve and forget to multiple it by the negative power change, resulting in adding negative reactivity instead of positive reactivity

Technical Reference(s): O-3.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RRT05C 5.05
RRT08C 2.05

Question Source: Bank # B194.0005
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 1
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments: Ginna B Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	004 K1.07	
	Importance Rating	2.6	

Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: NIS.

Proposed Question: RO Question # 3

The following conditions exist:

- MODE 3 at Normal Operating Temperature and Pressure, preparing for a normal Reactor Startup
- The RCS Boron level has been established at the value which the ECP was calculated.
- Letdown Temperature Control valve controller, TCV-130 is in MANUAL
- All other controls are in AUTOMATIC and functioning NORMALLY.

If the operator RAISES letdown flow from 40 gpm to 60 gpm with NO other manipulations, over time, Source Range counts will:

A. RISE due to cooler water exiting the Non-Regen letdown heat exchanger

B. RISE due to warmer water exiting the Non-Regen letdown heat exchanger

C. LOWER due to cooler water exiting the Non-Regen letdown heat exchanger

D. LOWER due to warmer water exiting the Non-Regen letdown heat exchanger

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible if the candidate incorrectly assumes cooler water in the letdown system will add positive reactivity similar to cooler water in the RCS.

B. Incorrect. Plausible if candidate incorrectly assumes the lower density of the warmer letdown water will cause the SRNIS to indicate higher.

C. Incorrect. Plausible if candidate incorrectly assumes the higher density of the cooler letdown water will cause the SRNIS to indicate lower.

D. Correct. Higher letdown flow with no increase in CCW cooling water flow will cause a letdown temperature rise. With higher temperature, the Letdown DI will release boron and add negative reactivity, which will cause SRNI counts to lower.

Technical Reference(s): P-3
R1601C

Proposed References to be provided to applicants during examination: None

Learning Objective: R1601C 2.05

Question Source: Bank # B010.0030
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 5
55.43

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for these operating characteristics.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G1 2.1.17	
	Importance Rating	3.9	

Conduct of Operations - Ability to make accurate, clear, and concise verbal reports.

Proposed Question: RO Question # 4

During the performance of E-0, Reactor Trip or Safety Injection, ATT-27.0, Automatic Action Verification, is concurrently performed. At the completion of this attachment, the operator is required to inform the team of its completion and any required manual manipulations performed.

For this communication, (1) by what method will this information be delivered to the team and (2) what procedure directs this?

A. (1) Status Update; (2) A-503.1, Emergency and Abnormal Operating Procedures

B. (1) Transient Brief; (2) CNG-OP-1.01-2001, Communications and Briefings

C. (1) Transition Brief; (2) A-503.1, Emergency and Abnormal Operating Procedures

D. (1) Shift Brief; (2) CNG-OP-1.01-2001, Communications and Briefings

Proposed Answer: A

Explanation (Optional):

A. Correct. Section R.3 of A-503.1 details both the required content and method of communication.

B. Incorrect. Part (1) is plausible because the reference identifies that "the CRS needs to balance the decision for an UPDATE vs the more interactive and detailed TRANSIENT brief" and (2) this is the correct procedure for the Transient brief.

C. Incorrect. Part (1) is plausible because the completion of ATT-27.0 might be considered a form of transition back to the main body of the E-0 procedure and therefore an appropriate type of brief, and (2) is the correct procedure for transition brief.

D. Incorrect. Part (1) is plausible if the candidate considers updating the rest of the crew on changes in equipment status as being a form of "shift brief", whereas the shift brief is only given at the beginning of the shift and lasts from 15-30 minutes; (2) is the correct procedure for the shift brief.

Technical Reference(s): A-503.1, Section R.3, p48 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RSE00S, 8.01

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	005 K4.03	
	Importance Rating	2.9	

Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following: RHR heat exchanger bypass flow control.

Proposed Question: RO Question # 5

Given the following valves associated with the RHR Heat Exchangers:

- RHR HX OUTLET 1B, HCV-624
- RHR HX OUTLET 1A, HCV-625
- RHR HX BYPASS, HCV-626

Assuming all 3 valves are initially 25% open, which one of the following describes how RCS temperature is controlled while the RHR system is being used in its normal cooldown lineup?

A. Closing only HCV-626 by 5% will raise RCS temperature

B. Closing either HCV-624 or HCV-625 by 5% AND opening HCV-626 an equal amount will lower RCS temperature

C. Closing HCV-624, HCV-625, AND HCV-626 by 5% will lower RCS temperature

D. Closing either HCV-624 or HCV-625 by 5% AND opening HCV-626 an equal amount will raise RCS temperature

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Closing the RHR HX bypass flowpath will send more flow through the RHR HXs, which will lower temperature.

B. Incorrect. Closing RHR HX outlet valves will raise temperature; opening HCV-626 bypass flow will also raise temperature.

C. Incorrect. Closing the RHR HX outlet valves a total of 10% will raise temperature; closing bypass flow by 5% will lower temperature, but the overall net effect is an increase in temperature.

D. Correct. Closing HX outlet valve will raise temperature; opening HX bypass flowpath will also raise temperature – net effect is both actions raising temperature.

Technical Reference(s): P&ID: 33013-1247, Rev 44, O-2.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R2501C 4.06

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 8
55.43

Components, capacity, and functions of emergency systems.

Comments: Ginna C Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	001 A2.14	
	Importance Rating	3.7	

Ability to (a) predict the impacts of the following malfunction or operations on the CRDS- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Urgent failure alarm, including rod-out-of-sequence and motion-inhibit alarms.

Proposed Question: RO Question # 6

Given the following conditions:

- During a plant load increase, with reactor power at 48%
- Control Bank C group 1 rod G-7 dropped
- Rod recovery is underway per ER-RCC.1, Retrieval of a Dropped RCC
- C-30, ROD CONTROL URGENT FAILURE ROD STOP, is received

Which one of the following explains (1) why the alarm actuated and (2) what action is required?

A. (1) All bank C group 2 rods lift coils are deenergized;
(2) Continue with ER-RCC.1

B. (1) All other bank C group 1 rods lift coils are deenergized;
(2) Maintain RCS temperature using boration/dilution per AR-C-30

C. (1) Group C rod moving with group D rods withdrawn;
(2) Direct an AO to locally determine the affected Rod Control cabinet per AR-C-30

D. (1) The step counter of the pulse to analog (P/A) converter was not reset to 0;
(2) Maintain RCS temperature using turbine load adjustments per ER-RCC.1

Proposed Answer: A

Explanation (Optional):

A. Correct. The Regulation Failure circuit senses no current in the Group 2 rods associated with Control Bank C. Part 2 is correct because this is an expected alarm.

B. Incorrect. Plausible because it involves lift coils being deenergized. Incorrect because the wrong group is involved and implementation of the steps within AR-C-30 is not required.

C. Incorrect. Plausible because this involves something that is outside the normal sequence of rod motion. Incorrect because this is an expected alarm and there is no need to determine the cause per AR-C-30.

D. Incorrect. Plausible because the pulse to analog (P/A) converter must be reset to 0 per the procedure, but this is not the cause of the expected alarm. Part 2 is utilized in ER-RCC.1, but not in response to this alarm.

Technical Reference(s): ER-RCC.1
R3001C

Proposed References to be provided to applicants during examination: None

Learning Objective: R3001C 2.18

Question Source: Bank # B001.0044
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments: Ginna B Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	006 A2.04	
	Importance Rating	3.4	

Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Improper discharge pressure.

Proposed Question: RO Question # 7

Consider the following:

- The plant has experienced a LOCA
- Reactor Trip and Safety Injection have been initiated
- Auxiliary Building radiation levels are rising
- L-10, Aux Bldg Sump Auto Start annunciator has been received
- SI indications:
  - FI-925, SI pump 'B' line flow to RCS Loop 'A' – 700 gpm
  - FI-924, SI pump 'A' line flow to RCS Loop 'B' - 0 gpm
  - PI-923, SI pump 'B' line pressure to RCS Loop 'A' – 1000 psig
  - PI-922, SI pump 'A' line pressure to RCS Loop 'B' – 700 psig

Based upon these conditions and indications: (1) Identify the leak location and (2) What procedure will be used to mitigate this event?

A. (1) SI pump 'A' line to RCS loop 'B';
(2) ECA-1.2, LOCA Outside Containment

B. (1) SI pump 'B' line to RCS loop 'A';
(2) ECA-1.2, LOCA Outside Containment

C. (1) SI pump 'A' line to RCS loop 'B';
(2) E-1, Loss of Reactor or Secondary Coolant

D. (1) SI pump 'B' line to RCS loop 'A';
(2) E-1, Loss of Reactor or Secondary Coolant

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because the second part is correct, and one might associate the higher flow and lower pressure with a leak downstream of the flow detector. Incorrect because downstream of the flow detector is inside CNMT.

C. Incorrect. Plausible because the first part is correct, and E-1 is the procedure to respond to a LOCA. Incorrect because ECA-1.2 is the correct procedure for the event.

D. Incorrect. Plausible because one might associate the higher flow and lower pressure with a leak downstream of the flow detector. Incorrect because downstream of the flow detector is inside CNMT.

Technical Reference(s): E-0, Steps 17 and 26 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RIE12C

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

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

Knowledge of the interrelations between the small break LOCA and the following: S/Gs.

Proposed Question: RO Question # 8

FR-H.1, Response to Loss of Secondary Heat Sink, Step 1 reads:

"Check If Secondary Heat Sink Is Required" – RCS pressure GREATER THAN ANY NON-FAULTED S/G PRESSURE"

If RCS pressure is less than the pressure in a non-faulted SG, the operator is returned to the procedure and step in effect or to ES-1.3, Transfer to Cold Leg Recirculation, if RWST level is < 28%.

Which one of the following explains the basis for this step?

A. Core decay heat can be removed by the intact SG

B. Core decay heat can be removed by the faulted SG

C. SGs are not required for decay heat removal because the RHR system will be in its cool-down alignment and serve as an alternate heat sink

D. For larger RCS breaks, the SGs no longer function as a heat sink and core decay heat is removed by the RCS break flow

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the examinee may misunderstand the relationship between RCS pressure and the non-faulted SG pressure, and believe that RCS pressure being less requires a secondary heat sink. Incorrect because the opposite is true.

B. Incorrect. Plausible because the fact that the SG is faulted implies that it is removing heat. Incorrect in this case we are determining if a secondary heat sink is required.

C. Incorrect. Plausible because if the LOCA is large enough to remove decay heat by

RCS break flow, we may be approaching the RHR shutoff head. Incorrect because at this point in the procedure RHR will normally not be in its coold-down alignment to serve as a heat sink.

D. Correct – this is the reason this is the first step in FR-H.1 (multiple types of accidents could accompany this FR-H entry).

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

Proposed References to be provided to applicants during examination: None

Learning Objective: RFRH1C 2.01

Question Source: Bank # C000.0831
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	011 K6.05	
	Importance Rating	3.1	

Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Function of PZR level gauges as post-accident monitors.

Proposed Question: RO Question # 9

Given the following plant conditions:

- The plant has experienced a LOCA
- Containment pressure is 35 psig and stable

Regarding PRZR level indication (LI-426, LI-427, LI-428):

(1) What effect will these plant conditions have on PRZR level indication;

(2) What is the basis in the EOPs for consulting with the TSC concerning the adequacy of PRZR level indication and heater operation following accidents which involved a significant and rapid reduction in RCS pressure? (Disregard CNMT temperature/pressure effects on the D/P cell.)

A. (1) Indicated level will be HIGHER than actual level
(2) These types of accidents will result in bubble formation in the reactor vessel and core uncover

B. (1) Indicated level will be LOWER than actual level
(2) These types of accidents will result in the inability to terminate SI when criteria are satisfied

C. (1) Indicated level will be HIGHER than actual level
(2) These types of accidents result in large level-measurement errors due to hydrogen coming out of solution in the PRZR reference legs

D. (1) Indicated level will be LOWER than actual level
(2) These types of accidents will result in the inability to regain normal PRZR pressure control

Proposed Answer: C

Explanation (Optional):

A. Incorrect. (1) Normal CNMT temps 110-120°F, whereas post-accident temps can reach as high as 350°F. This heats up PZR level reference leg (HP side of D/P) and decreases the weight of the reference leg. This reduces the D/P with the variable leg,

with the same effect as if the variable leg weight had increased (i.e., actual level rose). Indicated level is > actual level. Part (2) is plausible because while bubble formation is a possibility in some depressurization accidents, formation of a bubble in the vessel is not a given.

B. Incorrect. Plausible if the candidate doesn't know which high or low pressure side the reference legs are connected to. (2) is plausible if the candidate assumes that this lower level will prevent achieving the minimum PRZR level setpoint associate with SI termination.

C. Correct. (1) for the reason given in 'A', and (2) because this H2 coming out of solution positive level measurement error was not considered when the EOP level setpoint values were established. This creates a situation where the heaters can be energized when actually uncovered, which could overheat the PRZR and lead to creep-rupture failure of the PRZR heater pressure boundary.

D. Incorrect. Plausible if the candidate doesn't know which high or low pressure side the reference legs are connected to.

Technical Reference(s): EOP-Directed-TSC-Actions document (Attach if not previously provided)

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

Learning Objective: RMC07C, 1.01

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7, 10
55.43

- Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
- Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

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

Knowledge of the interrelations between the Dropped Control Rod and the following: Control rod drive power supplies and logic circuits.

Proposed Question: RO Question # 10

While operating at 100% power, a control bank 'C' group 1 rod dropped. The crew has entered ER-RCC.1, Retrieval of a Dropped RCC, and is ready to withdraw the dropped rod.

Which of the following describes why the affected group step counter needed to be reset to zero?

A. This ensures that the P/A converter will send the proper rod height data to the RIL circuitry.

B. This ensures that the rod is withdrawn to the proper height with a proper group step counter indication.

C. This prevents a ROD CONTROL URGENT FAILURE annunciator from alarming during the rod recovery.

D. This prevents a BANK D FULL ROD WITHDRAWAL annunciator from alarming during the rod recovery.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the same signal that is sent to the step counters is also sent to the P/A converter (which, in turn, feeds the RIL computer). Incorrect because resetting the group step counter has nothing to do with the RIL circuitry.

B. Correct.

C. Incorrect. Plausible because ROD CONTROL URGENT FAILURE is a concern during the dropped rod recovery. Incorrect because this has nothing to do with the ROD CONTROL URGENT FAILURE.

D. Incorrect. Plausible because it is correct, but is not the basis for resetting to zero. Incorrect because the step counter is reset to zero to ensures that the rod is withdrawn to the proper height with a proper group step counter indication.

Technical Reference(s): ER-RCC.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3001C, 6.04

Question Source: Bank # C001.0140
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 6
55.43

Design, components, and functions of reactivity control mechanisms and instrumentation.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	007	2.1.23
	Importance Rating	4.2	

Ability to perform specific system and integrated plant procedures during all modes of plant operation. (Regarding the PRT)

Proposed Question: RO Question # 11

Consider the following:

- Plant is in Mode 5
- S-2.3.B, Burping PRT (To Be Opened to Atmosphere) is in progress
- AO in the field has adjusted the N2 supply regulator to the PRT, PCV-441
- The team notes during the PRT draining that pressure is not maintaining and has the field operator re-adjust the regulator
- After re-adjustment of PCV-441 has been performed, the Control Operator notes that he must vent the PRT, and reports that he is unable to do so.
- PRT pressure is 14 psig and slowly rising.

What interlock has caused the Control Operator to be unable to vent the PRT?

A. AOV-527, PRT vent valve, will not open due to PRT pressure rising > 3 psig

B. AOV-527, PRT vent valve, will not open due to PRT pressure rising > 5 psig

C. AOV-527, PRT vent valve, will not open due to PRT pressure > 10 psig

D. AOV-527, PRT vent valve, will not open due to PRT pressure > 12 psig

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the candidate may recall the precaution from P-2 which maintains a Nitrogen blanket on the PRT up to 3 psig

B. Incorrect. Plausible because 5 psig is the input value for the PRT HI Press alarm

C. Correct. This is the high pressure value which prevents opening the vent valve if pressure is >10 psig

D. Incorrect. Plausible because it is only slightly higher than the actual interlock value itself.

Technical Reference(s): S-2.3.B, P-2, RCS Precautions & Limitations

Proposed References to be provided to applicants during examination: None

Learning Objective: R1401C, 1.03, 1.04, 1.09 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7, 10
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	011 EK3.13	
	Importance Rating	3.8	

Knowledge of the reasons for the following responses as they apply to the Large Break LOCA: Hot-leg injection/recirculation.

Proposed Question: RO Question # 12

Following a large break LOCA, ES-1.3, Transfer to Cold Leg Recirculation, has been in progress for 5 hours.

Which one of the following states why simultaneous reactor vessel deluge and cold leg injection recirculation are initiated?

A. To increase natural circulation flow through the core.

B. To remove non-condensable gases that have accumulated in the vessel head region.

C. To flush concentrated boric acid from the upper reactor core.

D. To depressurize the RCS below the shutoff head for the SI pumps.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the examinee may be confused about the flow path through the core at this time. Incorrect because the RHR pumps are provided forced flow through the core at this time. Natural circulation flow through the core is not in progress.

B. Incorrect. Plausible because non-condensable gases may accumulate in the vessel head region during this time period. Incorrect because the head region is not a concern at this time.

C. Correct. For the LBLOCA the boric acid solution will approach the solubility limit after 5 hours 49 minutes.

D. Incorrect. Plausible because ES-1.3 provides guidance for establishing high head recirculation, and if high head recirc was in progress, then it is desirable to reduce pressure below RHR pump shutoff head. Incorrect because this has nothing to do with

establishing simultaneous reactor vessel deluge and cold leg injection.

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

Proposed References to be provided to applicants during examination: None

Learning Objective: RES13C, 2.01

Question Source: Bank # C000.1104
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	007 A1.03	
	Importance Rating	2.6	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: Monitoring quench tank temperature.

Proposed Question: RO Question # 13

At 1100 the PRT level began to rise. Given the following information:

Time	1100	1130
Tavg	573 degrees	573 degrees
PRZR Level	56%	56%
PRT Level	70%	72%
PRT Temp.	100 degrees	108 degrees
PRT Pressure	0.7 psig	2.5 psig
VCT Level	35%	27%
VCT Temp.	100 degrees	100 degrees

Charging pump speed stable for the last 8 hours.

Which one of the following sources is the cause of the PRT parameter changes?

A. Relief Valve for Loop B Letdown (RV-203)

B. VCT Relief (RV-257)

C. PRT Makeup Valve (AOV-548)

D. SI Test Line Relief (RV-887)

Proposed Answer: A

Explanation (Optional):

A. Correct. RV-203 is upstream of the Non-Regen HX. A significant temperature change in the PRT temperature with level nearly 75% full would require higher energy inflow.

B. Incorrect. Plausible because RV-257 is in the same system as the correct answer (CVCS - letdown system). Incorrect because the temperature of the VCT water would not be high enough to account for the change in VCT temperature.

C. Incorrect. Plausible because AOV-548 provides flow to the PRT. Incorrect because this flow would be low temperature water.

D. Incorrect. Plausible because RV-887 provides flow to the PRT. Incorrect because this flow would be low temperature water.

Technical Reference(s): 33013-1258
33013-1264 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R1401C 5.01

Question Source: Bank # C002.0116
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G1 2.1.20	
	Importance Rating	4.6	

Conduct of Operations - Ability to interpret and execute procedure steps.

Proposed Question: RO Question # 14

When transients occur during modes other than "hot" or "at power":

A. The ERG network was developed to accommodate all design transients based on their symptoms. All EOP instructions are applicable.

B. The safeguards equipment is assumed to be available. All EOP instructions are applicable.

C. The same complement of equipment available at power cannot be assumed to be available. Some EOP instructions may not be applicable.

D. The availability of equipment cannot be assured. All EOP instructions are NOT applicable.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because often verbatim procedural compliance is emphasized. With this emphasis one may believe this response is correct. Incorrect because the same complement of equipment available at power cannot be assumed to be available. Some EOP instructions may not be applicable.

B. Incorrect. Plausible because one might believe that only the safeguards equipment needs to be available. Incorrect because the same complement of equipment available at power cannot be assumed to be available. Some EOP instructions may not be applicable.

C. Correct.

D. Incorrect. Plausible because the first part is correct. Incorrect because only some EOP instructions may not be applicable.

Technical Reference(s): A-503.1
WOG-ERG USERS GUIDE

Proposed References to be provided to applicants during examination: None

Learning Objective: REP50C 1.25 (As available)

Question Source: Bank # C000.1295
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 A1.03	
	Importance Rating	2.7	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including: CCW pressure.

Proposed Question: RO Question # 15

The plant is in preparation for placing RHR in service for RCS cooling. The following conditions exist:

- RCS temperature is 380°F
- RCS pressure is 420 psig
- RCP 'A' is running
- CCW pump 'A" is running with both CCW heat exchangers in service

Subsequently, the following alarms and indications are received/noted:

- A-31, CCW SYSTEM LOW FLOW 1800 GPM
- A-22, CCW PUMP DISCHARGE LOW PRESS 60 PSI
- A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F
- A-7, RCP A CCW RETURN HI TEMP OR LOW FLOW 165GPM 125°F
- A-17, MOTOR OFF RCP CCWP
- T2092 RCPA MOTOR UPPER THRUST BRG(200) reads 196°F
- T2093 RCPA MOTOR LOWER THRUST BRG(200) reads 199°F
- T2161 RCPA MOTOR UPPER RADIAL BRG(200) reads 197°F
- T2162 RCPA MOTOR LOWER RADIAL BRG(200) reads 203°F
- CCW Pump A breaker red light is lit
- CCW Pump B breaker green and white lights are lit

Which one of the following describes the required actions for this situation?

A. Attempt to reset and start CCW pump B, and continue to monitor RCP A motor temperatures and motor status

B. Attempt to reset and start CCW pump A and verify adequate cooling to the RHR pumps

C. Stop RCP A after 2 minutes and verify SDM requirements met and natural circulation established

D. Stop RCP A and verify SDM requirements met and natural circulation established

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the resetting and starting B CCW pump is correct per step 1 RNO. Incorrect because A RCP must be stopped per the caution prior to step 1.

B. Incorrect. Plausible because based on the alarms one might assume that A CCW pump had tripped, and therefore try to reset and restart it per step 1 RNO. Incorrect because the response does not address stopping A RCP.

C. Incorrect. Per AP-CCW.3 CAUTION: "IF CCW FLOW TO A RCP IS INTERRUPTED FOR GREATER THAN 2 MINUTES OR IF EITHER MOTOR BEARING TEMPERATURE EXCEEDS 200°F, THEN TRIP THE AFFECTED RCP"

Step 4a RNO: (1) Verify SDM requirements are met (Refer to O-3.1) and (2) IF no RCP's running, then verify natural circulation (Refer to ATT-13.0, Natural Circulation) and continue with Step 5.

The conditions given in the stem indicate a sheared shaft on the A CCW pump and a trip of the standby B pump when it auto started on low pressure. Since RCP bearing temperature is above 200°F, the RCP trip is required. This leaves no RCP's running, and NC needs to be verified.

D. Correct.

Technical Reference(s): AP-CCW.3 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP03C 2.01 (As available)

Question Source: Bank # B008.0016
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10

55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	015/17 AA1.08	
	Importance Rating	3.0*	

Ability to operate and/or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): S/G LCS.

Proposed Question: RO Question # 16

For a trip of "A" Reactor Coolant Pump below P-8, which of the following correctly describes the effect on the "A" SG level IMMEDIATELY after the RCP trip?

'A' S/G level will:

A. lower due to the decreased amount of steam in the riser allowing more water to flow into the riser from the downcomer.

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

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

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

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because one may mistakenly think that steam pressure initially lowers. With pressure compensation this would affect steam flow. Incorrect because steam pressure will not lower.

C. Incorrect. Plausible because turbine impulse pressure does feed the SG level program, and the program level used to vary. Incorrect because the current program level is fixed at 52%.

D. Incorrect. Plausible if one is confused about the SG level response to reduced steam flow. Incorrect because the SG will experience shrink.

Technical Reference(s): R4401C (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R4401C, 1.03

Question Source: Bank # C331.0217
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 14
55.43

Principles of heat transfer thermodynamics and fluid mechanics.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 K2.02	
	Importance Rating	2.5	

Knowledge of bus power supplies to the following: Controller for PZR spray valve.

Proposed Question: RO Question # 17

Which one of the following would result in a loss of manual operation of the pressurizer spray valve controllers?

A. "A" auto-static transfer switch swapped to the alternate supply and a subsequent loss of MCC-C.

B. "A" auto-static transfer switch swapped to the alternate supply and a subsequent loss of MCC-D.

C. "B" auto-static transfer switch swapped to the alternate supply and a subsequent loss of MCC-C.

D. "B" auto-static transfer switch swapped to the alternate supply and a subsequent loss of MCC-D.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because one might think manual operation of the MCB Controllers is powered from Inst Bus A. Incorrect because the MCB Controllers is powered from Inst Bus C.

B. Incorrect. Plausible because the examinee may confuse which MCC is the backup for the "A" inverter. Incorrect because manual operation of the MCB Controllers is powered from Inst Bus C.

C. Incorrect. Plausible because the examinee may confuse which MCC is the backup for the "B" inverter. Incorrect because MCC D is the backup for the "B" inverter.

D. Correct. Manual operation of the MCB Controllers is powered from Inst Bus C. Instr Bus C would be de-energized if "B" auto-static transfer switch swapped to the alternate supply and a subsequent loss of MCC-D.

Technical Reference(s): P-10, P-12 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RIC12C 1.04 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	022 AA1.06	
	Importance Rating	2.9	

Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Makeup: CVCS charging pump ammeters and running indicators.

Proposed Question: RO Question # 18

Consider the following conditions:

- A LOCA has occurred
- CNMT pressure is 36 psig
- All Containment Recirc Fans are running at design maximum current load
- The crew is at Step 10 of E-1, preparing to start the 'A' charging pump
- Offsite power is available

Based on these conditions, why did a recent change to the EOPs now have the operator evaluate the starting current associated with the start of one or more charging pumps?

A. The maximum bus continuous load rating can be exceeded by loading additional non-safeguards loads. Charging pumps cannot be started while CNMT pressure is greater than 28 psig.

B. The maximum bus continuous load rating can be exceeded by loading additional non-safeguards loads, which could result in a loss of the bus and its associated safeguards loads

C. The maximum bus transient load rating can be exceeded by the starting current associated with additional non-safeguards loads, which could result in a loss of the bus and its associated safeguards loads

D. The maximum bus transient load rating can be exceeded by the starting current associated with additional non-safeguards loads. Charging pumps cannot be started while CNMT pressure is greater than 28 psig.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Part 1 is true, but in fact the charging pumps CAN be started based upon an evaluation of whether CRF can be secured.

B. Correct.

C. Incorrect. The overcurrent concern is based upon the bus and D/G continuous ratings, not transient starting current values.

D. Incorrect. Same reason as 'C'.

Technical Reference(s): E-1; E-1 Background (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REP01C, 1.03

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	014 K1.01	
	Importance Rating	3.2*	

Knowledge of the physical connections and/or cause effect relationships between the RPIS and the following systems: CRDS.

Proposed Question: RO Question # 19

The plant was at full power when a reactor trip occurred.

Which one of the following indications and alarms will be present immediately after reactor trip?

Group step counters at __(1)__ and C-14, ROD BOTTOM, and C-30, ROD CONTROL URGENT FAILURE ROD STOP, annunciators are __(2)__ .

A. (1) Zero
(2) Energized

B. (1) Zero
(2) De-energized

C. (1) The position that existed immediately prior to the reactor trip
(2) Energized

D. (1) The position that existed immediately prior to the reactor trip
(2) De-energized

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because all rods are on bottom following reactor trip, and the second part is correct. Incorrect because step counters will remain at their position prior to trip.

B. Incorrect. Plausible because all rods are on bottom following reactor trip, and normally the operators are busy performing immediate actions after a reactor trip so that they may be unaware of the status of C-14 & C-30. Incorrect because C-14 & 30 will be energized.

C. Correct.

D. Incorrect. Plausible because the first part is correct, and normally the operators are busy performing immediate actions after a reactor trip so that they may be unaware of the status of C-14 & C-30. Incorrect because C-14 & 30 will be energized.

Technical Reference(s): AR-C-14
AR-C-30
P-1
O-1.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3001C 2.18
RSE00S 3.01

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 6
55.43

Design, components, and functions of reactivity control mechanisms and instrumentation.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	005 AA2.03	
	Importance Rating	3.5	

Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod: Required actions if more than one rod is stuck or inoperable.

Proposed Question: RO Question # 20

Assume the following plant conditions exist:

- 100% power
- Group counter Bank D = 216 steps
- MRPI Rod C7 Bank D = 188
- MRPI Rod K7 Bank D = 200
- MRPI Rods G3 and G11 Bank D = 212 steps
- QPTR = 1.024
- C-5, PPCS ROD SEQUENCE OR ROD DEVIATION, alarm lit
- Rods are believed to be trippable

Which one of the following describes the required actions, as specified in the applicable plant procedure, if this situation cannot be remedied?

A. Reduce power to < 75% per O-5.1, LOAD REDUCTIONS

B. Reduce power to < 50% per O-5.1, LOAD REDUCTIONS

C. Trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION

D. Shutdown per O-2.1, PLANT SHUTDOWN TO HOT SHUTDOWN

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because load reduction to < 75% per O-5.1 is required to realign a single misaligned rod. Incorrect because both rods C7 and K7 are misaligned, which requires Shutdown per O-2.1.

B. Incorrect. Plausible because ER-RCC.1 requires a load reduction to < 50% per O-5.1 to recover a dropped rod. ER-RCC.1 and ER-RCC.2 have many similarities and are easily confused. Incorrect because in this case there are 2 misaligned rods, not a single dropped rod.

C. Incorrect. Plausible because this is the required action per ER-RCC.1 for 2 dropped rods. Incorrect because in this case there are 2 misaligned rods, not 2 dropped rods.

D. Correct.

Technical Reference(s): ER-RCC.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3001C 2.18

Question Source: Bank #
Modified Bank # B000.0877 (Note changes or attach parent)
New

Question History: Last NRC Exam: 2006

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	012 K6.02	
	Importance Rating	2.9	

Knowledge of the effect of a loss or malfunction of the following will have on the RPS: Redundant channels.

Proposed Question: RO Question # 21

Given the following conditions:

- Unit is at 100% power
- PRNIS Channel N-44 indication began oscillating and was removed from service IAW ER-NIS.3, PR Malfunction
- I&C installed the P-10 jumper IAW ER-NIS.3

Which one of the following describes plant response if PR Channel N-43 subsequently fails high?

A. The reactor remains at power. Rod Control must be placed in MANUAL to stop rod motion.

B. The reactor remains at power. Rod Control motion is blocked by an Auto Rod stop.

C. The reactor will trip. SR 31 and 32 must be manually reinstated.

D. The reactor will trip. SR 31 and 32 will reinstate automatically when appropriate power level is reached.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. The Rx will trip on 2/4 PRNIS Hi Flux 108%. Plausible if examinee incorrectly thinks trip logic is 2/3 on the remaining channels after the instrument defeat. This would be true for OTDT and OPDT runback and rod stop, not high flux trip.

B. Incorrect. Explanation same as answer A.

C. Incorrect. First part is correct. Second part is incorrect. SRNIS will automatically reinstate due to the installation of the P-10 jumper during the defeat of N-44. Plausible if there is confusion on the purpose of the jumper.

D. Correct

Technical Reference(s): ER-NIS.3 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3301C 3.06

Question Source: Bank # C015.0150
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	025 2.4.41	
	Importance Rating	2.9	

Knowledge of the emergency action level thresholds and classifications, regarding Loss of RHR.

Proposed Question: RO Question # 22

Given the following conditions:

- The plant is in Mode 5
- RCS temperature is 203°F and rising
- RHR cooling has been lost and cannot be restored
- An ALERT has been declared

In accordance with the Ginna Station Nuclear Emergency Response Plan, (1) which one of the following is the Emergency Action Level threshold that was met for this event, and (2) how often must the state and counties be updated on the status of this event after the initial notification is made?

A. (1) It involves an actual substantial degradation of the level of safety of the plant;
(2) Every 30 minutes

B. (1) It involves an actual substantial degradation of the level of safety of the plant;
(2) Every 60 minutes

C. (1) It involves actual or imminent core damage and the potential for a large release;
(2) Every 30 minutes

D. (1) It involves actual or imminent core damage and the potential for a large release;
(2) Every 60 minutes

Proposed Answer: A

Explanation (Optional):

A. Correct. EAL 7.2.4, RCS temperature cannot be maintained < 200°F in Mode 5 or 6.

B. Incorrect. Although part (1) is correct, incorrect time in part (2)

C. Incorrect. Although the time is correct in part (2), the threshold described is for a General Emergency EAL 9.1.7

D. Incorrect. Part (1) incorrect per explanation for GE EAL 9.1.7, and part (2) time also incorrect.

Technical Reference(s):
- EAL 7.2.4;
- EAL Technical Basis document, Section 7.2
- EPIP-1.2

Proposed References to be provided to applicants during examination: None

Learning Objective: RSC02C, 1.1 and 6.1 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 A2.04	
	Importance Rating	3.6	

Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Loss of Instrument bus.

Proposed Question: RO Question # 23

Given the following:

- The plant is operating at 100% power
- All systems are in Auto, and no instrument channels are defeated
- Annunciator E-14, Loss 'B' Instrument Bus, has energized
- CNMT pressure indicators PI-949 (front of MCB) and PI-946 (behind MCB) are de-energized

What is the status of CNMT Spray (CS) with regards to an automatic actuation signal, and what procedural direction will address this event?

A. Auto CS actuation is disabled; ER-INST.3, Instrument Bus Power Restoration

B. Auto CS actuation is disabled; E-0, Reactor Trip or Safety Injection

C. Auto CS actuation is still enabled; ER-INST.3, Instrument Bus Power Restoration

D. Auto CS actuation is still enabled; E-0, Reactor Trip or Safety Injection

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the second part is correct, and one might mistakenly believe that the two channels lost were both in the same group of three – leaving only one of three, which wouldn't provide spray activation. Incorrect because 2/3 + 2/3 will be reduced to 2/2 + 2/2, which means spray can still actuate automatically.

B. Incorrect. Plausible because one might mistakenly believe that the two channels lost were both in the same group of three – leaving only one of three, which wouldn't provide spray activation. Incorrect because 2/3 + 2/3 will be reduced to 2/2 + 2/2, which means spray can still actuate automatically. Also, E-0 does not address this situation.

C. Correct. 2/3 + 2/3 logic required to actuate. Bistables are energized to actuate. Only 1 bistable on each train (A/B) is lost, leaving 2 bistables on each train still available. ER-INST.3 will be entered and the bus placed on the maintenance power supply.

D. Incorrect. Plausible because the first part is correct, and E-0 provides guidance for manually initiating spray. Incorrect because 2/3 + 2/3 will be reduced to 2/2 + 2/2, which means spray can still actuate automatically, and E-0 doesn't address loss of Inst Bus B.

Technical Reference(s): P12
ER-INST.3

Proposed References to be provided to applicants during examination: None

Learning Objective: R3501C, 1.10 (RPS);
RIC12C, 1.06 (Inst Bus Failure)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2 2.2.14	
	Importance Rating	3.9	

Equipment Control - Knowledge of the process for controlling equipment configuration or status.

Proposed Question: RO Question # 24

An IC maintenance activity will require that MCB recorder RK-28B, Misc Temperatures Recorder, replacement to be performed. This recorder provides an input to annunciator I-11, TEMP RECORDERS.

(1) How will this work activity be tracked; and
(2) Who determines whether an Annunciator or Recorder point requires controls and flagging?

A. (1) Tracked on Attachment 1, Alarm Annunciator/Computer Point/Recorder Point Out of Service log from CNG-OP-1.01-2003, Alarm Response and Control;
(2) Control Room SRO

B. (1) Tracked on Attachment 1, Alarm Annunciator/Computer Point/Recorder Point Out of Service log from CNG-OP-1.01-2003, Alarm Response and Control;
(2) Any member of the control room team

C. (1) Tracked on Attachment 5, Component Manipulation Form tracking log from CNG-OP-1.01-1000, Conduct of Operations;
(2) Control Room SRO

D. (1) Tracked on Attachment 5, Component Manipulation Form tracking log from CNG-OP-1.01-1000, Conduct of Operations;
(2) Any member of the control room team

Proposed Answer: A

Explanation (Optional):

A. Correct. CNG-OP-1.01-2003, Section 5.2 discusses "responsibilities"

B. Incorrect. Correct tracking attachment; incorrect approval level

C. Incorrect. Incorrect tracking method; correct approval

D. Incorrect. Incorrect tracking method; incorrect approval level

Technical Reference(s): CNG-OP-1.01-2003 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAD03C 1.03

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 K5.02	
	Importance Rating	2.9	

Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Safety System logic and reliability.

Proposed Question: RO Question # 25

The plant was stable at full power when an electrical short resulted in the "A" train SI block switch failing to the "block" position (electronics failure).

Which one of the following states the effect this will have on SI actuation signals?

A. Immediate SI - "A" train only.

B. All "A" train SI signals are immediately blocked.

C. "A" train manual and high containment pressure SI signals will function. The remaining "A" train signals are immediately blocked.

D. "A" train manual and high containment pressure SI signals will function. S/G and PRZR auto SI signals will be blocked when PRZR pressure lowers to block setpoint.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because one might mistakenly think that with the block activated an affected train SI will actuate. Incorrect because the block will initiate an SI.

B. Incorrect. Plausible because one might mistakenly think that SI block blocks all SI signals. Incorrect because manual and high containment pressure SI signals are not blocked.

C. Incorrect. Plausible because this correctly identifies which signals are blocked. Incorrect because the block will not function until 2 of 3 PRZR pressures decrease to < 1992 psig.

D. Correct

Technical Reference(s): 33013-1353 sheet 6 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3501C 6.08

Question Source: Bank # C012.0110
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2 2.2.42	
	Importance Rating	3.9	

Ability to recognize system parameters that are entry-level conditions for Technical Specifications

Proposed Question: RO Question # 26

The crew has placed the Containment Mini-Purge system in service and notes that Containment Pressure is 0.4 psig and rising slowly.

If pressure continues to rise, the crew will be required to enter a Tech Spec Action statement at __(1)__ psig, and the limiting accident for the design pressure limit in Containment is the __(2)__ .

A. (1) 0.5 psig; (2) DBA Steamline break inside CNMT

B. (1) 1.0 psig; (2) DBA Steamline break inside CNMT

C. (1) 0.5 psig; (2) DBA LOCA

D. (1) 1.0 psig; (2) DBA LOCA

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the value in (1) is the MCB alarm setpoint which would require CNMT depressurization while (2) is the correct accident.

B. Correct.

C. Incorrect. Plausible because the value in (1) is the MCB alarm setpoint which would require CNMT depressurization, while (2) is plausible because peak CNMT pressure following DBA LOCA is a valid concern (but not after EPU).

D. Incorrect. Plausible because (1) is the correct setpoint and (2) is plausible because peak CNMT pressure following DBA LOCA is a valid concern (but not after EPU).

Technical Reference(s): ITS Basis B3.6.4 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R2101C, 1.12 and 1.13

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 K4.01	
	Importance Rating	2.5*	

Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Cooling of containment penetrations.

Proposed Question: RO Question # 27

Which one of the following correctly identifies an interlock associated with the penetration cooling fans?

A. Only one of the two fans can be run at a time.

B. Fire protection switches trip the associated fan.

C. High vibration trips the associated fan.

D. High alarm on R-13, Plant Vent Particulate, trips the running fan and prevents start of the standby fan.

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because fire protection switches trip the CNMT Purge Supply and Exhaust Fans. Incorrect because these switches are not applicable to the penetration cooling fans.

C. Incorrect. Plausible because high vibration trips the Reactor Compartment Cooling Fans and the CNMT Auxiliary Charcoal Filter Fans. Incorrect because high vibration does not trip the penetration cooling fans.

D. Incorrect. Plausible because R-13 monitors the plant vent particulate and isolates the plant vent on high alarm. Incorrect because fire protection switches do not trip the penetration cooling fans.

Technical Reference(s): AR-C-17 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R2201C, 5.01

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 4
55.43

Secondary coolant and auxiliary systems that affect the facility

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	026 AK3.04	
	Importance Rating	3.5	

Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: Effect on the CCW flow header of a loss of CCW.

Proposed Question: RO Question # 28

The plant was operating at power when the Non-Regenerative heat Exchanger developed a leak and was isolated.

Which one of the following explains how this will affect CCW header flow; and, with this change in flow, what flow limit will we be closer to?

(Two CCW HXs are in service with one CCW pump operating.)

CCW flow will -

A. Rise; 4900 gpm

B. Rise; 2400 gpm

C. Lower; 870 gpm

D. Lower; 435 gpm

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the examinee may mistakenly think that isolation of a load will raise the flow. If he makes assumption, then we will be closer to the high flow limit. Incorrect because flow will lower, not rise; and 4900 is the limit for 2 pumps, not one.

B. Incorrect. Plausible because the examinee may mistakenly think that isolation of a load will raise the flow. If he makes assumption, then we will be closer to the high flow limit of 2400. Incorrect because flow will lower, not rise.

C. Incorrect. Plausible because flow will lower. Also, the minimum flow limit is 435 gpm. With 2 HXs in service the examinee may mistakenly double the low flow limit. Incorrect because the flow limit is incorrect.

D. Correct.

Technical Reference(s): P-4

Proposed References to be provided to applicants during examination: None

Learning Objective: R2801C 3.04 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	015 K2.01	
	Importance Rating	3.3	

Knowledge of bus power supplies to the following: NIS channels, components, and interconnections.

Proposed Question: RO Question # 29

Given the following:

- A loss of all AC power occurred 10 minutes ago.
- The crew is performing actions of ECA-0.0, Loss of All AC Power.
- Power has NOT been restored.

Which ONE (1) of the following describes which Source (N-31, N-32) and Intermediate Range (N-35, N-36) NIS instruments are still available?

A. N-31 and N-35

B. N-32 and N-36

C. N-31, N-32, N-35

D. N-31, N-32, N-35, N-36

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Both channels are powered from Instrument Bus 'A'. Plausible if candidate believes only Instrument Bus 'A' is energized, but Instrument Bus 'C' is also on an inverter.

B. Incorrect. Plausible is candidate believes that N-32 and N-36 are both powered from Instrument Bus 'C'. In reality, while N-32 is powered from instrument bus 'C', N-36 is powered from non-inverter-supplied bus 'B.'

C. Correct. Instrument Busses 'A' and 'C' are powered from inverters. N-31 and N-35 are powered from 'A', only N-32 from 'C'

D. Incorrect. Plausible because N-36 is not powered from instrument bus 'C' (as is N-32), but from non-inverter powered Bus B

Technical Reference(s): P-12, Attachment 4

Proposed References to be provided to applicants during examination: None

Learning Objective: R0901C, 3.01 (As available)

Question Source: Bank # C003.0119
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam: 2009

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	036 AK3.03	
	Importance Rating	3.7	

Knowledge of the reasons for the following responses as they apply to the Fuel Handling Incidents: Guidance contained in EOP for fuel handling incident.

Proposed Question: RO Question # 30

During movement of an irradiated fuel assembly from the core to the upender (not indexed over the core), the following events occur:

- Annunciator K-29, SFP HI TEMP 115°F HI-LO LEVEL 20" 12", alarms
- Soon after the K-29 alarm, a report from the manipulator crane operator informs you in the control room that refueling cavity level is rapidly dropping
- Manipulator crane radiation monitor is in alarm
- Containment sump 'A' level is rising on LI-2039/2044 control room indication

What action is required with respect to the fuel assembly being moved?

A. Return the transfer car to the pit side "Home" position and lower the upender to a vertical position.

B. Position the Fuel Assembly over an empty core location and immediately lower the Fuel Assembly to the selected core position and unlatch.

C. Position it over the "emergency" location, lower the assembly until it reaches the bottom, and leave the Fuel Assembly latched.

D. Place the Fuel Assembly in the shipping cask area then lower and unlatch the Fuel Assembly when it is fully enclosed in shipping cask.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the transfer car is returned to the "Home" position. Incorrect because the fuel assembly is latched to the manipulator crane, not in the transfer car.

B. Incorrect. Plausible because if the fuel assembly was positioned over the core it would be lowered back into the core and unlatched. Incorrect because the fuel assembly is not indexed over the core.

C. Correct.

D. Incorrect. Plausible because the shipping cask area is where a fuel assembly latched to the Spent Fuel Handling Tool would be placed. Incorrect because the fuel assembly is latched to the manipulator crane, not the Spent Fuel Handling Tool.

Technical Reference(s): RF-601

Proposed References to be provided to applicants during examination: None

Learning Objective: RRF01C, 3.00 (As available)

Question Source: Bank # B034.0002
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43 7

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fuel handling facilities and procedures.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022	2.4.41
	Importance Rating	4.2	

Knowledge of the emergency action level thresholds and classifications. (Regarding Containment Cooling)

Proposed Question: RO Question # 31

Based on the following plant conditions:

- A LOCA is in progress:
- CNMT Spray pump 'A' is tagged out
- CNMT Spray pump 'B' will not start
- CNMT pressure is 33 psig and rising
- Safeguards bus 14 has just deenergized (bus fault)

Which one of the following is the highest EAL classification which could be impacted by the loss of Safeguards Bus 14?

A. EAL 3.1.2, Alert

B. EAL 4.1.2, Site Area Emergency

C. EAL 3.1.3, Site Area Emergency

D. EAL 4.1.4, General Emergency

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Although the loss of Bus 14 will de-energize one SI pump, that has nothing to do with the magnitude of the leakage and this >46 gpm EAL.

B. Incorrect. Although a confirmed LOCA, there is no indication that CNMT pressure or sump response is not consistent with LOCA

C. Incorrect. Stem asked for current EAL classification. Although CNMT pressure is rising, it is still well below the RED path entry (60 psig) for CNMT pressure.

D. Correct. All 3 requirements (LOCA+<Min Operable CNMT Cooling Equipment+Fuel Damage) of GE on 4.1.4 are met.With only 2 CRFs available, CNMT Integrity is clearly being challenged

Technical Reference(s): EPIP-1.0 or EAL Wall Chart, EAL Technical Basis Document, F-0.5 CSFST

Proposed References to be provided to applicants during examination: EPIP-1.0

Learning Objective: RSC02C 3.00

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

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

Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.

Proposed Question: RO Question # 32

Which one of the following describes the expected plant response to a controlling pressurizer pressure channel failure high while operating at 100% power?

Assume no operator action.

A. Actual pressure will lower until low pressure reactor trip and then slowly rise back to program.

B. Actual pressure will lower until low pressure reactor trip and SI and then stabilize.

C. Actual pressure will lower until the other control channel actuates heaters and then stabilize below program but above the trip setpoint.

D. Plant will trip on high pressure trip but actual pressure will lower until low pressure SI and then stabilize.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because after the reactor trip the candidate might believe the transient would be "over" and allow pressure to recover. Spray valves are still open until the SI signal actuates.

B. Correct. Controlling channel will drive the output of Master Pressure Controller 431K to maximum, resulting in both spray valves full open and a rapid reduction in actual pressure. Pressure will lower until reactor trip and SI occur, and the CI signal which results from the SI signal will close AOV-5392, the CNMT instrument air supply valve. Since the spray valves are operated by IA and will fail to closed position, isolation of the 5392 valve will close the air supply to the spray valves and terminate the transient.

C. Incorrect. Plausible because the candidate might not realize that the heaters are tripped off due to the high pressure condition sensed by the controlling channel.

D. Incorrect. Plausible if the candidate believes that the controlling channel failing hi will result not in spray valve actuation, but rather pressurizer heater actuation until the HIGH pressure trip setpoint is reached.

Technical Reference(s): P-10, Instrument Failure
Reference Manual

Proposed References to be provided to applicants during examination: None

Learning Objective: R1901C 4.04
RIC02C 1.02 (As available)

Question Source: Bank # C010.0037
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 2.4.21	
	Importance Rating	4.2	

Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. (Regarding Component Cooling Water)

Proposed Question: RO Question # 33

Regarding the Component Cooling Water (CCW) system, (1) what is the CCW heat exchanger outlet high temperature alarm setpoint, and (2) what is the design temperature limit for the system?

A. (1) 100°F, (2) 150 °F

B. (1) 100°F, (2) 200 °F

C. (1) 125°F, (2) 150 °F

D. (1) 125°F, (2) 200 °F

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because (1) is correct and (2) is the CCW pump inlet header high temperature setpoint

B. Correct. (1) is the setpoint per AR-A-21 and (2) the normal temperature limit of 100°F and 120°F during C/D and LOCA prevents the CCW system from exceeding its design temperature limit of 200°F (ITS B3.7.7)

C. Incorrect. Plausible 125°F is the maximum transient temperature for CCW inlet to the RCP thermal barrier and (2) is the CCW pump inlet header high temperature setpoint

D. Incorrect. . Plausible 125°F is the maximum transient temperature for CCW inlet to the RCP thermal barrier and (2) is the correct answer.

Technical Reference(s): P-4, Step 6.2.1,
ITS, B3.7.7,

AR-A-21

Proposed References to be provided to applicants during examination: None

Learning Objective: R2501C, 1.09 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7, 10
55.43

- Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features
- Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2 2.2.38	
	Importance Rating	3.6	

Equipment Control - Knowledge of conditions and limitations in the facility license.

Proposed Question: RO Question # 34

Which one of the following statements explains the basis for the Reactor Core Safety Limit?

A. Prevent boiling from occurring in the core

B. Prevent fuel damage due to DNB and centerline fuel melting

C. Prevent exceeding the 5% failed fuel limit during plant power changes

D. Prevent overpressurization and failure of the reactor coolant system

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because core boiling is an indication of excessive power/temperature for a specific RCS pressure. Incorrect because the limit is based on preventing DNB and centerline fuel melting.

B. Correct.

C. Incorrect. Plausible because failed fuel will result from DNB and is synonymous with centerline fuel melting. Also, the basis discusses "95% probability" and "95% confidence level". The examinee can easily associate 5% with the "95%" and select 5% failed fuel. Incorrect because the basis is preventing DNB and centerline fuel melting.

D. Incorrect. Plausible because this is the basis for the Pressure Safety Limit. Incorrect because it is not the basis for the Reactor Core Safety Limit.

Technical Reference(s): ITS 2.1.1 Basis

Proposed References to be provided to applicants during examination: ITS Fig 2.1.1-1

Learning Objective: RTS21C, 2.03 (As available)

Question Source: Bank # C000.1060
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for these operating characteristics.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	026 K3.01	
	Importance Rating	3.9	

Knowledge of the effect that a loss or malfunction of the CSS will have on the following: CCS.

Proposed Question: RO Question # 35

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

- 'D' CRFC out of service for maintenance
- Containment pressure = 40 psig
- RHR pumps are in standby
- L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP, is lit
- The normal supply breaker to Bus 16 opened and Bus 16 is de-energized

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

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

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

C. Operators should start an additional Service Water pump to ensure adequate cooling water to operating CRFCs.

D. Operators should attempt a manual start of 'B' EDG to reenergize Bus 16 and restore power to 'B' CS pump

Proposed Answer: B

Explanation (Optional):

A. Incorrect. See below.

B. Correct. With 'D' CRFC out for maintenance and Bus 16 de-energized (CRFC 'B' & 'C'), only 1 CRFC is operating along with the single 'A' CS pump. Adequate CNMT cooling requires both CS pumps, or all 4 CRFCs, or 1 CS pump and 2 CRCFs. EDGs can't power up Bus 16 due to the unknown bus fault. Need to restore either Bus 16 or the 'D' CRFC.

C. Incorrect. See correct explanation. Only one CRFC is running.

D. Incorrect. Plausible because although the actions seem conservative, the root information identifies that there is an unknown bus fault on Bus 16 (which would prevent the EDG output breaker for Bus 16 from closing in on the bus).

Technical Reference(s): ITS 3.6.6 Basis

Proposed References to be provided to applicants during examination: None

Learning Objective: R2401C 1.01 (As available)

Question Source: Bank # C024.0001
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	037	2.1.28
	Importance Rating	3.6	

Knowledge of the purpose and function of major system components and controls. (Regarding SGTL)

Proposed Question: RO Question # 36

Given the following:

- The plant is operating at 90% power
- A primary to secondary S/G tube leak is indicated by R-47, Air Ejector Noble Gas Radiation Monitor
- Per the procedure in effect, the AO closes V-996A, Inlet block valve to FI-2027 (S/G Blowdown HX 'A' outlet flow), and the R-19 counts rise

(1) What specific indication is provided by this rise in counts, and (2) what would be the effect if counts continued to rise to the Alarm setpoint?

A. (1) Primary leakage is indicated on 'A' S/G;
(2) V-5737/5738, S/G Blowdown AOVs will close

B. (1) Primary leakage is indicated on 'B' S/G;
(2) V-5737/5738, S/G Blowdown AOVs will close

C. (1) Primary leakage is indicated on 'A' S/G;
(2) V-5709/5710, S/G 'A' and 'B' blowdown isolation AOVs to Blowdown Flash Tank will close

D. (1) Primary leakage is indicated on 'B' S/G;
(2) V-5709/5710, S/G 'A' and 'B' blowdown isolation AOVs to Blowdown Flash Tank will close

Proposed Answer: B

Explanation (Optional):

A. Incorrect. S/G leakage indication is wrong; automatic actuation is correct.

B. Correct. Closing V-996A isolates all sample flow from S/G 'A' to R-19. Indication on R-19 would rise if the leak is on S/G 'B' due to less dilution from the S/G 'A' flowpath. R-19 reaching the HI alarm will result in automatic isolation of S/G blowdown and sample line isolation valves (AOV-535/5736/5737/5738)

C. Incorrect. Incorrect leak location; AOV-5709/5710 close on turbine trip and high level in the blowdown flash tank.

D. Incorrect. Correct leak location, but AOV-5709/5710 close on turbine trip and high level in the blowdown flash tank.

Technical Reference(s): ATT-16.1
P&ID 33013-1278, sheets 1 & 2
AR-K-13

Proposed References to be provided to applicants during examination: None

Learning Objective: R6601C, 1.04
RAP32C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10, 11
55.43

- Administrative, normal, abnormal, and emergency operating procedures for the facility
- Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 K3.06	
	Importance Rating	2.8*	

Knowledge of the effect that a loss or malfunction of the MRSS (Main and Reheat Steam Sys) will have on the following: SDS.

Proposed Question: RO Question # 37

The plant is operating at full power with the Steam Dump Mode Selector Switch and controller in "AUTO", and control rods in "MANUAL", when a main turbine control valve 3464 failed closed.

Which one of the below statements describes the operation of the condenser steam dump valves?

A. Steam dumps will modulate open when the temperature error exceeds 4 degrees F.

B. No action will occur because Steam Dumps have not been armed by permissive P-4.

C. All steam dump valve groups will go full open initially, but then modulate to match Tavg with Tref.

D. All steam dump valve groups will go full open to reduce Tavg to match Tref.

Proposed Answer: A

Explanation (Optional):

A. Correct. Steam dumps will arm with >10% load rejection due to the control valve failure. Rod control in Manual will not compensate for the rise in RCS temperature, and thus the steam dumps will modulate open with a 4°F temperature error between Tavg – Tref.

B. Incorrect. Plausible because the candidate may believe that a control valve failure will not cause a large enough load reduction to arm the steam dumps.

C. Incorrect. Plausible because it may be assumed that a control valve failure with rods in manual may cause a large enough temperature error to cause a "snap open" of all steam dump valves.

D. Incorrect. Plausible because the candidate may assume that all steam dump valves will full open due to the magnitude of the temperature error.

Technical Reference(s): P-10

Proposed References to be provided to applicants during examination: None

Learning Objective: R4501C 2.02 (As available)

Question Source: Bank #
Modified Bank # C041.0048 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	038 EK1.01	
	Importance Rating	3.1	

Knowledge of the operational implications of the following concepts as they apply to the SGTR: Use of steam tables.

Proposed Question: RO Question # 38

One of the major actions of E-3, SGTR is to perform an RCS cooldown. The cooldown is intended to establish 20 degrees of subcooling after the subsequent depressurization is performed.

Using the steam tables provided, if ruptured steam generator pressure is 800 psig, what is the core exit temperature associated with 20 degrees of subcooling?

A. 496 degrees

B. 500 degrees

C. 516 degrees

D. 520 degrees

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible if 15 psia is subtracted from 800 psig. In this case, T_{SAT} for 785 psia = 516°F and -20° subcooling = 496°F

B. Correct. T_{SAT} for 800 psig = 815 psia = 520°F. 20°F subcooled = 520-20 = 500°F

C. Incorrect. Plausible if 15 psia is subtracted from 800 psig and subcooling is not taken into account. T_{SAT} for 785 psia = 516°F

D. Incorrect. Plausible since this is the T_{SAT} (only) for 800 psig, without subcooling taken into account.

Technical Reference(s): Steam Tables

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

Learning Objective: REP03C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 14
55.43

Principles of heat transfer thermodynamics and fluid mechanics.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	033 2.2.22	
	Importance Rating	3.6	

Knowledge of limiting conditions for operations and safety limits. (Regarding SFP)

Proposed Question: RO Question # 39

Which one of the following conditions would prevent full core offload to the SFP during refueling outage?

A. SFP temperature 160 degrees F

B. "B" Aux Bldg Exhaust fan is out of service for repairs

C. Aux Bldg crane interlock is by-passed to allow access to the Decon Pit

D. Fuel Transfer System Valve (Canal/Tube Isolation) light de-energized

Proposed Answer: A

Explanation (Optional):

A. Correct. As stated in TR 3.9.4, SFP water temperature shall be $\leq$ 150°F

B. Incorrect. Plausible because during movement of irradiated fuel assemblies in the Aux Bldg, when one or more fuel assemblies in the AB has decayed < 60 days since being irradiated, the ABVS is required to be operable. The candidate will need to recognize that only one AB Exhaust Fan is required for the ABVS to be operable.

C. Incorrect. Plausible because the AB crane is equipped with two (2) electrical interlocks to prevent movement over the Spent Fuel Racks. The candidate must recognize that no interlocks preclude travel over the Decon Pit.

D. Incorrect. Plausible because the light is on the refueling panel in the SFP area, however it's incorrect because the light is jumpered per the NOTE in RF-301.

Technical Reference(s): TR 3.9.4

Proposed References to be provided to applicants during examination: None

Learning Objective: R3601C, 5.02
RRF08C, 4.00 (As available)

Question Source: Bank # C300.0252
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	068 AK3.09	
	Importance Rating	3.9	

Knowledge of the reasons for the following responses as they apply to Control Room Evacuation: Transfer the following to local control: charging pumps, charging header flow control valve, PRZR heaters, and boric acid transfer pumps.

Proposed Question: RO Question # 40

Which one of the following explains why charging pump control is transferred to local during the performance of ER-FIRE.1, Alternate Shutdown For Control Complex Fire?

Local control -

A. Prevents spurious operation of the "A" charging pump due to wire short or open during the fire.

B. Provides uninterrupted Instrument Air supply for speed control of "A" charging pump.

C. Allows for adjustment of "A" charging pump minimum speed by the I&C Tech to support RCS cooldown with loss of Instrument Air.

D. Allows the "A" charging pump to continue to run in case a spurious UV is initiated by the fire.

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because speed control is required during the procedure. Incorrect because Charging Pump Speed Control Backup Air Cylinders provide air for approximately 1 hour.

C. Incorrect. Plausible because the I&/C Tech has actions to perform during ER-FIRE.1 (wire PCV-430 for local operation, wire AOV-296 and AOV-294 for local operation). Incorrect because this action is not performed.

D. Incorrect. Plausible because when in local the charging pump will not be stripped by an SI signal. The examinee may confuse this with UV trip. Incorrect because the "A" charging pump will still trip on an UV signal and is transferred to local to prevent spurious operation of the pump due to wire short or open during the fire.

Technical Reference(s): AP-CR.1
ER-FIRE.1

Proposed References to be provided to applicants during examination: None

Learning Objective: RER22C 8.00 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	059 K4.17	
	Importance Rating	2.5*	

Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: Increased feedwater flow following a reactor trip.

Proposed Question: RO Question # 41

The plant is operating at 98% power when a Reactor Trip occurs. Avg Tavg is greater than 554 degrees F.

Which one of the following is correct regarding the Main feedwater control valves?

The FRVs will -

A. Snap open.

B. Close.

C. Modulate open on ADFCS flow error.

D. Modulate open on ADFCS level error.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Valves will <u>modulate</u> - not snap - open.

B. Incorrect. Valves will modulate <u>open</u>.

C. Incorrect. Following the reactor trip ADFCS will be in low power mode, which will control based on <u>level</u> error.

D. Correct. Following the reactor trip ADFCS will be in low power mode, which will control based on level error.

Technical Reference(s): R4401C

Proposed References to be provided to applicants during examination: None

Learning Objective: R4401C, 3.03 (As available)

Question Source: Bank # B035.0009
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam: 2007

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	040 AK2.02	
	Importance Rating	2.6*	

Knowledge of the interrelations between the Steam Line Rupture and the following: Sensors and detectors.

Proposed Question: RO Question # 42

Given the following MCB indications immediately after a large steam break:

- "A" SG pressure PI-468, 469, 482A: 200 psig and lowering
- "B" SG pressure PI-478, 479, 483A: 1050 psig and lowering
- Steam Header pressure PI-484: 100 psig and lowering
- "A" SG steam flow FI-464, 465, 498: 4.6×10^6 lbm/hr
- "B" SG steam flow FI-474, 475, 499: 0.1×10^6 lbm/hr
- Turbine 1st STG pressure PI-485, 486: 100 psig and lowering

Which one of the following is the location of the steam break?

A. Downstream of the turbine stop valves

B. Upstream of "A" SG flow element

C. Between the MSIVs and PI-484

D. Upstream of the 'A' MSIV

Proposed Answer: D

Explanation (Optional):

A. Incorrect. If the break was located here the SG pressures would be the same. Plausible because this is the lowest indicated pressure.

B. Incorrect. If the break was located here "A" SG flow would be significantly less than "B" SG flow. Plausible because of "A" SG pressure.

C. Incorrect. If the break was located here the SG pressures would be the same. Plausible because PI-484 indicates a low pressure.

D. Correct. "A" SG pressure low with "B" SG pressure high shows separation between

SGs, which indicates the break must be upstream of the MSIVs.

Technical Reference(s): REP02C

Proposed References to be provided to applicants during examination: None

Learning Objective: AEP02S, 1.0 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 5
55.43

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for these operating characteristics.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061 K5.03	
	Importance Rating	2.6	

Knowledge of the operational implications of the following concepts as they apply to the AFW: Pump head effects when control valve is shut.

Proposed Question: RO Question # 43

Which one of the following describes how the AFW pump head responds to the discharge valve closing?

As the discharge valve closes, the pump head rises until ___(1)___ , which causes the recirc valve to open. When the recirc valve opens, the pump head ___(2)___.

A. (1) the discharge pressure rises to 1350 psig
2) lowers to its initial value

B. (2) the discharge pressure rises to 1350 psig
(2) stabilizes

C. (1) the discharge flow lowers to 80 gpm
(2) lowers to its initial value

D. (1) the discharge flow lowers to 80 gpm
(2)stabilizes

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the SBAFW recirc valves used to open based on pressure. Incorrect because the recirc actually opens based on flow, and pump head will stabilize when the recirc opens.

B. Incorrect. Plausible because the SBAFW recirc valves used to open based on pressure. Incorrect because the recirc actually opens based on flow. Last part is correct.

C. Incorrect. Plausible because the first part is correct. Incorrect because head will not lower to the initial value.

D. Correct.

Technical Reference(s): R4201C,
P&ID 33013-1237

Proposed References to be provided to applicants during examination: None

Learning Objective: RSE00S, 3.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G3 2.3.7	
	Importance Rating	3.9	

Radiation Control - Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Proposed Question: RO Question # 44

Which one of the following describes the Tech Spec controls required for a High Radiation Area of less than 1000 mrem/hr?

A. Locked, posted, and entry controlled by security.

B. Locked, posted, and entry controlled by Radiation Work Permit.

C. Barricaded, posted, and entry controlled by security.

D. Barricaded, posted, and entry controlled by Radiation Work Permit.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the examinee may mistakenly identify this as a Locked High Radiation Area – which would require locked, and posted. Also, Security controls the keys for containment. Incorrect because this is a High Radiation Area, not a Locked High Radiation Area.

B. Incorrect. Plausible because the examinee may mistakenly identify this as a Locked High Radiation Area – which would require locked, and posted and entry controlled by RWP. Incorrect because this is a High Radiation Area, not a Locked High Radiation Area.

C. Incorrect. Plausible because barricaded and posted are correct. Incorrect because entry is controlled by RWP, not security.

D. Correct.

Proposed References to be provided to applicants during examination: None

Learning Objective: RRC03C, 2.05

Question Source: Bank # C300.0037
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 12
55.43

Radiological safety principles and procedures.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	062 K1.04	
	Importance Rating	3.7	

Knowledge of the physical connections and/or cause effect relationships between the ac distribution system and the following systems: Off-site power sources.

Proposed Question: RO Question # 45

Given the following plant conditions:

- "A" and "B" condensate pumps are running with "C" in standby
- Trip from 100% power
- Auto transfer failed to transfer Bus 11A to Bus 12A
- All other electrical components functioned as designed

Which one of the following describes the Condensate Pump(s) that REMAIN IN OPERATION as a result?

A. "A" Condensate pump

B. "B" Condensate pump

C. "C" Condensate pump

D. "A" and "C" Condensate pumps

Proposed Answer: B

Explanation (Optional):

A. Incorrect. "A" Condensate pump is powered by Bus 11A, which is de-energized. Plausible because the examinee may be uncertain of the power supplies to the condensate pumps.

B. Correct. "B" Condensate pump is powered by Bus 11B, which is energized.

C. Incorrect. "C" Condensate pump is powered by Bus 11A, which is de-energized. Plausible because the examinee may be uncertain of the power supplies to the condensate pumps.

D. Incorrect. Both "A" and "C" Condensate pumps are powered by Bus 11A, which is de-energized. Plausible because the examinee may be uncertain of the power supplies to the condensate pumps.

Technical Reference(s): P-12

Proposed References to be provided to applicants during examination: None

Learning Objective: R4301C 1.10 (As available)

Question Source: Bank # B062.0026
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 4
55.43
Secondary coolant and auxiliary systems that affect the facility.

Comments:

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

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: RO Question # 46

The plant was at full power when Avg Tavg failed. The crew responded per the appropriate alarm response. Later a turbine trip occurred.

Which one of the following identifies how the steam dump system responds to this situation?

Steam dump valves will -

A. Modulate open based on an error signal between steam header pressure and the steam dump controller setpoint.

B. Initially snap open, and then modulate based on Avg Tavg signal and a fixed value of 547 degrees F

C. Be operated manually as directed by ES-0.1, Reactor Trip Response.

D. Open as necessary to control steam header pressure at 1050 psig. However, if pressure rises to 1060 psig, the valves will snap open.

Proposed Answer: A

Explanation (Optional):

A. Correct. AR-F-15 directs placing steam dump mode selector to manual (pressure control mode). When the turbine trips, this will result in steam dump valves modulating open based on an error signal between steam header pressure and the steam dump controller setpoint.

B. Incorrect. Plausible because this is the response if steam dumps were still in temperature control. Incorrect because the Avg Tavg failure required placing steam dump in pressure control mode.

C. Incorrect. Plausible because if the steam dump was in manual this is how the vaves

would be controlled.

D. Incorrect. Plausible because this is how the ARVs would respond.

Technical Reference(s): P-10, AR-F-15

Proposed References to be provided to applicants during examination: None

Learning Objective: R4501C, 2.02 (As available)

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

Question History: 2006 Comp3 exam Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 4
55.43

Secondary coolant and auxiliary systems that affect the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	063 A3.01	
	Importance Rating	2.7	

Ability to monitor automatic operation of the DC electrical system, including: Meters, annunciators, dials, recorders, and indicating lights.

Proposed Question: RO Question # 47

Which one of the following describes the operation of Inverter 1A when the 125 VDC supply from DC Distribution Panel 1A is interrupted?

Static transfer switch 1A:

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

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

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

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

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible if the candidate does not know the purpose of, or which inverters have Auto-static transfer switch.

B. Incorrect. Same as 'A'

C. Correct. On the loss of DC supply, the Auto-static transfer switch will transfer to CVT (from MCC-1C) with ¼ cycle to prevent power loss. On DC power restoration, the inverter must be manually transferred back to its normal DC supply.

D. Incorrect. Plausible if the candidate believes that the Auto-static transfer switch will revert back to its normal supply automatically if normal DC power is restored.

Technical Reference(s):
- R0901C Lesson Plan
- P-12, Electrical System PLS
- CME-38-01-INVTCVTA, Maintenance for INV-CBT-A

Proposed References to be provided to applicants during examination: None

Learning Objective: R0901C, 2.01 (As available)

Question Source: Bank # C063.0067
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	054 AA1.03	
	Importance Rating	3.5	

Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): AFW auxiliaries, including oil cooling water supply.

Proposed Question: RO Question # 48

The plant experienced a loss of MFW and a loss of Instrument Air. During the recovery, both MDAFW pumps failed to start and are unavailable.

Which one of the following correctly describes the consequences on the TDAFW pump discharge valve, MOV-3996, and the flow control valves, AOV-4297 and 4298?

A. MOV-3996 will remain operable; Local action will be required to locally control AOV-4297 and 4298.

B. MOV-3996 will remain operable; AOV-4297 and 4298 cannot be controlled. Flow will be controlled by starting/stopping the pump.

C. MOV-3996 fails open; Local action will be required to locally control AOV-4297 and 4298.

D. MOV-3996 fails open; AOV-4297 and 4298 cannot be controlled. Flow will controlled by starting/stopping the pump.

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because MOV-3996 is motor operated and will remain operable. AOV-4297 and AOV-4298 are administratively maintained open and fail as-is upon loss of air. Candidate may chose starting and stopping of pump if they do not recognize local actions are required to control flow.

C. Incorrect. Plausible because candidate may not recognize that MOV-3996 is motor operated and will remain operable. Local control is the correct action for AOV-4297 and AOV-4298.

D. Incorrect. Plausible because candidate may incorrectly assume that MOV-3996 is air operated and not recognize that local operation is required for flow control valves, and choose starting and stopping of pump as the method for flow control.

Technical Reference(s): R4201C

Proposed References to be provided to applicants during examination: None

Learning Objective: R4201C 12.0
R4201C 19.01 (As available)

Question Source: Bank #
Modified Bank # C000.0765 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 4
55.43
Secondary coolant and auxiliary systems that affect the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	071 K5.04	
	Importance Rating	2.5	

Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System: Relationship of hydrogen/oxygen concentrations to flammability.

Proposed Question: RO Question # 49

The auxiliary operator reports that the in-service gas decay tank's oxygen concentration is 4.1%.

(1) What action is required, and (2) What is the concern with this concentration?

A. (1) Sample the in-service tank for oxygen at least every 4 hours and reduce the oxygen concentration to less than 2% within 48 hours;
(2) > 4 % oxygen concentration may damage the Gas Analyzer Oxygen sensor.

B. (1) Sample the in-service tank for oxygen at least every 4 hours and reduce the oxygen concentration to less than 2% within 48 hours;
(2) Gas mixtures with > 5% oxygen concentration and > 4% hydrogen concentration are explosive

C. (1) Remove the tank from in-service or re-use and reduce the oxygen concentration to less than 2% within 48 hours;
(2) > 4 % oxygen concentration may damage the Gas Analyzer Oxygen sensor.

D. (1) Remove the tank from in-service or re-use status and reduce the oxygen concentration to less than 2% within 48 hours;
(2) Gas mixtures with > 5% oxygen concentration and > 4% hydrogen concentration are explosive

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because this is the action required for > 2% oxygen concentration, and damage to the Gas Analyzer Oxygen sensor is identified as a concern in the S-4.2.12 procedure (but due to drawing a vacuum – not O2 concentration).

B. Incorrect. Plausible because this is the action required for > 2% oxygen concentration, and the second part is correct.

C. Incorrect. Plausible because the first part is correct, and the second part is identified as a concern in the S-4.2.12 procedure (but due to drawing a vacuum – not O2 concentration).

D. Correct.

Technical Reference(s): S-4.2.12, CH-SAMP-MSA

Proposed References to be provided to applicants during examination: None

Learning Objective: N3801C, 8.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E01 EA2.1	
	Importance Rating	3.2	

Ability to determine and interpret the following as they apply to the (Reactor Trip or Safety Injection Rediagnosis): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: RO Question # 50

From which of the following conditions may the operator enter ES-0.0, "Rediagnosis", based on operator judgement?

A. After immediate operator actions of E-0 have been completed.

B. From ES-0.1, "Reactor Trip Response" procedure.

C. From FR-P.1, "Imminent PTS Condition" procedure.

D. From E-3, "SGTR" procedure.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. E-0 must be complete with transition to an optimal recovery procedure to enter ES-0.0. Plausible if examinee confuses completion of immediate actions with completion the procedure.

B. Incorrect. ES-0.1 is entered when SI is not in service. Plausible because ES-0.1 is an optimal recovery procedure and SI could be required during its performance. However, one of the requirements for ES-0.0 entry is that an SI is in service or is required.

C. Incorrect. FR-P.1 is a functional restoration procedure, not an optimal recovery procedure. Plausible because SI Pumps would be running upon transition to FR-P.1

D. Correct. From the ES-0.0 Background, rediagnosis only applies to ORGs, not to FRGs

Technical Reference(s): ES-0.0,
ES-0.0 Background document,
RES00C

Proposed References to be provided to applicants during examination: None

Learning Objective: RES00C, 1.02 (As available)

Question Source: Bank # B000.0152
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	063 A1.01	
	Importance Rating	2.5	

Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: Battery capacity as it is affected by discharge rate.

Proposed Question: RO Question # 51

A loss of all AC power is in progress.

Which one of the following identifies (1) The proper order of expected MCB alarms as battery capacity is reduced, and (2) How/where the battery discharge rate can be monitored?

(J-21, 1A or 1B BATTERY UNDERVOLTAGE)
(J-31, VITAL BATTERY MONITORING SYSTEM)

A. (1) J-21 and then J-31;
(2) Faster battery discharge rate is indicated by a larger positive number, and is available in the Control Room only.

B. (1) J-31 and then J-21;
(2) Faster battery discharge rate is indicated by a larger positive number, and is available in the Control Room and the Battery Rooms.

C. (1) J-21 and then J-31;
(2) Faster battery discharge rate is indicated by a larger negative number, and is available in the Control Room only.

D. (1) J-31 and then J-21;
(2) Faster battery discharge rate is indicated by a larger negative number, and is available in the Control Room and the Battery Rooms.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the alarms are correct, and the locations are correct. Incorrect because discharge is indicated by a negative sign.

B. Incorrect. Plausible because the alarms are correct, and the locations are correct. Incorrect because discharge is indicated by a negative sign.

C. Incorrect. Plausible because one can easily confuse the voltage setpoints for these two alarms. One can easily confuse if discharge is indicated by a + or – sign. And, everyone knows that indication is available in the CR, but may not remember that indication is also available in the respective Battery Room. Incorrect because J-31 is received first, and indication is also available in the respective Battery Room.

D. Correct.

Technical Reference(s): AR-J-21
AR-J-31
UFSAR 8.3.2.2

Proposed References to be provided to applicants during examination: None

Learning Objective: R0901C, 3.05 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	056 2.4.9	
	Importance Rating	4.2	

Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.

Proposed Question: RO Question # 52

Given that the plant is in Mode 5.

Which one of the following describes the intent of ER-RHR.1, RCDT Pump Operation For Core Cooling?

ER-RHR.1 provides guidance to align the RCDT pumps for core cooling in the event -

A. RCS pressure has stabilized above RHR pump shutoff head during a small break LOCA.

B. RHR pumps are lost when operating at RCS reduced inventory conditions.

C. a secondary heat sink cannot be established following the loss of all AFW.

D. an adequate level in CNMT sump B to provide NPSH for RHR pumps does not exist.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because, in the case of a SBLOCA, ES-1.3 provides guidance for swapping to cold leg recirc. If that were unsuccessful, the team would go to ECA-1.1. One of the entry conditions for ER-RHR.1 is from ECA-1.1.

B. Correct.

C. Incorrect. Plausible because one of the entry conditions is from AP-RHR.1, and one of the last things attempted in AP-RHR.1 is using secondary heat sink to cool the RCS. This involves verifying at least 200 gpm AFW flow available. Incorrect because a loss of all AFW by itself won't result in transition to ER-RHR.1.

D. Incorrect. Plausible because this describes a situation where the team would be going to ECA-1.1 from ES-1.3, and one of the entry conditions for ER-RHR.1 is from ECA-1.1. Incorrect because the procedure does not provide guidance to restore normal lineup.

Technical Reference(s): ER-RHR.1

Proposed References to be provided to applicants during examination: None

Learning Objective: RER13C, 1.01 (As available)

Question Source: Bank # C000.0281
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	064 K2.02	
	Importance Rating	2.8*	

Knowledge of bus power supplies to the following: Fuel oil pumps.

Proposed Question: RO Question # 53

While operating at power, bus 14 tripped on overcurrent. Subsequently, a loss of offsite power occurred and both DGs started.

Which one of the following is correct regarding the DGs and their fuel oil transfer pumps for these conditions?

__(1)__ fuel oil transfer pump will start. With an AO stationed locally, __(2)__ fuel oil transfer pump(s), and can be used to supply one/both DG(s).

A. (1) 'A'; (2) 'A' can supply BOTH

B. (1) 'A'; (2) 'A' can supply ONE

C. (1) 'B'; (2) 'B' can supply BOTH

D. (1) 'B'; (2) 'B' can supply ONE

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because Bus 16 will power MCC D which will power MCC J. In general MCC J feeds all of the support equipment for B DG. However, MCC J powers the A diesel start air compressor. One may easily confuse this with the fuel oil transfer pump and think that A fuel oil transfer pump is supplied by MCC J. Incorrect because the A fuel oil transfer pump will not start.

B. Incorrect. Plausible for the same reason as above. Incorrect because both parts are incorrect.

C. Correct. Bus 16 will power MCC D which will power MCC J which will power B fuel oil transfer pump. With an AO stationed locally, B fuel oil transfer pump can be used to supply both DGs.

D. Incorrect. Plausible because the alignment for using B fuel oil transfer pump to fill A day tank doesn't allow filling B day tank simultaneously. The examinee may assume this will require securing one DG. Incorrect because the AO can swap the alignment as necessary to keep both day tanks filled adequately.

Technical Reference(s): P-12, ER-DG.1

Proposed References to be provided to applicants during examination: None

Learning Objective: R0801C, 9.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 8
55.43

Components, capacity, and functions of emergency systems.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G3 2.3.11	
	Importance Rating	3.8	

Radiation Control - Ability to control radiation releases.

Proposed Question: RO Question # 54

There is a tube rupture in the "B" SG. The team is performing actions to isolate the ruptured steam generator per E-3, STEAM GENERATOR TUBE RUPTURE.

Which one of the following actions should be performed to stop/reduce the radioactive release in progress, per the Major Action Category isolation steps of E-3?

A. Open the A S/G ARV to control RCS temperature.

B. Set the ARV controller for B S/G to 1050 psig.

C. Shut the manual isolation valve for B S/G ARV.

D. Take the ARV controller to manual for the B S/G and set demand to 0% open.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the candidate might believe he should lower RCS temp (and ruptured S/G pressure) to prevent lifting a ruptured S/G ARV. This action is taken during the Cooldown phase, but is not used to control RCS temperature to prevent lifting the ruptured S/G ARV.

B. Correct. The ruptured S/G ARV is adjusted to its normal setpressure to ensure that the ARV remains operable and opens BEFORE its associated first safety valve opens at 1085 psig.

C. Incorrect. Plausible because candidate might believe it was a conservative action to isolate a ruptured S/G ARV that was lifting normally in response to pressure.

D. Incorrect. Same reasoning as 'C' – the candidate might believe he/she should take action to close a ruptured S/G ARV that was open.

Technical Reference(s): E-3 Background,
EOP Setpoint Document for H.3

Proposed References to be provided to applicants during examination: None

Learning Objective: REP03C 1.02 (As available)

Question Source: Bank # S019.0011
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	073 A2.02	
	Importance Rating	2.7	

Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure.

Proposed Question: RO Question # 55

Which one of the following indications would: (1) Indicate a loss of detector high voltage for R-17, Component Cooling Water; and (2) What procedure(s) would be used to respond to this situation?

A. (1) HIGH light lit;
(2) AR-E-16, RMS Process High Activity, then AR-RMS-17, R-17 Component Cooling, and then AP-CCW.1, Leakage Into The Component Cooling Loop

B. (1) FAIL light lit;
(2) AR-E-16, RMS Process High Activity, then AR-RMS-17, R-17 Component Cooling, and then AP-CCW.1, Leakage Into The Component Cooling Loop

C. (1) HIGH light lit;
(2) S-14, Area and Process Monitoring System and then A-52.12, Nonfunctional Equipment Important to Safety

D. (1) FAIL light lit;
(2) S-14, Area and Process Monitoring System and then A-52.12, Nonfunctional Equipment Important to Safety

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because one might associate the HIGH light with the loss of high voltage, and the procedures listed are the procedures that would be referenced if R-17 alarmed. Incorrect because the loss of high voltage disables R-17 so that it won't alarm.

B. Incorrect. Plausible because the first part is correct and the procedures listed are the procedures that would be referenced if R-17 alarmed. Incorrect because R-17 wouldn't alarm and, therefore, none of the procedures would be applicable.

C. Incorrect. Plausible because one might associate the HIGH light with the loss of high voltage, and the second part is correct.

D. Correct.

Technical Reference(s): S-14

Proposed References to be provided to applicants during examination: None

Learning Objective: R3901C, 1.04 (As available)

Question Source: Bank #
Modified Bank # C072.0018 (Note changes or attach parent)
New

Question History: Last NRC Exam: 2007

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

10 CFR Part 55 Content: 55.41 11
55.43

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	057 AK3.01	
	Importance Rating	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: RO Question # 56

The crew is restoring power to Instrument Bus D while implementing FR-S.1, Response To Reactor Restart/ATWS.

Which one of the following identifies: (1) Where Instrument Bus D will be powered from, and (2) What the basis is for restoring Instrument Bus D?

A. (1) MCC A or MCC B;
(2) Power the Intermediate Range SUR instrumentation

B. (1) MCC A or MCC B;
(2) Power the Radiation Monitoring instrumentation

C. (1) MCC A or MCC C;
(2) Power the Intermediate Range SUR instrumentation

D. (1) MCC A or MCC C;
(2) Power the Radiation Monitoring instrumentation

Proposed Answer: A

Explanation (Optional):

A. Correct. MCC B is energized to restore IB D to power IR SUR. MCC A is energized is energized because IB D may have been previously aligned to the maintenance supply.

B. Incorrect. Plausible because the first part is correct and the rad monitors are powered from instrument busses. Throughout the EOPs, IBs are re-energized to restore instrumentation. Incorrect because in FR-S.1, we are specifically restoring SUR indication.

C. Incorrect. Plausible because MCC A is correct and MCC C is a power source for both IB A and IB B, which power IR N-35 & N-36. Incorrect because the SUR indication comes from IB D.

D. Incorrect. Plausible because the first part is correct and the rad monitors are powered from instrument busses. Throughout the EOPs, IBs are re-energized to restore instrumentation. Incorrect because in FR-S.1, we are specifically restoring SUR indication.

Technical Reference(s): FR-S.1,
FR-S.1 Background

Proposed References to be provided to applicants during examination: None

Learning Objective: RFRS1C, 1.02 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	076 K1.17	
	Importance Rating	3.6*	

Knowledge of the physical connections and/or cause- effect relationships between the SWS and the following systems: PRMS.

Proposed Question: RO Question # 57

The plant is operating at power with Containment Recirc Fan cooler leakage. Which one of the following conditions would cause an alarm condition on the Containment Service Water radiation monitor, R-16?

A. A small break LOCA at EOL, causing containment pressure to rise to 6 psig.

B. A large break LOCA at MOL, causing containment pressure to rise to 58 psig.

C. A major steam leak at BOL, causing containment pressure to rise to 58 psig.

D. PRZR PORV leakage at EOL, causing the PRT rupture disk to rupture and containment pressure to rise to 6 psig.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. SW header pressure is higher than CNMT pressure, therefore the leakage would be *into* the CNMT.

B. Correct. CNMT pressure is high enough to cause leakage into the SW system.

C. Incorrect. This answer would be correct if a SGTL/SGTR was present in the same SG.

D. Incorrect. CNMT pressure is too low to cause leakage into the SW system.

Technical Reference(s): P-9 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3901C 1.03 (As available)

Question Source: Bank # C072.0022
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	062 2.4.11	
	Importance Rating	4.0	

Knowledge of abnormal condition procedures, regarding Loss of Service Water.

Proposed Question: RO Question # 58

Given the following conditions:

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

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

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

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

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

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

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the first part is correct, but incorrect because pumps do not start based upon Busses 17 and 18 – they start on status of Busses 14 and 16.

B. Correct.

C. Incorrect. Plausible because the first part is correct, but incorrect because pumps do not start based upon Busses 17 and 18 – they start on status of Busses 14 and 16.

D. Incorrect. Plausible because the first part is correct (outlet SW AOVs respond to SI signal), and the SW pumps will start after 15 and 17 seconds. Incorrect because the SW AOVs fail OPEN and DG's re-energize logic is from Bus 14 and 16.

Technical Reference(s): 33013-1353 sheets 6,7, 8 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R5101C 4.01
R5101C 4.02
R5101C 4.03
R5101C 4.05 (As available)

Question Source: Bank # C076.0036
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	002 K5.16	
	Importance Rating	3.5	

Reason for automatic features of the Feedwater Control System during total loss of reactor coolant flow.

Proposed Question: RO Question # 59

The plant was at 100% power when both RCPs tripped.

Which ONE of the following describes the FRV response immediately after the trip and the basis for this response?

The FRVs initially ...

A. Open further due to shrink associated with the reactor trip, and then isolate to prevent steam generator overfill.

B. Open further due to shrink associated with the reactor trip, and then isolate to prevent excessive RCS cooldown.

C. Close further due to reduced steam demand, and then reopen when the ARVs open.

D. Close further due to reduced steam demand, and then reopen to restore level to program.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the part is correct and FWI does occur on high level to prevent overfill. Incorrect because in this case overfill is not a concern.

B. Correct.

C. Incorrect. Plausible because steam demand will reduce with the reactor trip and then rise again when the ARVs open. Incorrect because FRVs initially open further due to shrink associated with the reactor trip, and then isolate to prevent excessive RCS cooldown.

D. Incorrect. Plausible because steam demand will reduce with the reactor trip and level will be below program. Incorrect because FRVs initially open further due to shrink

associated with the reactor trip, and then isolate to prevent excessive RCS cooldown.

Technical Reference(s): R4401C (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R4401C 3.03 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 4
55.43
Secondary coolant and auxiliary systems that affect the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E15 EA1.2	
	Importance Rating	2.7	

Ability to operate and / or monitor the following as they apply to the (Containment Flooding): Operating behavior characteristics of the facility.

Proposed Question: RO Question # 60

Following a large break LOCA, the operators are in E-1, Loss of Reactor or Secondary Coolant. The HCO notes that CNMT sump B level indication for 180 inches is illuminated for both trains.

Which one of the following statements is correct regarding the 180 inch level?

A. This is a normal post-LOCA indication. Continue in E-1.

B. This indicates service water leakage into CNMT. The operators will take action per AP-SW.1, Service Water Leak.

C. This indicates unexpected water entering into CNMT. The operators will take action per FR-Z.2, Response to Containment Flooding.

D. This indicates unexpected water entering into CNMT. The operators will monitor level, but take no action until level > 214 inches in sump B.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the examinee may forget the normal sump B level response to a LOCA. Incorrect because 180 inches is an entry condition to FR-Z.2.

B. Incorrect. Plausible because AP-SW.1 has steps that specifically address the CNMT flooding concern. Incorrect because 180 inches is an entry condition to FR-Z.2.

C. Correct.

D. Incorrect. Plausible because the first part is correct, and 214 is the highest level indication available fro sump B. Incorrect because 180 inches is an entry condition to FR-Z.2.

Technical Reference(s): FR-Z.2, F-0.5 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RFRZ2C 2.01 (As available)

Question Source: Bank # B000.1057
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 9
55.43
Shielding, isolation, and containment design feature, including access limitations
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 A3.01	
	Importance Rating	3.1	

Ability to monitor automatic operation of the IAS, including: Air pressure.

Proposed Question: RO Question # 61

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

- The 'A' RCP is tagged out for seal repair
- The 'C' Instrument Air Compressor and Service Air Compressor are OOS.
- 'A' and 'B' Instrument Air Compressors are running with local control in 'Constant Run'
- The Diesel Air Compressor is aligned to service air per T-2F, "Backup Air Supply"

Subsequently the following indications are received:

- Annunciator H-16, INSTRUMENT AIR COMP, alarms
- Annunciator H-8, INSTRUMENT AIR LO PRESS 100 PSIG, alarms
- MCB check reveals that the 'B' Instrument Air Compressor has tripped
- Instrument air header pressure is 95 psig and slowly lowering.

Assuming no operator action, which one of the following describes the Instrument and Service Air system response?

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

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

C. AOV-5251, Service Air Crosstie Valve will open at 90 psig and supply the instrument air header with backup air.

D. Instrument Air header pressure will continue to lower until AOV-5392, Containment Instrument Air Isolation Valve automatically closes.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. 'A' IAC loads/unloads at 110-125 psig

B. Incorrect. 'B' IAC must be reset to restart

C. Correct.

D. Incorrect. AOV-5392 closes automatically on a CI signal, but not on low air pressure.

Technical Reference(s): AP-IA.1
FIG-14.0
R4701C (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP10C 2.01
R4701C 5.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E04 EA2.1	
	Importance Rating	3.4	

Ability to determine and interpret the following as they apply to the (LOCA Outside Containment): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: RO Question # 62

Given the following conditions:

- A small break LOCA has occurred outside containment
- Actions of ECA-1.2, LOCA Outside Containment, have failed to isolate the break
- RCS pressure is 1440 psig and continues to lower

Which one of the following identifies: (1) The procedure that will be used upon transition from ECA-1.2, and (2) The basis for the transition?

A. (1) ES-0.0, Rediagnosis;
(2) To identify the break location

B. (1) E-1, Loss Of Reactor Or Secondary Coolant;
(2) To continue actions to address the LOCA

C. (1) ES-1.2, Post LOCA Cooldown And Depressurization;
(2) To reduce SI and conserve makeup inventory

D. (1) ECA-1.1, Loss of Emergency Coolant Recirculation;
(2) To address the loss of inventory available for core cooling

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because ES-0.0 is used when the operator is trying to determine or confirm the most appropriate post accident recovery procedure. Incorrect because ES-0.0 won't identify the break location.

B. Incorrect. Plausible because E-1 is the alternative procedure that ECA-1.2 uses as a transition at the end of the procedure. Incorrect because RCS pressure continues to

lower, which indicates transition to ECA-1.1 is required rather than transition to E-1.

C. Incorrect. Plausible because there is a LOCA in progress and ES-1.2 provides the guidance for dealing with a LOCA. Incorrect because we have a continuing LOCA outside CNMT which means the CNMT sump may not get enough water to support Cold Leg recirc, which requires the transition to ECA-1.1.

D. Correct.

Technical Reference(s): ECA-1.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REC12C, 2.01 (As available)

Question Source: Bank # C000.1125
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 A4.01	
	Importance Rating	3.1	

Ability to manually operate and/or monitor in the control room: Pressure gauges. (Regarding Instrument Air System)

Proposed Question: RO Question # 63

Which one of the following best explains the operation of the A & B Instrument Air Compressors with the local control switch in Auto?

A. They will start in AUTO at 100 psig and load/unload at 110 to 125 psig

B. They will start in AUTO at 105 psig and load/unload at 110 to 125 psig

C. They will start in AUTO at 113 psig and load/unload at 113 to 125 psig

D. They will start in AUTO at 115 psig and load/unload at 115 to 125 psig

Proposed Answer: B

Explanation (Optional):

A. Incorrect. 100 psig is the setpoint for H-8 (low header press). Plausible because these setpoints could easily be confused with the setpoints for the A & B IACs.

B. Correct.

C. Incorrect. This is the operation of "C" IAC. Plausible because these setpoints could easily be confused with the setpoints for the A & B IACs.

D. Incorrect. This is the operation of the SAC. Plausible because these setpoints could easily be confused with the setpoints for the A & B IACs.

Technical Reference(s): T-1C, T-2I (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R4701C, 3.01 (As available)

Question Source: Bank # C079.0007
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:
All responses rewritten.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G3 2.3.13	
	Importance Rating	3.4	

Radiation Control - Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Proposed Question: RO Question # 64

Given the following conditions:

- The plant is at 100% power
- A Containment entry is in progress

Which one of the conditions listed below requires the containment to be evacuated?

A. Unexpected R-11 alarm

B. Oxygen concentration at 20%

C. Unexpected R-13 alarm

D. Discovery of a "Hot Spot" in containment

Proposed Answer: A

Explanation (Optional):

A. Correct. Per A-3, Precautions, Section 3.1

B. Incorrect. Plausible because oxygen concentration must be within limits. Incorrect because 20% is within the limits (19.5 – 23%).

C. Incorrect. Plausible because unexpected CNMT radiation monitor alarms would require evacuation.

D. Incorrect. Plausible because the hot spot is a radiation concern.

Technical Reference(s): A-3 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAD02C 1.01 (As available)

Question Source: Bank #
Modified Bank # B310.0030 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 K3.03	
	Importance Rating	3.7	

Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under refueling operations.

Proposed Question: RO Question # 65

Given the following:

- The plant was in mode 6 with fuel movement in progress
- Annunciator L-4, Safeguard DC Failure CI and CVI Logic, alarmed
- The secondary AO reported the "Safeguards DC Failure CI and CVI Logic" lights on SIA1 and SIB1 racks were de-energized

Which ONE of the following explains: (1) The effect this will have on containment integrity, and (2) Any applicable ITS action?

A. (1) "A" and "B" train Auto and Manual CI and CVI are disabled.
(2) Immediately establish controls to assure containment closure if a CVI signal is actuated.

B. (1) "A" and "B" train Auto and Manual CI and CVI are disabled.
(2) Immediately suspend core alterations and movement of irradiated fuel assemblies within containment.

C. (1) "A" and "B" train Auto CI and CVI are disabled. Manual CI and CVI remain available.
(2) Immediately establish controls to assure containment closure if a CVI signal is actuated.

D. (1) "A" and "B" train Auto CI and CVI are disabled. Manual CI and CVI remain available.
(2) Immediately suspend core alterations and movement of irradiated fuel assemblies within containment.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the first part is correct and the second part is a procedurally required action for establishing containment closure per O-2.3.1A. Incorrect because the second part is not an ITS action.

B. Correct.

C. Incorrect. Plausible because one can easily confuse the Safeguard DC Failure CI and CVI Logic and believe that affects only the auto function. The second part is a procedurally required action for establishing containment closure per O-2.3.1A. Incorrect because both auto and manual CI/CVI are affected, and the second part is not an ITS action.

D. Incorrect. Plausible because one can easily confuse the Safeguard DC Failure CI and CVI Logic and believe that affects only the auto function. The second part is correct. Incorrect because both auto and manual CI/CVI are affected.

Technical Reference(s): AR-L-4, A-3.3, ITS 3.9.3 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3501C 6.17 RRF02C 5.02 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G4 2.4.13	
	Importance Rating	4.0	

Emergency Procedures/Plan - Knowledge of crew roles and responsibilities during EOP usage.

Proposed Question: RO Question # 66

The plant was operating at power, when a valid SI signal was received. SI pumps have been secured per the EOP guidance in effect.

Which one of the following describes the proper operation of the secured SI Pumps, if an FR procedure is in progress when the SI Reinitiation criteria of the EOP procedure FOLDOUT page are met?

A. Manually operate SI pumps as necessary, regardless of the FR procedure in effect.

B. Do not operate the SI pumps, continuous actions on FOLDOUT pages do not apply when in FR procedures.

C. Manually operate SI pumps as necessary if in a yellow or orange FR, but only as directed if in a red path FR.

D. Manually operate SI pumps as necessary if in a yellow path FR, but only as directed if in a red or orange path FR.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible if the candidate believes that FOLDOUT pages are always carried forward. Per A503.1, p24, K.2, foldout pages do not carry forward when a procedure is exited unless preceded by a NOTE stating they are applicable in other procedures.

B. Incorrect. Continuous actions in an EOP still apply if performing the actions of a yellow path FR being performed in parallel with the EOP in effect.

C. Incorrect. As in 'B', continuous actions only apply when implementing yellow path FRs.

D. Correct. Per A503.1, p32, 4.c.(7), "While performing the actions of the yellow path, continuous actions or foldout page items of the EOP in effect are still applicable and shall be monitored by the operator and STA." This is because yellow path procedures

can be performed in parallel with the EOP, should the operator decide to implement the yellow path FR.

Technical Reference(s): A-503.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REP50C 1.14 (As available)

Question Source: Bank # C000.1219
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam: 2010

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 A4.03	
	Importance Rating	2.7*	

Ability to manually operate and/or monitor in the control room: ESF slave relays. (Regarding CNMT)

Proposed Question: RO Question # 67

Given the following:

- Control Room R-11 (CNMT PARTICULATE) has a "RANGE" alarm
- Indicator display reads "000E0"
- Procedurally, the operator performs a source check
- Annunciator A-25, CONTAINMENT VENTILATION ISOLATION (CVI), alarms during the check

Which ONE of the following is correct, given these conditions?

A. The drawer has failed LOW and prevented CVI from occurring.

B. The drawer has failed HIGH and CVI has occurred as a result of the source check.

C. The RANGE alarm is in because the radiation field is low and testing the source resulted in CVI.

D. The RANGE alarm is in because the radiation field is above the alarm setpoint and CVI is expected.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. While the drawer may have failed low, the AR-RMS-11.3 procedure directs performance of a source check to check for operability. Annunciator A-25 confirms that CVI <u>has</u> occurred in response to the source check.

B. Incorrect. The drawer failing HI would result in an error display of "EEEE" (actual value greater than over-range value), not 000E0.

C. Correct. The RANGE alarm corresponds to a signal LESS THAN the normal background value. Upon receipt of 000E0, AR-RMS-11.3 directs the performance of a source check to prove operability. CVI actuation would be a normal response to the source check.

D. Incorrect. The RANGE alarm in this case corresponds to a low value signal. If the radiation field is greater than the HI alarm setpoint, the HIGH alarm light would be lit. CVI would be expected upon the receipt of the HIGH alarm. If < the over-range setpoint, the display would read some high value > the HIGH alarm. If > the over-range setpoint, the display would read "EEEE".

Technical Reference(s):
- AR-RMS-11.3
- S-14, Area and Process Radiation Monitoring System

(Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R3901C 3.02 (As available)

Question Source: Bank # C072.0025
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam: 2007

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

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

Ability to determine and interpret the following as they apply to the (Loss of Emergency Coolant Recirculation): Adherence to appropriate procedures and operation within the limitations in the facility license and amendments.

Proposed Question: RO Question # 68

A NOTE prior to the second SG depressurization step (36) in ECA-1.1, Loss of Emergency Coolant Recirculation, states "The intent of the next step is to depressurize the SGs more slowly, but at a rate that will maintain required RVLIS level."

Which one of the following statements gives the reason for slowly depressurizing the SGs?

A. To prevent accumulator nitrogen from entering the RCS and causing gas binding.

B. To avoid exceeding the Tech Spec cooldown or depressurization limit.

C. To allow time for the RCS to depressurize by ambient heat loss without causing a void in the vessel that exceeds the required RVLIS level.

D. To minimize the rate of accumulator water injection extending the time to depletion of the accumulators.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the candidate may believe there will be a certain amount of N2 injection during the depressurization to such a low S/G pressure. The S/G pressure selected (160 psig) is designed to prevent N2 injection.

B. Incorrect. Plausible because the candidate may believe that the primary reason for minimizing the depressurization (and subsequent RCS cooldown) is to prevent challenging the cooldown limit.

C. Incorrect.

D. Correct. Slow depressurization minimizes the injection rate of the accumulators, extending the time to their depletion. This prolongs the time that RVLIS level is maintained high enough to keep the core covered.

Technical Reference(s): • ECA-1.1, Step 36
• ECA-1.1 Background (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REC11C 1.02 (As available)

Question Source: Bank # C000.0785
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 10
Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	029 A2.01	
	Importance Rating	2.9/3.6	

Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Maintenance or other activity taking place inside containment.

Proposed Question: RO Question # 69

Given the following information:

- The plant was in mode 5 with containment purge in progress
- AOV-5879, Containment Purge Exhaust Valve, was inadvertently closed
- Containment Purge was subsequently shutdown and then restarted
- When the "B" train of Purge was restarted the crew started the B Purge Exhaust Fan, but not the B Purge Supply Fan

Which ONE of the following describes: (1) The impact of AOV-5879 closing, and (2) By what method did the crew start the B Purge Exhaust Fan, but not the B Purge Supply Fan?

A. (1) Both Purge Supply and Mini-Purge Supply Fans trip,
(2) On the back of the MCB, start the B Purge Exhaust Fan. Do not start the B Purge Supply Fan.

B. (1) Both Purge Supply and Mini-Purge Supply Fans trip,
(2) Place the control switch at the B Purge Supply Fan breaker in the SECURE position and then start the B Purge Exhaust Fan from the back of the MCB.

C. (1) Both Purge Exhaust Fans trip,
(2) On the back of the MCB, start the B Purge Exhaust Fan. Do not start the B Purge Supply Fan.

D. (1) Both Purge Exhaust Fans trip,
(2) Place the control switch at the B Purge Supply Fan breaker in the SECURE position and then start the B Purge Exhaust Fan from the back of the MCB.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because both supply and mini-purge supply fans respond to CVI signal. This may cause the examinee to confuse these trips with the correct answer.

B. Incorrect. Plausible because both supply and mini-purge supply fans respond to CVI signal. The second part is correct.

C. Incorrect. Plausible because the first part is correct, and starting these fans is an infrequent evolution, so one can easily confuse what is involved.

D. Correct.

Technical Reference(s): AR-C-17
S-23.2.2 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RSE00S 3.01
RSE00S 6.06 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E16 EA1.1	
	Importance Rating	3.1	

Ability to operate and / or monitor the following as they apply to the (High Containment Radiation): Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: RO Question # 70

Which one of the following is true regarding ADVERSE containment values?

A. Adverse CNMT values should first e applied when R-29 or R-30 exceed 1E6 R/hr

B. Adverse CNMT values should first be applied when R-29 and R-30 exceed 1E6 R/hr

C. PPCS data point "RADVCNMT" will begin to integrate at 1E5 R/hr on R-29 or R-30

D. PPCS data point "RADVCNMT" will begin to integrate at 1E6 R/hr on R-29 or R-30

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Adverse CNMT is > 10^5 R/hr. Plausible because < 10^6 R/hr is where we revert to normal containment values if the integrated value of RADVCNMT is < 10^6 R/hr.

B. Incorrect. Either R-29 or R-30 > 10^5 R/hr requires use of adverse values. Plausible because the examinee can easily mistake 'and' & 'or'.

C. Correct. A-503.1, p41, Section H.2

D. Incorrect. Begins to integrate at > 10^5 R/hr. Plausible because the examinee can easily confuse 10^5 R/hr and 10^6 R/hr.

Technical Reference(s): A-503.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REP50C 1.01 (As available)

Question Source: Bank # B000.1500
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 11
55.43

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G4 2.4.23	
	Importance Rating	3.4	

Emergency Procedures/Plan - Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.

Proposed Question: RO Question # 71

While performing ECA-0.0, "Loss of All AC Power", the STA informs you that he has received an orange path on core cooling, and a red path on integrity.

Which one of the following states the correct action to take?

A. Continue with ECA-0.0 while monitoring CSFSTs.

B. Continue with ECA-0.0. CSFSTs should not be monitored while in ECA-0.0.

C. Immediately transition to FR-C.1, "Response to Inadequate Core Cooling".

D. Immediately transition to FR-P.1 "Response to Imminent Pressurized Thermal Shock".

Proposed Answer: A

Explanation (Optional):

A. Correct. This guideline has priority over all FRGs and is written to implicitly monitor and maintain critical safety functions. This priority is necessary since all FRs assume that at least one AC emergency bus is available.

B. Correct. Plausible because candidate might assume that since FRs are not to be implemented in ECA-0.0, that might be construed to mean that they're not monitored, either.

C. Incorrect. Plausible if the candidate did not recall that FR procedures are NOT to be implemented while in ECA-0.0 unless directed. Since Core Cooling CSF has a higher priority than the Integrity CSF, he might believe transition to FR-C procedure would be appropriate.

D. Incorrect. Plausible if the candidate did not recall that FR procedures are NOT to be implemented while in ECA-0.0 unless directed. Since the Integrity red path is a higher priority than the Core Cooling orange path, he might believe transition to FR-P procedure would be appropriate.

Technical Reference(s):
- ECA-0.0
- ECA-0.0 Background
- A-503.1

(Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REC00C 2.01, REC00C 1.05, REP50C 1.29 (As available)

Question Source: Bank # B000.0007
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E05 EK1.1	
	Importance Rating	3.8	

Knowledge of the operational implications of the following concepts as they apply to the (Loss of Secondary Heat Sink): Components, capacity, and function of emergency systems.

Proposed Question: RO Question # 72

Step 2 of FR-H.1, Response to Loss of Secondary Heat Sink, checks both S/G wide range levels less than 120 inches [160 inches adverse CNMT]. If the S/G wide range levels are less than the stated levels, the step directs stopping both RCPs and going to step 13, which initiates RCS bleed and feed.

Which one of the following is the reason an immediate bleed and feed is initiated under these conditions?

A. If bleed and feed is delayed PORV's may not remove enough energy to depressurize RCS to less than SI pump shutoff head.

B. If bleed and feed is delayed, the RCS pressure rise may not be terminated prior to exceeding RCS pressure safety limit.

C. This ensures sufficient mass exists in the S/Gs to ensure complete dryout of the S/G does not occur during the design basis event duration

D. This ensures sufficient mass exists in the S/Gs to ensure that thermal stress is reduced on the subsequent reinitiation of feed.

Proposed Answer: A

Explanation (Optional):

A. Correct. Early initiation of bleed and feed permits the maximum initial depressurization, greater SI flowrate, and ensures effective heat removal.

B. Incorrect. RCS pressure will rise, but the primary concern is the impact of the higher pressure on SI injection flowrate, not challenging the RCS safety limits.

C. Incorrect. There is no "design basis event duration" for this event, and the S/Gs are going to dry out due to the inability to establish feedwater to them. The basis for the setpoint value (13000 lb_m of water) is to provide enough time to successfully initiate bleed and feed.

D. Incorrect. Same as 'C'.

Technical Reference(s): FR-H.1 Background, ECP-11-000830, PWROG DW-00-28 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RFRH1C 1.04 (As available)

Question Source: Bank # C000.0597
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E10 EK1.3	
	Importance Rating	3.3	

Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation Operations): Annunciators and conditions indicating signals, and remedial actions associated with the Natural Circulation with Steam Void in Vessel with/without RVLIS.

Proposed Question: RO Question # 73

Given the following conditions during the performance of ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel:

- A plant cooldown and depressurization is in progress
- The operators have tried unsuccessfully to start a RCP
- They continue the cooldown at 10 degrees F/hr and initiate an RCS depressurization
- During the depressurization, the PRZR level steadily rises to 90% and the operators energize PRZR heaters

Which of the following statements describes the expected indications as the void in the vessel collapses?

(1) RVLIS level will __(1)__ and PRZR level will __(2)__

A. (1) lower, (2) lower

B. (1) rise, (3) rise

C. (1) lower, (2) rise

D. (1) rise, (2) lower

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the second part is correct, and the examinee may be confused about the response of collapsing a bubble in the head. Incorrect because RVLIS level will rise.

B. Incorrect. Plausible because the first part is correct, and the examinee may be confused about the PRZR level response to collapsing a bubble in the head. Incorrect

because PRZR level will lower.

C. Incorrect. Plausible because this is the opposite of what occurs. The examinee may select this if his reasoning is backwards. Incorrect because RVLIS will rise and PRZR will lower.

D. Correct. Establishing subcooled conditions collapses the bubble in the head, which causes RVLIS level to rise and PRZR level to lower.

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

Proposed References to be provided to applicants during examination: None

Learning Objective: RES03C 2.01 (As available)

Question Source: Bank # B000.0251
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	086 K4.02	
	Importance Rating	3.0	

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Maintenance of fire header pressure.

Proposed Question: RO Question # 74

V-5106, Service Air Pressure Control Valve to Fire Water Storage Tank, was inadvertently isolated.

Which one of the following: 1) Explains why annunciator AR-K-31, Fire System Alarm Panel, will energize, and 2) Lists an automatic action that will occur as the Fire Water Storage Tank pressure lowers?

A. 1) Fire Booster Pump start
2) When pressure lowers to 105 psig the Fire Water Booster Pump will start

B. 1) Fire Booster Pump start
2) When pressure lowers to 100 psig the Fire Water Booster Pump will start

C. 1) Motor Fire Pump start
2) When pressure lowers to 95 psig the Motor Driven Fire Pump will start

D. 1) Motor Fire Pump start
2) When pressure lowers to 85 psig the Motor Driven Fire Pump will start

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because one could easily confuse the start of the FBP due to level with starting due to pressure. Incorrect because the FBP starts on low level – not low pressure.

B. Incorrect. Plausible because one could easily confuse the start of the FBP due to level with starting due to pressure. Incorrect because the FBP starts on low level – not low pressure.

C. Correct.

D. Incorrect. Plausible because the MFP does start on a lowering pressure, and it will cause K-31 to alarm when it starts. Incorrect because the MFP starts at 95 psig, not 85 psig. 85 psig is the start setpoint for the diesel fire pump.

Technical Reference(s): AR-K-15
AR-K-31 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R5901C 2.07
R5901C 2.09
R5901C 2.13 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 10
55.43
Administrative, normal, abnormal, and emergency operating procedures for the facility.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	077 AA2.06	
	Importance Rating	3.4	

Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Generator frequency limitations.

Proposed Question: RO Question # 75

The unit is operating at 18% power when the following event occurs:

Frequency on Bus 11A and 11B lowers to 55 HZ.

Which of the following would be the expected positions for the RCP breakers and the Reactor trip breakers?

	RCP Breakers	Reactor Trip Breakers
A.	Open	Shut
B.	Open	Open
C.	Shut	Shut
D.	Shut	Open

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Both the RCP and the RTB will get a trip signal when frequency is < 57.7 hz. Plausible because the examinee must recall that the under-frequency feeds both reactor trip and RCP trip.

B. CORRECT

C. Incorrect. Both the RCP and the RTB will get a trip signal when frequency is < 57.7 hz. Plausible because the examinee must recall that the under-frequency feeds both reactor trip and RCP trip.

D. Incorrect. Both the RCP and the RTB will get a trip signal when frequency is < 57.7 hz. Plausible because the examinee must recall that the under-frequency feeds both reactor trip and RCP trip.

Technical Reference(s): ITS 3.3.1 (Attach if not previously provided)

33013-1353 sheet 4

Proposed References to be provided to applicants during examination: None

Learning Objective: R3501C, 4.07
R1301C 6.03 (As available)

Question Source: Bank # C000.1250
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41 7
55.43

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	003 A2.04	
	Importance Rating		2.8

Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effects of fluctuation of VCT pressure on RCP seal injection flow.

Proposed Question: SRO Question # 76

Given the following conditions:

- The plant is at 100% power.
- AR-A-10, VCT PRESSURE 15 PSI 65, is received
- The HCO determines VCT pressure is 66 psig and appears stable
- VCT level is 22%.
- Both RCP #1 seal inlet and outlet temperatures remain normal
- Both RCP #1 seal leakoff flows are currently within FIG-4.0, RCP Seal Leakoff, normal operating range
- The HCO recommends entry into AP-RCP.1, RCP Seal Malfunction

Which of the following describes (1) the potential impact on continued plant operations for these conditions, and (2) the procedural action required for that impact?

A. (1) RCP #1 seal leakoff flow will be unaffected;
(2) Take actions to reduce VCT pressure to normal band using the guidance provided in the AR procedure

B. (1) RCP #1 seal leakoff flow will be less than the minimum required;
(2) Enter AP-RCP.1, RCP Seal Malfunction and take actions to raise seal injection flow.

C. (1) RCP #1 seal leakoff flow will exceed the maximum limit;
(2) Correct the problem or shutdown the plant and secure the RCP within 8 hours.

D. (1) RCP #1 seal leakoff flow will exceed the maximum limit;
(2) Trip the reactor, when all E-0 immediate actions are done – close AOV-270A and B.

Proposed Answer: A

Explanation (Optional):

A. Correct. The high VCT pressure will reduce #1 seal leakoff flow slightly. In the absence of any other symptoms, the AR procedural guidance is to lower VCT pressure (Step 7). The AR

B. Incorrect. Plausible because an increase in VCT pressure would raise the backpressure on #1 seal, thus lowering the flow through it. However, RCP seals are designed to perform under a wide range of VCT pressures without impacting seal performance, and the effect of this small increase in pressure is negligible. The examinee must have a good knowledge of the procedure to recognize that this condition does not require Rx trip.

C. Incorrect.

D. Incorrect.

Technical Reference(s): AR-A-10
AP-RCP.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP14C 2.02 (As available)

Question Source: Bank #
Modified Bank # C003.0185 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: SRO-only due to Clarification Guidance Figure 2, "Assessing plant conditions and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed." SRO must consider all the other seal parameters, and recognize that the guidance in AR-A-10 is sufficient to correct this single condition despite HCO recommendation.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	008	AA2.10
	Importance Rating		3.6

Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident: High-pressure injection valves and controllers.

Proposed Question: SRO Question # 77

The plant experienced a pressurizer vapor space break while in Mode 1. On SI initiation, the "B" SI pump fails to start and cannot be manually started.

Which one of the following statements describes (1) the response of the "C" SI pump discharge valves, and (2) the procedure that will verify this response?

MOV-871A ,'C' SI pump discharge to 'A' SI pump header, will _____ and MOV-871B, 'C' SI pump discharge to "B' SI pump header, will _____.

A. (1) MOV-871A will close, MOV-871B will remain open;
(2) ATT-27.0, Attachment Automatic Action Verification

B. (1) MOV-871A will close, MOV 871B will remain open;
(2) E-1, Loss of Reactor or Secondary Coolant

C. (1) MOV-871A will remain open, MOV-871B will close;
(2) ATT-27.0, Attachment Automatic Action Verification

D. (1) MOV-871A will remain open, MOV-871B will close;
(2) E-1, Loss of Reactor or Secondary Coolant

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because the first part is correct, and this could be verified in the E-1 procedure designed to respond to this type of loss of coolant accident

C. Incorrect. Plausible because the second part is correct and it is very easy to reverse these two valves (very challenging human factoring at Ginna).

D. Incorrect. Plausible because it is very easy to reverse these two valves (very challenging human factoring at Ginna), and could be verified in the E-1 procedure designed to respond to this type of loss of coolant accident.

Technical Reference(s): ATT-27.0 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R2601C 4.05 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: SRO-only due to Clarification Guidance Figure 2, "Assessing plant conditions and then selecting a procedure or **section of a procedure** to mitigate, recover, or with which to proceed." *Correctly implements that portion of ATT-27.0 to ensure SI pump proper alignment.*

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	002	A2.02
	Importance Rating		4.4

Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of coolant pressure.

Proposed Question: SRO Question # 78

A DBA LOCA has occurred.

Which one of the following describes 1) the expected RCS pressure response, and 2) the expected procedural flow after E-0, Reactor or Safety Injection, is exited?

(NOTE: FR-P.1, Response To Imminent Pressurized Thermal Shock Condition;
E-1, Loss Of Reactor Or Secondary Coolant)

A. RCS pressure will be less than RHR pump shutoff head. This will result in a thermal shock of the reactor vessel. The team will enter and complete FR-P.1.

B. RCS pressure will be less than RHR pump shutoff head. RCS re-pressurization is not a concern. The team will enter FR-P.1, but return to E-1, from FR-P.1 step 1.

C. The combination of SI Accumulator dump and SI flow will keep RCS pressure greater than RHR pump shutoff head. However, the injection flow will result in a thermal shock of the reactor vessel. The team will enter and complete FR-P.1.

D. The combination of SI Accumulator dump and SI flow will keep RCS pressure greater than RHR pump shutoff head. RCS re-pressurization is not a concern. The team will enter FR-P.1, but return to E-1, from FR-P.1 step 1.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the first part is correct, and the team will enter FR-P.1; however, the team will exit at step 1 rather than complete the procedure.

B. Correct.

C. Incorrect. Plausible because the combination of SI Accumulator dump and SI flow will keep RCS pressure greater than RHR pump shutoff head in most cases, and SI flow

may result in thermal shock of the reactor vessel. The team will enter FR-P.1, however the team will exit at step 1 rather than complete the procedure.

D. Incorrect. Plausible because the combination of SI Accumulator dump and SI flow will keep RCS pressure greater than RHR pump shutoff head in most cases, and SI flow may result in thermal shock of the reactor vessel. Additionally, the last part is correct.

Technical Reference(s): FR-P.1
FR-P.1 Background (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RMC03C 1.04 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		1
	K/A #	G1	2.1.39
	Importance Rating		4.3

Conduct of Operations - Knowledge of conservative decision making practices.

Proposed Question: SRO Question # 79

During the performance of an EOP the Shift Manager thinks that a procedural deviation is required.

Which one of the following lists the conditions required to implement a procedural deviation?

A. As-written procedural guidance is deficient due to current plant or equipment conditions, OR insufficient time exists to implement the normal procedure change policy, AND an immediate need exists to prevent or to minimize one or more of the following:
- Injury to personnel
- Damage to plant equipment
- Threat to health and safety of the public.

B. As-written procedural guidance is deficient due to current plant or equipment conditions, AND insufficient time exists to implement the normal procedure change policy, AND an immediate need exists to prevent or to minimize one or more of the following:
- Injury to personnel
- Damage to plant equipment
- Threat to health and safety of the public.

C. As-written procedural guidance is deficient due to current plant or equipment conditions; OR insufficient time exists to implement the normal procedure change policy.

D. As-written procedural guidance is deficient due to current plant or equipment conditions; AND insufficient time exists to implement the normal procedure change policy.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because all three parts listed are correct, however, it should be "and" between each part, not "or" between the first and second parts.

B. Correct.

C. Incorrect. Plausible because both parts listed are correct, however, the third part is missing, and it should be "and" between each part, not "or".

D. Incorrect. Plausible because both parts listed are correct, however, the third part is missing.

Technical Reference(s): A-503.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R1901C, 1.12
RAP02C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 3

Facility licensee procedures required to obtain authority for design and operating changes in the facility.

Comments: SRO-only due to knowledge of admin procedures that specify implementation of EOPs

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	068	2.4.6
	Importance Rating		4.7

Regarding Control Room Evacuation: Knowledge of EOP mitigation strategies.

Proposed Question: SRO Question # 80

During 100% power operations a small fire occurs in the Control Room kitchen. Large quantities of smoke fill the Control Room forcing the operating crew to evacuate.

Assuming the fire is controlled and extinguished in the kitchen area, which one of the following procedures will the operating crew utilize to establish the proper RCS boron concentration, and what is the RCS temperature endpoint of this procedure?

A. ER-FIRE.1, Alternate Shutdown for Control Complex Fire; Borate to CSD boron concentration via MOV-350; maintain the plant in mode 5.

B. ER-FIRE.1, Alternate Shutdown for Control Complex Fire; Borate to CSD Xenon-free boron concentration via V-358; maintain hot shutdown conditions until the Control Room is habitable.

C. AP-CR.1, Control Room Evacuation; Borate to CSD boron concentration via V-358; maintain the plant in mode 5.

D. AP-CR.1, Control Room Evacuation; Borate to CSD Xenon-free boron concentration via MOV-350; maintain hot shutdown conditions until the Control Room is habitable.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because ER-FIRE.1 would be used if the fire was not controllable. Nearly correct boron concentration, correct flow path. Wrong temperature endpoint.

B. Incorrect. Plausible because ER-FIRE.1 would be used if the fire was not controllable. Correct boron concentration, but incorrect flow path. Correct temperature endpoint.

C. Incorrect. Correct procedure. Nearly correct boron concentration, but wrong flowpath. Wrong temperature endpoint.

D. Correct. Fire is controllable, therefore the team will remain in AP-CR.1, which will

borate to CSD Xenon-free boron concentration via MOV-350, and maintain hot shutdown conditions until the Control Room is habitable.

Technical Reference(s): AP-CR.1
ER-FIRE.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP04C 1.01
RAP04C 2.01
RER22C 2.00
RER22C 10.00 (As available)

Question Source: Bank #
Modified Bank # B000.1068 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: SRO-only due to Clarification Guidance Figure 2, "Assessing plant conditions and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed." SRO had to assess that the fire was controllable, therefore the crew remains in AP-CR.1 (vs. ER-FIRE.1) to implement the correct boration method.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	004	2.1.23
	Importance Rating		4.4

Regarding CVCS: Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Proposed Question: SRO Question # 81

In the event of an SI and loss of CCW flow, E-0, REACTOR TRIP OR SAFETY INJECTION, step 11 allows starting charging pumps without isolating seal injection.

However, E-1, LOSS OF REACTOR OR SECONDARY COOLANT, step 11 requires seal injection be isolated under these conditions.

Which one of the following describes the reason for this difference?

A. In E-0 CCW flow is restored before any attempt to initiate charging is allowed.

B. In E-0 seal cooling can be re-established before the seals heat up above limits.

C. In E-1 CCW flow is restored before any attempt to initiate charging is allowed.

D. In E-1 the potential for inventory loss due to seal damage is a greater concern than the need for charging injection.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because an attempt is made to start a CCW pump in E-0, ATT-27 prior to step 11. However, to perform the actions of step 11, this attempt to start a CCW pump would have been unsuccessful.

B. Correct. E-0 verifies seal outlet temperatures < 235 degrees and then starts one charging pump.

C. Incorrect. Plausible because numerous actions are completed prior to E-1 step 11. Incorrect because CCW is not restored.

D. Incorrect. Plausible because the seals are isolated prior to initiating charging to prevent additional inventory loss due to seal damage. Incorrect because this is not a greater concern than the need for charging. Rather, the seals are isolated to allow establishing

charging without seal damage.

Technical Reference(s): E-0, E-0 Background (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REP00C, 2.01 (As available)

Question Source: Bank # E000.0135
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select a section of a procedure with which to proceed

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2	2.2.5
	Importance Rating		3.2

Equipment Control - Knowledge of the process for making design or operating changes to the facility.

Proposed Question: SRO Question # 82

Given the following:

- The unit is at 100% power
- A temporary sump pump is being installed in the Screenhouse in direct support of normally scheduled maintenance replacement of the Screenhouse Circ Water Bay sump pumps
- The replacement will be performed under a Work Order and a Temporary Change Package (TCP), and is expected to take less than 60 days.

For the given situation:
(1) Whose approval is required for this temporary change installation in the plant, and
(2) Will a 10CFR50.59 screening be required for this activity?

A. (1) Shift Manager (SM);
(2) 10CFR50.59 screening is NOT required

B. (1) Shift Manager (SM);
(2)10CFR50.59 screening IS required

C. (1) Installation group supervisor;
(2) 10CFR50.59 screening is NOT required

D. (1) Installation group supervisor;
(2) 10CFR50.59 screening IS required

Proposed Answer: A

Explanation (Optional):

A. Correct. Per CNG-CM-1.01-1004, Section 5.4 (c), the SM will approve the TC. This work activity is not a compensatory measure and is in direct support of a scheduled maintenance activity. Per Step 5.3.F.5, if the TCP is in direct support of maintenance, and in installed for 90 days or less, the 10CFR50.59 screen required by CNG-CM-1.01-1003 may be waived.

B. Incorrect. Plausible because (1) SM approval is correct but (2) the 10CFR50.59 screening can be waived.

C. Incorrect. Plausible because (1) the installation group supervisor is part of the TCP installation process, and (2) the 10CFR50.59 screening is not required.

D. Incorrect. Plausible because (1) the installation group supervisor is part of the TCP installation process, and (2) the screening can be waived.

Technical Reference(s): CNG-CM-1.01-1004, Temporary Plant Configuration Change Process (Attach if not previously provided)

Proposed References to be provided to applicants during examination: YES - CNG-CM-1.01-1004

Learning Objective: (As available)

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

Question History: Last NRC Exam: N/A

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

10 CFR Part 55 Content: 55.41
55.43 3

Facility licensee procedures required to obtain authority for design and operating changes in the facility

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	029	2.1.20
	Importance Rating		4.6

Regarding ATWS: Ability to interpret and execute procedure steps.

Proposed Question: SRO Question # 83

Given the following conditions:

- A valid reactor trip signal occurred with the plant at full power.
- The reactor would not trip and the team transitioned to FR-S.1, Response To Reactor Restart/ATWS.
- Emergency boration was initiated without an SI signal present.
- Subsequently, while still in FR-S.1, an automatic SI signal was received and the reactor is still not tripped.

Which one of the following explains the status of emergency boration and what actions are required?

A. Emergency boration flow is unaffected. When the procedure is exited, boration should continue to obtain adequate shutdown margin per the caution prior to the final step of FR-S.1.

B. Emergency boration flow is unaffected. A manual SI and manual CI have been initiated. Receipt of a subsequent SI signal will have no affect because the initial SI signal has not been reset.

C. The charging pumps will trip. If the SI pumps are running no further action is required.

D. The charging pumps will trip. If SI flow is not indicated, the emergency boration step must be re-performed.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because the second part is true. Incorrect because the first is incorrect.

B. Incorrect. Plausible because subsequent auto SI can be confusing.

C. Incorrect. Plausible because the first part is correct and the second part is correct sometimes. Incorrect because it is not enough to verify SI pumps running. SI flow must be verified.

D. Correct.

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

Proposed References to be provided to applicants during examination: None

Learning Objective: RFRS1C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select section of a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2	2.2.17
	Importance Rating		3.8

Equipment Control - Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.

Proposed Question: SRO Question # 84

Given the following plant conditions:

- The plant is at full power
- You are the Shift Manager of Record.
- RG&E Energy Control Center (ECC) has notified you that Station 13A transmission circuit 911 has just been lost.

Which one of the following identifies:
(1) Your responsibilities per O-6.9, Ginna Station Operating Limits For Station 13A Transmission, and
(2) The procedure that will be used if the Control Room does not lower Net Generation to the required level within the required time limit?

A. (1) Complete Attachment 1, Generation Output Ramp Down Written Certification, and fax a copy to RG&E ECC within 15 minutes of being notified of certification request;
(2) Trip the reactor and go to E-0, Reactor Trip Or Safety Injection.

B. (1) Complete Attachment 1, Generation Output Ramp Down Written Certification, and fax a copy to RG&E ECC within 15 minutes of being notified of certification request;
(2) Raise the load reduction rate as necessary per AP-TURB.5, Rapid Load Reduction.

C. (1) Complete Attachment 1, Generation Output Ramp Down Written Certification, and fax a copy to RG&E ECC within 29 minutes of being notified of certification request;
(2) Trip the reactor and go to E-0, Reactor Trip Or Safety Injection.

D. (1) Complete Attachment 1, Generation Output Ramp Down Written Certification, and fax a copy to RG&E ECC within 29 minutes of being notified of certification request;
(2) Raise the load reduction rate as necessary per AP-TURB.5, Rapid Load Reduction.

Proposed Answer: A

Explanation (Optional):

A. Correct. Per O-6.9, the SM will complete Attachment 1, Generation Output Ramp Down Written Certification, and fax a copy to RG&E ECC within 15 minutes of being notified of certification request. If the Control Room does not lower Net Generation to the required level within the required time limit trip the reactor and go to E-0, Reactor Trip Or Safety Injection.

B. Incorrect. Plausible because the first part is correct, and AP-TURB.5 is the procedure that is used for the load reduction. Incorrect because if the time limit has been reached we trip the reactor rather than raise the load reduction rate.

C. Incorrect. Plausible because 29 minutes is one of the times utilized on attachment 1. This time can easily be confused with the 15 minute limit the SM has. The second part is correct.

D. Incorrect. Plausible because 29 minutes is one of the times utilized on attachment 1 and AP-TURB.5 is the procedure that is used for the load reduction. Incorrect because if the time limit has been reached we trip the reactor rather than raise the load reduction rate.

Technical Reference(s): O-6.9 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RSE00S 7.05 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: Assess plant conditions and select a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	E14	EA2.1
	Importance Rating		3.8

Ability to determine and interpret the following as they apply to (Loss of CTMT Integrity): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: SRO Question # 85

The plant was in mode 6 with RCS loop level at 60 inches and irradiated fuel in the reactor vessel, when both RHR pumps tripped.

Which one of the following identifies (1) the procedure to use to respond to the situation, and (2) the procedure to refer to for establishing containment integrity?

A. (1) AP-RHR.1, Loss Of RHR
(2) O-2.3.1A, Containment Closure Capability Within Two Hours During Reduced Inventory Operation

B. (1) AP-RHR.1, Loss of RHR
(2) A-3.3, Containment Integrity Program

C. (1) AP-RHR.2, Loss Of RHR While Operating At Reduced Inventory Conditions
(2) O-2.3.1A, Containment Closure Capability Within Two Hours During Reduced Inventory Operation

D. (1) AP-RHR.2, Loss Of RHR While Operating At Reduced Inventory Conditions
(2) A-3.3, Containment Integrity Program

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because if loop level is > 64inches AP-RHR.1 would be the correct answer, however, < 64 inches AP-RHR.2 is the correct procedure. Second part is correct.

B. Incorrect. Plausible because if loop level is > 64inches AP-RHR.1 would be the correct answer, however, < 64 inches AP-RHR.2 is the correct procedure. A-3.3 is plausible because it delineates the containment integrity program for all modes – including reduced inventory, however, O-2.3.1A is the procedure that is actually used to establish containment closure in this situation.

C. Correct. AP-RHR.2 is applicable because loop level is < 64 inches. O-2.3.1A is the procedure that is actually used to establish containment closure in this situation.

D. Incorrect. Plausible because the first part is correct. A-3.3 is plausible because it delineates the containment integrity program for all modes – including reduced inventory, however, O-2.3.1A is the procedure that is actually used to establish containment closure in this situation.

Technical Reference(s): AP-RHR.2
O-2.3.1A (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP25C 1.02
RAP25C 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: Assess plant conditions and select a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	062	A2.08
	Importance Rating		3.0*

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of exceeding voltage limitations.

Proposed Question: SRO Question # 86

The following conditions exist during normal 100% power operations:

- Bus 14 – 424V
- Bus 16 – 441V
- Bus 17 – 442V
- Bus 18 – 441V
- Both D/G in standby

Which one of the following identifies the consequences of continued operation with these conditions, and what actions would you take?

A. Lower current and reduced motor speed
Start "A" D/G and load bus 14 in unit operation

B. Higher current and motor damage
Start "A" D/G and load bus 14 in unit operation

C. Lower current and reduced motor speed
Start "A" D/G and load bus 14 in parallel operation

D. Higher current and motor damage
Start "A" D/G and load bus 14 in parallel operation

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because one of the entry conditions for AP-ELEC.14/16 is annunciator L-14, Bus 14 UV Sfgds, lit, and this alarm would be lit. Incorrect because this procedure is provides actions to respond to a loss of bus 14 or 16, not under voltage.

B. Correct

C. Incorrect. See "A" above. Additionally, the D/G would be operated in unit, not parallel.

D. Incorrect. Plausible because everything is correct except that the D/G would be operated in unit, not parallel.

Technical Reference(s): AP-ELECT.2
AP-ELEC.14/16 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP08C 1.02
RAP08C 2.01 (As available)

Question Source: Bank #
Modified Bank # B062.0001 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select a section of a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	E12 EA2.2	
	Importance Rating		3.9

Ability to determine and interpret the following as they apply to the (Uncontrolled Depressurization of all Steam Generators): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Proposed Question: SRO Question # 87

Under what conditions would transition to E-2, Faulted Steam Generator Isolation, be made from procedure ECA-2.1, Uncontrolled Depressurization Of Both Steam Generators?

A. If both steam generator pressures becomes less than RCS pressure.

B. If any steam generator pressure rises at any time.

C. If any steam generator pressure rises at any time (except while performing SI termination in steps 17 and 18).

D. If RCS pressure is NOT greater than 300 psig [350 psig adverse CNMT].

Proposed Answer: C

Explanation (Optional):

A. INCORRECT. Plausible because this is the criteria for transition out of FR-H.1 that the examinee may confuse with ECA-2.1 if he is not familiar enough with ECA-2.1.

B. INCORRECT. Plausible because this is correct except during the performance of steps 17 and 18.

C. CORRECT. Per ECA-2.1 foldout page.

D. INCORRECT. Plausible because this is criteria for transition out of ECA-2.1, except that it transitions to E-1, not E-2.

Technical Reference(s): ECA-2.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REC21C, 1.03 (As available)

Question Source: Bank # B000.0141
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	029 A2.04	
	Importance Rating		3.2*

Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Health physics sampling of containment atmosphere.

Proposed Question: SRO Question # 88

Given the following conditions:

- The plant was in mode 5
- Workers are bringing outage equipment into containment through the equipment hatch
- The portable CAM outside the equipment hatch alarmed
- The RP Tech reported that there was *outward* air flow through the equipment hatch

Which one of the following identifies: (1) Guidance which provides the combinations of Purge fans used to establish a negative pressure in containment, and (2) Per that guidance, which acceptable fan combination will result in INWARD air flow through the equipment hatch?

A. (1) S-23.2.2, Containment Purge Procedure;
(2) 2 Purge Exhaust Fans and 1 Purge Supply Fan running

B. (1) S-23.2.2, Containment Purge Procedure;
(2) 2 Purge Exhaust Fans and no Purge Supply Fan running

C. (1) AR-C-17, CNMT VENT SYSTEM;
(2) 2 Purge Exhaust Fans and 1 Purge Supply Fan running

D. (1) AR-C-17, CNMT VENT SYSTEM;
(2) 2 Purge Exhaust Fans and no Purge Supply Fan running

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because S-23.2.2 contains the combinations, but the 2/0 combination is not acceptable.

C. Incorrect. Plausible because the CNMT Purge Supply and Exhaust fans feed the C-17 alarm and that alarm response provides actions to take for other fans. Additionally, 2/1 is a correct combination. Incorrect because AR-C-17 doesn't provide the acceptable combinations.

D. Incorrect. Plausible because the CNMT Purge Supply and Exhaust fans feed the C-17 alarm and that alarm response provides actions to take for other fans. Incorrect because 2/0 is a incorrect combination, and because AR-C-17 doesn't provide the acceptable combinations.

Technical Reference(s): S-23.2.2
AR-C-17 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: R2201C, 5.03 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 4

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		3
	K/A #	G3 2.3.4	
	Importance Rating		3.7

Radiation Control - Knowledge of radiation exposure limits under normal or emergency conditions.

Proposed Question: SRO Question # 89

Given the following conditions:

- A Site Area Emergency is in progress
- An operator has been determined to be missing, and his last known location was the Auxiliary Building Sub-basement
- The radiation levels in the Auxiliary Building Sub-basement are expected to be very high
- It's assumed that the operator is injured

(1) What is the radiation exposure limit for the search and removal of the operator, and
(2) What procedure provides the limit for this situation?

A. (1) 10 Rem;
(2) EPIP-2.8, Voluntary Acceptance Of Emergency Radiation Exposure

B. (1) 10 Rem;
(2) A-1, Radiation Control Manual

C. (1) 25 Rem;
(2) EPIP-2.8, Voluntary Acceptance Of Emergency Radiation Exposure

D. (1) 25 Rem;
(2) A-1, Radiation Control Manual

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because EPIP-2.8 lists the Facility Protection Limit as 10 Rem and this could easily be confused with the Lifesaving Limit. EPIP-2.8 is the correct procedure.

B. Incorrect. Plausible because EPIP-2.8 lists the Facility Protection Limit as 10 Rem and this could easily be confused with the Lifesaving Limit. A-1 is incorrect. A-1 procedure generally lists all radiation exposure limits.

C. Correct. EPIP-2.8 provides the limit of 25 Rem

D. Incorrect. Plausible because 25 Rem is correct, and because the A-1 procedure generally lists all radiation exposure limits. A-1 does discuss a Planned Special Exposure (PSE), but that is different than what is involved in EPIP-2.8.

Technical Reference(s): EPIP-2.8 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RSC02C 1.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 4

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	E07	EA2.2
	Importance Rating		3.9

Ability to determine and interpret the following as they apply to (Inadequate Core Cooling): Adherence to appropriate procedures and operation within the limitations in the facilities license and amendments.

Proposed Question: SRO Question # 90

A LOCA was in progress with the following plant conditions:

- CNMT pressure 16 psig and rising
- Average CETs 1214 °F
- RCS pressure 1000 psig
- RWST level 74%
- RVLIS 60%
- SG narrow range levels 30%

The CRS entered the appropriate procedure. While performing that procedure he determined that the SGs should be depressurized from 160 psig to atmospheric pressure.

Which one of the following identifies the procedure the CRS entered, and an action that must be performed immediately before the depressurization?

A. FR-C.2, Response To Degraded Core Cooling; Stop the RCPs

B. FR-C.1, Response To Inadequate Core Cooling; Stop the RCPs

C. FR-C.2, Response To Degraded Core Cooling; Check SI accumulator discharge valves open

D. FR-C.1, Response To Inadequate Core Cooling; Check SI accumulator discharge valves open

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the examinee could easily confuse FR-C.1 and FR-C.2 entry criteria. The second part is correct.

B. Correct. Meet FR-C.1 entry criteria. RCPs are stopped immediately before the depressurization to atmospheric pressure.

C. Incorrect. Plausible because the examinee could easily confuse FR-C.1 and FR-C.2 entry criteria. The SI accumulator discharge valves are checked open prior to the first depressurization.

D. Incorrect. Plausible because the correct procedure is identified. Incorrect because the SI accumulator discharge valves are checked open prior to the first depressurization.

Technical Reference(s): FR-C.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: No

Learning Objective: RFRC1C, 1.02
RFRC1C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	064	2.4.9
	Importance Rating		4.2

Regarding Emergency D/Gs: Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.

Proposed Question: SRO Question # 91

The plant was cooling down per O-2.2, Plant Shutdown From Hot Shutdown To Cold Conditions, with the following conditions:

- Offsite power in the 0/100 electrical lineup on circuit 7T
- Maintenance has just been completed on circuit 767
- "A" D/G out of service
- RCS temperature 295 degrees F and lowering

Subsequently, a 200 gpm LOCA and a loss of circuit 7T occurred simultaneously.

Which one of the following identifies: (1) The appropriate procedure for this condition, and (2) the procedure that will be used to restore offsite power when offsite power becomes available?

A. (1) AP-ELEC.3, Loss Of 12A And/Or 12B Transformer (Below 350F)
(2) ER-ELEC.1, Restoration Of Offsite Power

B. (1) AP-ELEC.3, Loss Of 12A And/Or 12B Transformer (Below 350F)
(2) AP-ELEC.3, Loss Of 12A And/Or 12B Transformer (Below 350F)

C. (1) AP-RCS.4, Shutdown LOCA;
(2) ER-ELEC.1, Restoration Of Offsite Power

D. (1) AP-RCS.4, Shutdown LOCA;
(2) AP-ELEC.3, Loss Of 12A And/Or 12B Transformer (Below 350F)

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because the loss of 12A or 12B transformer has the same impact as the loss of offsite power, however, AP-ELEC.3 is written for the loss of the transformers – not a loss of the offsite power circuit. Additionally, AP-ELEC.3 does not provide guidance to respond to a LOCA. The second part is correct.

B. Incorrect. Plausible because the loss of 12A or 12B transformer has the same impact as the loss of offsite power, however, AP-ELEC.3 is written for the loss of the transformers – not a loss of the offsite power circuit. Additionally, AP-ELEC.3 does not provide guidance to respond to a LOCA. AP-ELEC.3 also directs the user to refer to ER-ELEC.1 to restore offsite.

C. Correct. AP-RCS.4 provides actions for a LOCA that occurs during Mode 3 after SI accumulators are isolated or Mode 4. AP-RCS.4 has the team refer to ER-ELEC.1 to restore offsite power and allow securing the D/Gs.

D. Incorrect. Plausible because AP-RCS.4 provides actions for a LOCA that occurs during Mode 3 after SI accumulators are isolated or Mode 4. Incorrect because AP-RCS.4 has the team refer to ER-ELEC.1 to restore offsite power and allow securing the D/Gs – not AP-ELEC.3.

Technical Reference(s): AP-RCS.4
AP-ELEC.3
ER-ELEC.1 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP27C, 1.02
RAP27C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: Assess plant conditions and select a procedure

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		3
	K/A #	G3 2.3.6	
	Importance Rating		3.8

Radiation Control - Ability to approve release permits.

Proposed Question: SRO Question # 92

The "A" Monitor Tank was sampled for release and the analysis completed at 1700 on Monday. An event occurred that is delaying the release.

Which one of the following times is the LATEST that a release of the "A" Monitor Tank can be initiated with no restrictions?

A. 1900 Monday

B. 2300 Monday

C. 0400 Tuesday

D. 1700 Tuesday

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Although this falls within the 12 hours limit, it is not the LATEST time possible.

B. Incorrect. Although this falls within the 12 hours limit, it is not the LATEST time possible.

C. Correct. Per S-3.4K, the release may be initiated, provided no more than 12 hrs have elapses since the sample .

D. Incorrect. The release may be initiated, with chem tech approval, provided the conditions that existed when the permit was made still exist.

Technical Reference(s): CH-700 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RSE00S, 5.04 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 4

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions

Comments: SRO-only justification per Clarification Guidance for SRO-Only Questions, Item II.D, "Process for gaseous/liquid release approvals, i.e., release permits."

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	055	2.1.25
	Importance Rating		4.2

Ability to interpret reference materials, such as graphs, curves, tables, etc.

Proposed Question: SRO Question # 93

Following a loss of all AC power, the following conditions exist:

- S/G A pressure - 615 psig
- S/G B pressure - 623 psig
- RCS Loop A Cold Leg – 517 °F
- RCS Loop B Cold Leg – 519 °F
- RCS Loop A Hot Leg – 545 °F and steady
- RCS Loop B Hot Leg – 546 °F and steady
- Core exit TCs – 551 °F and rising
- RCS pressure - 1250 psig
- PRZR level – 14%
- Containment pressure - 1.0 psig
- Containment radiation - 3.61 mR/hr
- SI and RHR pumps not running

Which one of the following states (1) the next recovery procedure you transition to, and (2) why natural circulation is/is not indicated?

A. (1) ECA-0.1, Loss Of All AC Power Recovery Without SI Required;
(2) Natural circulation is not indicated. RCS cold leg temperature is greater than SG saturation temperature for observed SG pressure.

B. (1) ECA-0.1, Loss Of All AC Power Recovery Without SI Required;
(2) Natural circulation is not indicated. The RCS is not subcooled.

C. (1) ECA-0.2, Loss Of All AC Power Recovery With SI Required;
(2) Natural circulation is indicated. RCS cold leg temperature is greater than SG saturation temperature for observed SG pressure.

D. (1) ECA-0.2, Loss Of All AC Power Recovery With SI Required;
(2) Natural circulation is indicated. The RCS is not subcooled.

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because ECA-0.1 is the correct transition and a lack of subcooling would indicate a lack of NC. In this case the RCS is subcooled.

C. Incorrect. Plausible because these RCS and SG pressures would normally result in transition to ECA-0.2. In this case the ECA-0.2 criteria is not met. The RCS cold leg temperature is greater than saturation SG temperatures.

D. Incorrect. Plausible because these RCS and SG pressures would normally result in transition to ECA-0.2. In this case the ECA-0.2 criteria is not met. The RCS is subcooled.

Technical Reference(s): ATT-13.0
FIG-1.0 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: ECA-0.0 page 27
ATT-13.0
FIG-1.0

Learning Objective: REC00C 2.01
REC00S 1.03 (As available)

Question Source: Bank #
Modified Bank # B000.0040 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: (1) Assess plant conditions, select procedure, (2) Interpret reference mat'ls

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G4	2.4.18
	Importance Rating		4.0

Emergency Procedures/Plan - Knowledge of the specific bases for EOPs.

Proposed Question: SRO Question # 94

Given the following plant conditions:

- A SGTR is in progress
- The cooldown to establish subcooling has been completed
- PORV-430 was opened to minimize break flow and refill the PRZR
- When the criteria to close PORV-430 was met, both PORV-430 and MOV-516 would not close

Following the required procedure transition, the CRS eventually reached the following caution:

FEED FLOW SHOULD NOT BE ESTABLISHED TO ANY RUPTURED S/G WHICH IS ALSO FAULTED UNLESS IT IS NEEDED FOR RCS COOLDOWN.

Which one of the following identifies:
(1) The procedure that the CRS transitioned to, and
(2) The basis for the caution?

A. (1) ECA-3.1, SGTR With Loss Of Reactor Coolant – Subcooled Recovery Desired
(2) Prevent excessive RCS cooldown due to feeding a faulted steam generator

B. (1) ECA-3.1, SGTR With Loss Of Reactor Coolant – Subcooled Recovery Desired
(2) Prevent spread of contamination from an uncontrolled radioactive release

C. (1) ECA-3.3, SGTR Without Pressurizer Pressure Control
(2) Prevent excessive RCS cooldown and reduce the potential for overfill due to feeding a ruptured+faulted S/G

D. (1) ECA-3.3, SGTR Without Pressurizer Pressure Control
(2) Prevent spread of contamination from an uncontrolled radioactive release

Proposed Answer: A

Explanation (Optional):

A. Correct.

B. Incorrect. Plausible because the correct procedure is identified, and spread of contamination from an uncontrolled radioactive release will result. Incorrect because the basis is to prevent excessive RCS cooldown due to feeding a faulted S/G

C. Incorrect. Plausible because with the PORV open the team will not have PRZR pressure control, and the second part is correct. Incorrect because ECA-3.1 is the correct transition.

D. Incorrect. Plausible because with the PORV open the team will not have PRZR pressure control, and spread of contamination from an uncontrolled radioactive release will result. Incorrect because the basis is to prevent excessive RCS cooldown due to feeding a faulted S/G, and ECA-3.1 is the correct transition.

Technical Reference(s): E-3
ECA-3.1 Background (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REP03C, 2.01
REC31C, 1.02 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: (1) Assess plant conditions, select procedure, (2) Interpret reference mat'ls

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	076	2.2.25
	Importance Rating		4.2

Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

Proposed Question: SRO Question # 95

Technical Specification 3.4.16 places a limit on maximum RCS specific activity. If this limit is exceeded, RCS T-avg must be reduced to 500°F within 8 hours.

What is the purpose of this temperature reduction?

A. To protect the public against the potential radioactive release from a steam generator tube rupture.

B. To minimize the potential for stress corrosion cracking of stainless steels used in the RCS.

C. To keep the postulated post accident release due to containment leakage following a LOCA below the levels assumed in 10CFR20 siting criteria.

D. To prevent control rod drive damage. Differential metal expansion rates are minimized if RCS temperature is stabilized below 500 degrees F.

Proposed Answer: A

Explanation (Optional):

A. Correct. Per B 3.4.16 (RCS Specific Activity) APPLICABLE SAFETY ANALYSES.

B. Incorrect. Plausible because a temperature in excess of 500 degrees F is required to produce stress corrosion cracking of stainless steels used in emergency core cooling components. Incorrect because that has nothing to do with ITS 3.4.16.

C. Incorrect. Plausible in that this sounds reasonable with regards to RCS activity. Incorrect because that has nothing to do with ITS 3.4.16.

D. Incorrect. Plausible because the Zirc guide tube interlock (concerned with differential metal expansion rates) involves this temperature, however this has nothing to do with ITS 3.4.16.

Technical Reference(s): ITS B 3.4.16 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RCH02C, 3.03 (As available)

Question Source: Bank # C300.0263
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 2
Facility operating limitations in the technical specifications and their bases.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	073	A2.03
	Importance Rating		2.9*

Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Calibration drift.

Proposed Question: SRO Question # 96

Which one of the following identifies:
(1) A possible result of calibration drift of R-47, Air Ejector Monitor, and
(2) An action that would be required for this situation?

A. (1) High Voltage reading being outside its limit compared to the Tape Value posted on the drawer;
(2) Apply ITS 5.5.8, Steam Generator Program

B. (1) High Voltage reading being outside its limit compared to the Tape Value posted on the drawer;
(2) Initiate a Condition Report

C. (1) Warning Alarm and High Alarm setpoints below their required values;
(2) Apply ITS 5.5.8, Steam Generator Program

D. (1) Warning Alarm and High Alarm setpoints below their required values;
(2) Initiate a Condition Report

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the first part is correct, and R-47 is used to quantify SG tube leakage. Incorrect because this situation requires a Condition Report, not application of ITS 5.5.8. (ITS 5.5.8 is used to ensure SG tube integrity. It does not include actions to implement similar to section 3; however, it is unlikely that the students will be familiar with 5.5.8, and therefore it is a suitable distractor.)

B. Correct.

C. Incorrect. Plausible because these are setpoints that are checked by the STP. Incorrect because calibration drift affects the process signal, not the warning setpoints that are set at the drawer by the operator.

D. Incorrect. Plausible because these are setpoints that are checked by the STP. Incorrect because calibration drift affects the process signal, not the warning setpoints that are set at the drawer by the operator.

Technical Reference(s): STP-O-17.5M (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP32C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 4

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.
Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	058	2.4.20
	Importance Rating		4.3

Knowledge of the operational implications of EOP warnings, cautions, and notes.

Proposed Question: SRO Question # 97

A SGTR has occurred. The control room operators are preparing to cool down and depressurize the RCS per the ES-3 series procedure with the following Major Action Categories:

- Prepare for cooldown to Cold Shutdown
- Cooldown and depressurize RCS to RHR conditions
- Cooldown to Cold Shutdown

While performing the RCS cooldown at a rate of 95°F/hr, the SR count rate indications begin to rise.

(1) Which one of the following identifies the procedure that is being used and
(2) The probable root cause of this unexpected SR rise?

A. (1) ES-3.1, Post SGTR Cooldown Using Backfill;
(2) The RCS cooldown is too rapid for the described conditions. Positive reactivity is being added to the core.

B. (1) ES-3.1, Post SGTR Cooldown Using Backfill;
(2) Water below the boron concentration required for the shutdown margin is flowing into the RCS from the ruptured S/G, diluting the RCS.

C. (1) ES-3.2, Post SGTR Cooldown Using Blowdown;
(2) The RCS cooldown is too rapid for the described conditions. Positive reactivity is being added to the core.

D. (1) ES-3.2, Post SGTR Cooldown Using Blowdown;
(2) Water below the boron concentration required for the shutdown margin is flowing into the RCS from the ruptured S/G, diluting the RCS.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because the first part is correct, and the negative ITC will insert positive reactivity with the RCS cooldown, however, the shutdown margin is large enough to support a cooldown rate of 100 degrees per hour.

B. Correct. These are the MACs for ES-3.1 and the concern per ES-3.1 background for step 4 note 1.

C. Incorrect. Plausible because the MACs are very similar, however ES-3.2 has an additional MAC of "Depressurize the RCS to RHR system pressure". Second part is incorrect per response "A" above.

D. Incorrect. Plausible because the MACs are very similar, however ES-3.2 has an additional MAC of "Depressurize the RCS to RHR system pressure". Second part is correct.

Technical Reference(s): ES-3.1 background
ES-3.2 background (Attach if not previously provided)

Proposed References to be provided to applicants during examination:

Learning Objective: RES31C 1.02
RES31C 1.04
RES32C 1.04 (As available)

Question Source: Bank #
Modified Bank # B000.0212 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: (1) Assess plant conditions, select procedure, (2) Ops implication of note.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	056	2.1.32
	Importance Rating		4.0

Regarding the Condensate sys: Ability to explain and apply system limits and precautions.

Proposed Question: SRO Question # 98

The plant was at full power. The crew used AP-RCS.1, Reactor Coolant Leak, to respond to an RCS leak. Plant Management has directed that the plant be taken off-line in 2 hours.

Per the applicable load reduction procedure, there is a caution regarding running two condensate pumps at less than 30% power.

(1) Which one of the following identifies the procedure that will be used for the load reduction, and (2) what is the basis for the caution?

A. (1) O-2.1, Normal Shutdown To Hot Shutdown;
(2) Running two condensate pumps at < 30% power has caused the reject valve to open in automatic, resulting in a significant reduction in condensate pressure and NPSH concerns for the running MFP.

B. (1) O-2.1, Normal Shutdown To Hot Shutdown;
(2) Running two condensate pumps at < 30% power has caused dead-heading of one condensate pump with subsequent overheating and cavitation.

C. (1) AP-TURB.5, Rapid Load Reduction;
(2) Running two condensate pumps at < 30% power has caused the reject valve to open in automatic, resulting in a significant reduction in condensate pressure and NPSH concerns for the running MFP.

D. (1) AP-TURB.5, Rapid Load Reduction;
(2) Running two condensate pumps at < 30% power has caused deadheading of one condensate pump with subsequent overheating and cavitation.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Plausible because O-2.1 is provided as the other option for the load reduction in the AP-RCS.1 procedure. Also the reject valve is plausible because there is a caution regarding the reject valve operation during the load reduction. Incorrect because AP-TURB.5 is required to reduce power quickly enough for the time allowed, and running two condensate pumps at < 30% power is based on the deadheading concern.

B. Incorrect. Plausible because O-2.1 is provided as the other option for the load reduction in the AP-RCS.1 procedure, and the second part is correct. Incorrect because AP-TURB.5 is required to reduce power quickly enough for the time allowed.

C. Incorrect. Plausible because AP-TURB.5 is the correct procedure to use, and there is a caution regarding the reject valve operation during the load reduction. Incorrect because running two condensate pumps at < 30% power is based on the deadheading concern.

D. Correct. To reduce power enough in the time allotted, AP-TURB.5 must be used, and running two condensate pumps at < 30% power is based on the deadheading concern.

Technical Reference(s): AP-TURB.5 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RAP30C 1.01
RAP30C 1.03 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Comments: (1) Assess plant conditions, select procedure, (2) system limit/precaution

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G4	2.4.29
	Importance Rating		4.4

Emergency Procedures / Plan - Knowledge of the emergency plan.

Proposed Question: SRO Question # 99

The TSC is being manned during a Site Emergency condition when the control room receives word that radiation levels in the TSC are approximately 75 mrem per hour.

Which one of the following identifies (1) the applicable procedure, and (2) the action the acting Emergency Coordinator (Shift Manager) should take?

(Appropriate TSC personnel includes: Operations Assessment Manager, Chemistry Manager, TSC Director/Emergency Coordinator, Technical Assessment Manager, and Nuclear Assessment.)

A. (1) EPIP 1-9, Technical Support Center Activation;
(2) Have appropriate TSC personnel report to the Shift Manager's office and all other TSC personnel report to the Plant Conference Rooms.

B. (1) EPIP 1-9, Technical Support Center Activation;
(2) Have appropriate TSC personnel report to the Shift Manager's office and all other TSC personnel report to the Training Center.

C. (1) EPIP 2-10, In-plant Radiation Surveys;
(2) Have appropriate TSC personnel report to the Shift Manager's office and all other TSC personnel report to the Plant Conference Rooms.

D. (1) EPIP 2-10, In-plant Radiation Surveys;
(2) Have appropriate TSC personnel report to the Shift Manager's office and all other TSC personnel report to the Training Center.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Plausible because EPIP 1-9 is the correct procedure, and the appropriate TSC personnel report to the Shift Manager's office. Additionally, the Plant Conference Rooms are large enough to hold all other TSC personnel and are located far enough away that the radiation level would likely no longer be a concern. Incorrect because, per EPIP 1-9, all other TSC personnel report to the Training Center.

B. Correct. Per EPIP 1-9.

C. Incorrect. Plausible because EPIP 2-10 provides the guidelines for conduct of in-plant radiation survey and monitoring, and one might easily assume that includes the guidance for when the measured radiation level is too high. Incorrect because EPIP 1-9 actually contains this information.

D. Incorrect. Plausible because EPIP 2-10 provides the guidelines for conduct of in-plant radiation survey and monitoring, and one might easily assume that includes the guidance for when the measured radiation level is too high. Also, the second part is correct. Incorrect because EPIP 1-9 actually contains the desired information.

Technical Reference(s): EPIP 1-9 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: RSC03C, 1.00 (As available)

Question Source: Bank #
Modified Bank # B000.0219 (Note changes or attach parent)
New

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 4, 5

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations

Comments: Assess plant conditions, select procedure with which to proceed.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	065	AA2.07
	Importance Rating		3.2*

Ability to determine and interpret the following as they apply to the Loss of Instrument Air: Whether backup nitrogen supply is controlling valve position.

Proposed Question: SRO Question # 100

Given the following:

- A SGTR is in progress with a major instrument air leak in containment.
- RCS cooldown has been completed

Which one of the following identifies how the subsequent RCS depressurization will be performed?

A. Spray the PRZR with maximum available spray

B. Spray the PRZR with maximum available auxiliary spray

C. Align nitrogen to a PORV per Attachment N2 PORVS and open one PORV

D. Align nitrogen to the PORVs per Attachment N2 PORVS and open both PORVs

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Plausible because spray is the preferred method of depressurization. Incorrect because a major instrument air leak in containment means that normal spray is unavailable.

B. Incorrect. Plausible because aux spray is the alternative available if no PORV is available for the depressurization. Incorrect because a single PORV is preferred to using aux spray, and aux spry is unavailable do to the air leak.

C. Correct. With instrument air in CNMT unavailable, the next preferred method is a single PORV. Without instrument air, nitrogen will be aligned to the selected PORV per the attachment.

D. Incorrect. Plausible because the intent is to depressurize quickly. Incorrect because a single PORV will accomplish the desired rapid depressurization, and the procedure specifies use of a single PORV.

Technical Reference(s): E-3, E-3 Background (Attach if not previously provided)

Proposed References to be provided to applicants during examination: None

Learning Objective: REC00C, 2.01 (As available)

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

Question History: Last NRC Exam:

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

10 CFR Part 55 Content: 55.41
55.43 5

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Comments: Assess conditions and select section of procedure; and Knowledge of when to implement attachments