Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	209001 K1.05	
	Importance Rating	3.7	

Knowledge of the physical connections and/or cause- effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following: Automatic depressurization system

Proposed Question: Common 1

Given the following conditions:

- An un-isolable small LOCA has occurred
- A4-2-3, DSL GEN 102 START is alarming
- A5-2-3, DSL GEN 103 START is alarming
- PB 102 and 103 have been re-powered
- Drywell pressure is 3.6 psig and slowly lowering
- RPV water level is -10 inches and slowly lowering
- RPV pressure is 675 psig and slowly lowering

Assuming no operator action, which one of the following identifies the plant response to the conditions specified above?

A. The ADS System will initiate but Core Spray must be manually started

B. The ADS System will initiate and lower RPV pressure, then Core Spray will inject

C. Neither Core Spray nor ADS will automatically initiate, both must be manually initiated

D. Core Spray Pumps have started but cannot inject until ADS is manually initiated to lower RPV pressure

Proposed Answer: B

Explanation (Optional):

B. Correct - The conditions provided indicate that the plant has suffered a LOCA and LOOP is indicated by the presence of A4-2-3(A5-2-3). Both DGs have started. The RPV level (-10 inches lowering) and DW Pressure (3.5 PSIG lowering) indicate that ADS timers have initiated and Core Spray Pumps started. ADS will initiate and Core Spray will inject when ADS lowers RPV pressure.

A. Incorrect - There is no need to manually start Core Spray a LO-LO RPV water level signal or a high drywell pressure signal will automatically initiate Core Spray.

C. Incorrect - Both systems will have automatically started with power supplied from the DGs.

D. Incorrect - ADS is or will (if the timer hasn't timed out yet) initiate on the Lo Lo Lo water level and high DW pressure, even if drywell pressure lowers below 3.5 psig the initiation signal is sealed in.

Technical Reference(s): N1-OP-2, Sect B. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: N1-209001-RBO-8 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	239002 K1.07	
	Importance Rating	3.6	

Knowledge of the physical connections and/or cause- effect relationships between RELIEF/SAFETY VALVES and the following: Suppression pool

Proposed Question: Common 2

Following a reactor scram, the following conditions exist:

- All controls rods have inserted
- ERV 113 has failed OPEN
- Torus temperature is 146°F and rising
- Torus water level is 11.0 feet and slowly rising
- RPV pressure is 500 psig and slowly lowering

The SRO has directed an RPV Blowdown.

What is the consequence of opening additional ERVs at this time?

A. Containment venting may be required to remain within the Primary Containment Pressure Limit

B. Torus water temperature will exceed the Containment Spray NPSH Limit for minimal flows even with Containment venting

C. Torus water temperature will exceed its design limit before Reactor pressure reaches the Minimum RPV Flooding Pressure

D. Primary Containment pressure will exceed its design limit before Reactor pressure reaches the Minimum RPV Flooding Pressure

Proposed Answer: A

Explanation (Optional):

A. Correct – The purpose of blowing down prior to exceeding HCTL is to lower RPV pressure to the point where the rate of energy transfer from the RPV to the primary containment with 3 ERVs open is within the capacity of the containment vent. This strategy leads to the possibility of further venting to control containment pressure.

B. Incorrect - As containment pressure rises it will raise NPSH "*Overpressure = Torus Pressure + 0.433 (Torus Water Level – 4.5*)" therefore NPSH is not a concern.

C. Incorrect - Although Torus water temperature may be exceeded the Torus water temperature design limit will occur after Reactor pressure reaches the Minimum RPV Flooding Pressure.

D. Incorrect - Although Primary Containment pressure may be exceeded it would be after Reactor pressure reaches the Minimum RPV Flooding Pressure.

Technical Reference(s): EOP-SAP Bases, Sect 1.2.E (Attach if not previously provided)

Proposed references to be provided to applicants during examination: N1-EOP-4 or at a minimum EOP Curves.

Learning Objective: N1-218000-RBO-12 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	259002 K1.03	
	Importance Rating	3.8	

(K&A Statement) Knowledge of the physical connections and/or cause effect relationships between REACTOR WATER LEVEL CONTROL SYSTEM and the following: Reactor water level

Proposed Question: Common 3

The plant is operating at 100% power, with the following conditions:

- 12 and 13 Feedwater pumps are running
- 11 Feedwater pump is in standby
- A turbine trip occurs
- Reactor water level drops to 35 inches
- Two minutes later, Reactor water level is 70 inches and slowly rising

With no operator action, which one of the following describes the Feedwater pumps that are running to control Reactor water level?

A. 11 and 12 are running with 11 FCV closed

B. 11 and 12 are running with 12 FCV closed

C. 11 and 13 are running with both injecting

D. 12 and 13 are running with both injecting

Proposed Answer: A.

Explanation (Optional):

A. Correct – A turbine trip and reactor level of 53” both initiate HPCI, 12 FW will control at 72” while 11 FW controls at 65”. With RPV water level at 72” 11FW FCV will be closed.

B. Incorrect - 12 FW will raise level to 72” driving 11FW FCV closed.

C and D. Incorrect - 13 FW will not inject above 45” due to the setpoint setdown function which initiates when RPV water level lower to less than 52”.

Technical Reference(s): N1-OP-16, Section B. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-259001-RBO-05 (As available)

Question Source: Bank # Feed Systems , Question # 146

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	218000 K2.01	
	Importance Rating	3.1	

(K&A Statement) Knowledge of electrical power supplies to the following: ADS logic

Proposed Question: Common 4

Which one of the following describes the effect a loss of 125 VDC will have on the Electromatic Relief Valves (ERVs)?

A. The F Panel control, RPV over-pressure protection and ADS Function becomes inoperable.

B. The ADS function becomes inoperable; however the F Panel control and RPV over-pressure protection remains operable.

C. The ADS function and F Panel controls becomes inoperable; however the RPV over-pressure protection remains operable.

D. The F Panel control and RPV over-pressure protection becomes inoperable, however the ADS function remains operable.

Proposed Answer: A.

Explanation (Optional):

A. Correct – The loss of 125 VDC power makes the F Panel controls, RPV over-pressure protection and ADS Function become inoperable because power to the ERV solenoid is lost.

B. Incorrect – all three methods of initiating the ERVs become inoperable on a loss of 125 VDC.

C. Incorrect – all three methods of initiating the ERVs become inoperable on a loss of 125 VDC.

D. Incorrect – all three methods of initiating the ERVs become inoperable on a loss of 125 VDC.

Technical Reference(s): N1-SOP-47A, Attachment 2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-218000-RBO-04 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	261000 K1.03	
	Importance Rating	2.9	

Knowledge of the physical connections and/or relationships between STANDBY GAS TREATMENT SYSTEM and the following: Suppression Pool

Proposed Question: Common 5

Following a LOCA the following Primary Containment parameters exist:

- Torus level is 18 feet
- Drywell pressure is 39 psig
- Torus pressure is 36 psig

Which one of the following paths would be used to vent the primary containment?

A. The Drywell through RBEVS

B. The Drywell through the Vent and Purge fan

C. The Torus through RBEVS

D. The Torus through the Vent and Purge fan

Proposed Answer: D.

Explanation (Optional):

D. Correct - The torus is the preferred path because by requiring the Drywell atmosphere to be pulled through the torus to be vented, release rates can be minimized. Torus water level is low enough at 18 feet to allow this. The Vent and Purge fan is used because with Primary Containment Pressure so high the objective is to lower it as quickly as possible and to only lower it enough to protect the containment. Once a safe distance has been established to the PCPL then the release should be stopped. RBEVS cannot be used to vent above 3.5 psig due to concern over damaging the ductwork.

A & B. Incorrect - The torus is the preferred path because by requiring the Drywell atmosphere to be pulled through the torus to be vented, release rates can be minimized. Torus water level is low enough at 18 feet to allow this.

C. Incorrect - With Torus pressure this high the Vent and Purge fan is used because the objective is to lower it as quickly as possible and to only lower it enough to protect the containment. Once a safe distance has been established to the PCPL then the release should be stopped. RBEVS cannot be used to vent above 3.5 psig due to concern over damaging the ductwork.

Technical Reference(s): N1-EOP-4, Primary Containment Control
N1-EOP-4.1, Sect. 2. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOP-4

Learning Objective: O1-OPS-006-344-1-05 EO-1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215003, K3.02	
	Importance Rating	3.6	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: Reactor manual control

Proposed Question: Common 6

The plant is in STARTUP with the following conditions:

- IRM 11 is reading 20 out of 125 on range 4
- The REFUEL INST TRIP BYPASS switches are in the COINCIDENT position

Because of a high heatup rate a control rod is to be inserted. An operator takes the following actions:

- The operator places IRM 11 to range 5
- Then, the operator places the CONTROL ROD MOVEMENT switch to the ROD IN position

Which one of the following is correct?

A. A control rod block has NOT occurred and the control rod will insert.

B. A control rod block has occurred and the control rod will NOT insert.

C. A control rod block has occurred and the control rod will insert.

D. A half scram and control rod block has occurred and the control rod will NOT insert.

Proposed Answer: C.

Explanation (Optional):

C. Correct – Shifting IRM 11 from range 4 to range 5 will cause it to go from 20/125 to 2/125 (or 2 on the 0 – 40 scale) which is below the downscale setpoint of 7.5/125 scale (or 2.4 on the 0 – 40 scale). This will cause a downscale rod block which would prevent withdrawing a control rod; since the control rod is being inserted control rod motion will continue.

A. Incorrect – A control rod block will occur on IRM downscale.

B. Incorrect – Since the control rod is being inserted control rod motion will continue.

B. Incorrect – No half scram occurs and since the control rod is being inserted control rod motion will continue.

Technical Reference(s): N1-ARP-F2 – 3-6, N1-OP-5, Sect B.(pg 7) (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-215000-RBO-05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	212000, K4.11	
	Importance Rating	3.3	

Knowledge of REACTOR PROTECTION SYSTEM (RPS) design feature(s) and/or interlocks which provide for the following: Operation with shorting links removed: Plant-Specific (switch is used at NMP1)

Proposed Question: Common 7

Refueling is currently in progress, with the following:

- REFUEL INST TRIP BYPASS CH 11 AND 12 keylock switches in "NON-COINCIDENT"
- SRM 14 count rate rises to 3 x 10^5 cps

Which one of the following describes the response of the Reactor Protection System and the Reactor Manual Control System?

A. No SCRAM occurs
No rod block occurs

B. No SCRAM occurs
A rod block occurs

C. A Half SCRAM ONLY occurs
A rod block occurs

D. A Full SCRAM occurs
A rod block occurs

Proposed Answer: B

Explanation (Optional):

B. Correct - An SRM Hi Rod Block occurs at $1x10^5$ cps. Since $3x10^5$ cps is above this setpoint a Rod Block occurs. With key lock switches in non-coincident a Hi-Hi Count Rate Scram would occur at $5x10^5$ cps. Since $3x10^5$ cps is below this setpoint no Scram should occur.

A. Incorrect - A Rod Block occurs at $1x10^5$ cps.

C. Incorrect - Since $3x10^5$ cps is below $5x10^5$ cps no Scram should occur.

D. Incorrect - Since $3x10^5$ cps is below $5x10^5$ cps no Scram should occur.

Technical Reference(s): N1-OP-38A, Sect. B (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: N1-215000-RBO-05 (As available)

Question Source: Bank # N1-215000-RBO-05-Q-11

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	262001, K4.02	
	Importance Rating	2.9	

Knowledge of A.C. ELECTRICAL DISTRIBUTION design feature(s) and/or interlocks which provide for the following: Circuit breaker automatic trips

Proposed Question: Common 8

The plant is operating at 90% power with the following conditions:

- A fault pressure condition develops in transformer T-2
- Protective circuitry responds as designed

Which one of the following describes the DIRECT plant response to this event?

A. Main Turbine trip, R-915 opens, and MOD-18 opens

B. Main Generator trip, R-915 and R-925 open, MOD-18 opens

C. Main Generator trip, R-925 opens, and MOD-18 remains closed

D. Main Turbine trip, R-915 and R-925 open, MOD-18 remains closed

Proposed Answer: B

Explanation (Optional):

B. Correct - T-2 fault pressure condition results in R-915 and R-925 automatically opening, a main generator trip, and MOD-18 automatically opening on the generator trip.

A. Incorrect - The Turbine trip is NOT a direct response and R-925 opens.

C. Incorrect - MOD-18 opens.

D. Incorrect - The Turbine trip is NOT a direct response and MOD-18 opens.

Technical Reference(s): N1-ARP-A7, 4-1
N1-OP-32, Sect. H.2.
N1-OP-31, Sect. B.
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: N1-262000-RBO-05 (As available)

Question Source: Bank # N1-262000-RBO-05-Q-13

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	205000, K5.03	
	Importance Rating	2.8	

Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) : Heat removal mechanisms

Proposed Question: Common 9

The plant is in Hot Shutdown with Shutdown Cooling (SDC) Loop 12 in operation. The following conditions exist:

- RPV water level is 90 inches
- RPV coolant temperature is 347°F
- RPV pressure is 117 psig

Which one of the following describes how SDC will respond to a sustained loss of Reactor Building Closed Loop Cooling (RBCLC)?

A. SDC System isolation valves (38-01, 38-02, 38-13) close on high pressure and trip the SDC Pump.

B. SDC System isolation valves (38-01, 38-02, 38-13) close on high temperature and trip the SDC Pump.

C. SDC Pump trips on high temperature and SDC System isolation valves (38-01, 38-02, 38-13) remain open.

D. SDC Pump trips on high pressure and SDC System isolation valves (38-01, 38-02, 38-13) remain open.

Proposed Answer: C.

Explanation (Optional):

C. Correct - The SDC heat exchangers are cooled by water from the Reactor Building Closed Loop Cooling (RBCLC) Water System. If the reactor coolant system was heating up (RBCLC was lost) the SDC pumps will trip if coolant temperatures rise to 350°F. The isolation valves close on:
• Reactor Vessel Level Low-Low (>+5")
• High Area Temperature (170°F T.S. Limit)
• Manual Isolation
The high temperatures or pump trip will NOT close the isolation valves.

A. Incorrect - There are no valve closures on pressure. Pressure is only an open-permissive for these valves

B. Incorrect - Valves close on high space temperature indicative of a leak, not on high coolant temperature.

D. Incorrect - SDC pump does not trip on high pressure.

Technical Reference(s): N1-OP-4, Section B and P&L statements 4. and 5.
C-19859-C sht 12
C-19436-C sht 3
C-19438-C sht 2
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-205000-RBO-8 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	300000, K5.01	
	Importance Rating	2.5	

Knowledge of the operational implications of the following concepts as they apply to the INSTRUMENT AIR SYSTEM: Air Compressors

Proposed Question: Common 10

The plant is operating at 100% power with the following conditions:

- Instrument air compressor (IAC) 11 is red flagged and carrying the load
- IAC 12 is red flagged in backup
- IAC 13 is green flagged

Then, the following events occur:

- IAC 11 trips
- IAC 12 loads and then trips
- Neither IAC 11 or 12 can be restarted
- No operator actions are taken

Which one of the following will automatically supply the instrument air load?

A. Breathing Air Compressor

B. Instrument Air Compressor 13

C. House Service Air Compressor

D. Temporary Service Air Compressor

Proposed Answer: C

Explanation (Optional):

C. Correct - When Instrument air pressure drops to 90 psig, valve 94-19 opens to supply instrument air from the Service Air Compressor.

A. Incorrect - IA backs up Breathing Air, Breathing Air does not back up IA.

B. Incorrect - 13 IAC has no automatic start features.

D. Incorrect - Use of this compressor requires connecting a hose.

Technical Reference(s): N1-OP-20, Sect. B. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-278000-RBO-05 (As available)

Question Source: Bank # N1-278000-RBO-05-Q-04

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	262002, K6.01	
	Importance Rating	2.7	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) : A.C. electrical power

Proposed Question: Common 11

The plant is operating at 100% power in a normal electrical lineup when RPS UPS 162A, Rectifier Input Breaker, B401, trips OPEN.

Which one of the following describes the effect on plant operation?

A. RPS 11 does NOT de-energize. Other than a control room alarm there is no effect on plant operation.

B. RPS 11 is momentarily de-energized, causing a half scram and containment isolation. RPS 11 may be reset immediately.

C. RPS 11 is de-energized, causing a half scram and containment isolation. RPS 11 must be manually switched to RPS UPS 162B to reset and recover.

D. RPS 11 is momentarily de-energized, the static switch transfers RPS 11 to 600V PB 16, Sec B. A half scram and containment isolation should NOT occur.

Proposed Answer: A.

Explanation (Optional):

A. Correct - UPS 162A Inverter is normally powered from a 600 VAC power board. If the normal 600 VAC input power is interrupted or the UPS rectifier fails, the 120 VAC output power will continue to be supplied by the UPS inverter which is supplied input power by the 125 VDC connection to the station battery.

B. Incorrect - The UPS is not de-energized no scram or isolation signals occur.

C. Incorrect - The UPS is not de-energized and no actions are required to recover

D. Incorrect - The UPS is not de-energized and the static switch does not operate

Technical Reference(s): N1-OP-40, Section B. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: N1-262002-RBO-05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41 X
- 55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	206000, K6.03	
	Importance Rating	2.9	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the following will have on the HIGH PRESSURE COOLANT INJECTION SYSTEM : AC Power

Proposed Question: Common 12

The plant is operating at 50% power with the following conditions:

- Feedwater pump 12 is in PTL with a red clearance tag attached
- A fault in the T10 load tap changer causes T10 output to fall below 3,200 VAC

Without operator action, which one of the following describes the plant response to this event?

A. PB 11 and PB 12 fast transfer. Feedwater Pump 11 does NOT start to control Reactor water level.

B. PB 11 and PB 12 fast transfer. Feedwater Pump 11 starts to control Reactor water level.

C. PB 11 and PB 12 slow transfer. Feedwater Pump 11 does NOT start to control Reactor water level.

D. PB 11 and PB 12 slow transfer. Feedwater Pump 11 starts to control Reactor water level.

Proposed Answer: D

Explanation (Optional):

D. Correct - The 24 kV Main Generator Bus Duct is tapped to provide power to Normal House Service Transformer 10. This transformer supplies two separate busses: Power Board 11 and Power Board 12. Low voltage initiation of transfer (slow transfer) is delayed to ensure override of transient disturbances. In this case special relays delay closure of the Reserve Breaker until the bus voltage has decayed to 20% of normal. This delay leads to a Rx scram and subsequent Turbine trip. HPCI is auto-initiated by the Turbine trip, as well as low RPV water level. Feedwater pump 11 starts on the HPCI initiation to control RPV water level.

A. Incorrect - Under degraded voltage conditions the 27TR relays in the breaker control logic prevent the rapid transfer to reserve power and force a delay of at least 27 cycles (about1/2 second) before the auto-closing function is enabled. Feedwater pump 11 will start on HPCI initiation following a Rx scram and Turbine trip.

B. Incorrect - Under degraded voltage conditions the 27TR relays in the breaker control logic prevent the rapid transfer to reserve power and force a delay of at least 27 cycles (about1/2 second) before the auto-closing function is enabled.

C. Incorrect - Feedwater pump 11 will start on HPCI initiation following a Rx scram and Turbine trip.

Technical Reference(s): N1-OP-30, Sect. B. (Attach if not previously provided)
N1-OP-16, Sect. B

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-262000-RBO-11 (As available)

Question Source: Bank # N1-262000-RBO-11-Q-01
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	263000, A1.01	
	Importance Rating	2.5	

(K&A Statement) Ability to predict and/or monitor changes in parameters associated with operating the D.C. ELECTRICAL DISTRIBUTION controls including: Battery charging/discharging rate

Proposed Question: Common 13

The plant is operating at 100% power when a malfunction causes 24 VDC battery charger 121 output voltage to change from the normal value to 22 VDC over one (1) minute.

Which one of the following describes the status of 24 VDC battery 121 before and after the voltage change?

24 VDC battery 121…

A. was initially being charged, and continues to be charged.

B. was initially being charged, but is now discharging.

C. was initially discharging, and continues to discharge.

D. was initially discharging, but is now being charged.

Proposed Answer: B.

Explanation (Optional):

B. Correct – The normal battery charger output voltage is approximately 27 VDC, which provides a constant float charge for the 24 VDC battery. With battery charger output voltage lowering to a value less than the battery's voltage, the battery will begin to discharge.

A. Incorrect – The battery will begin to discharge as the charger output voltage lowers below 24 VDC.

C. Incorrect – The battery is normally on a float charge.

D. Incorrect – The battery is normally on a float charge, and will begin to discharge when charger output voltage lowers below 24 VDC.

Technical Reference(s): N1-ARP-A3 (2-5) (Attach if not previously provided)

N1-OP-47B, Sect. B

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-263000-RBO-05 (As available)

Question Source: Bank # N1-263000-RBO-05-Q-06

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	211000, A1.04	
	Importance Rating	3.6	

(K&A Statement) Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Valve operations

Proposed Question: Common 14

An ATWS has occurred with the following conditions:

- RPS Bus 11 is de-energized due to an electrical fault
- The SRO directs Liquid Poison (LP) initiated from the control room
- The RO places the LP Initiation Switch to System 12

Which one of the following describes the status of the LP system?

A. LP system is not injecting into the RPV

B. LP pump 12 is injecting through 11 explosive valve only

C. LP pump 12 is injecting through 12 explosive valve only

D. LP pump 12 is injecting through both explosive valves

Proposed Answer: C.

Explanation (Optional):

C. Correct - Starting LP pump 12 will close contacts in the firing circuits of both squib valves but since there is no power to RPS bus 11 the System 11 squib valve will not fire. Liquid poison pump 12 will start and inject through the 12 valve only.

A. Incorrect - The LP system will initiate and inject, but only the 12 squib valve will fire

B. Incorrect - Only the 12 squib valve will fire

D. Incorrect - Only the 12 squib valve will fire

Technical Reference(s): Lesson Plan N1101211000C01 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1101211000C01-RBO-08 (As available)

Question Source: Bank #

Modified Bank # N1-211000-RBO-08-08-Q-10

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	400000, A2.02	
	Importance Rating	2.8	

(K&A Statement) Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: High/low surge tank level

Proposed Question: Common 15

An unidentified leak from the RBCLC system has resulted in a loss of level in the Closed Loop Cooling (CLC) Makeup Tank in excess of makeup capability. The following conditions exist:

- Makeup Tank level is two (2) feet and slowly lowering.
- RBCLC Pump 12 is operating.
- RBCLC pressure is 38 psig and slowly lowering.
- RBCLC supply temperature is 93^{o}F and slowly rising.
- Operators have been dispatched to search for the location of the leak.

In accordance with N1-SOP-11, RBCLC Failure, which one of the following actions is required at this time?

A. Trip RBCLC Pump 12 and SCRAM the Reactor per N1-SOP-1.

B. SCRAM the Reactor per N1-SOP-1 and trip all Reactor Recirculation Pumps.

C. Trip RWCU pumps and initiate an Emergency Power Reduction per N1-SOP-1.1.

D. Initiate an Emergency Power Reduction per N1-SOP-1.1 and trip two Reactor Recirculation Pumps.

Proposed Answer: C.

Explanation (Optional):

C. Correct - N1-SOP-11 directs IF RBCLC cooling capability is challenged THEN trip RWCU pumps and the next step is Perform an Emergency Power Reduction per N1-SOP-1.1. With Makeup Tank level falling faster than makeup can provide and RBCLC supply temperature rising, cooling capability is challenged.

A. Incorrect - There is no direction to trip the remaining RBCLC Pump. This would compound the problem. Additionally SOP-11 requires a scram when all the RBCLC pumps have tripped and cannot be re-started. In this case RBCLC Pump 12 is operating.

B. Incorrect - This is directed in SOP-11 only if no RBCLC pumps are operating and none can be restarted.

D. Incorrect - There is no direction in SOP-11 to trip only two recirc pumps. All recirc pumps are tripped in the event that no RBCLC pumps are running and none can be started. This distractor action is similar to the direction to trip RWCU pumps to reduce heat load, but not correct.

Technical Reference(s): N1-SOP-11 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1101208000C01-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	207000, A2.06	
	Importance Rating	3.3	

(K&A Statement) Ability to (a) predict the impacts of the following on the ISOLATION (EMERGENCY) CONDENSER ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve openings: BWR-2,3

Proposed Question: Common 16

Following a complete loss of Instrument Air pressure, the plant was manually scrammed.

In accordance with N1-SOP-20.1, INSTRUMENT AIR FAILURE, which one of the following actions is required?

A. Return Reactor Building Ventilation to service and secure RBEVS.

B. Control RPV water level by throttling the Feedwater Isolation Valves.

C. Manually operate the EC Steam Supply Valves to control cooldown rate.

D. Start the Mechanical Vacuum Pump in preparation for loss of Main Condenser vacuum.

Proposed Answer: C.

Explanation (Optional):

C. Correct - SOP directs manually closing the EC Steam Supply Valves since both ECs Condensate Return Valves 39-05 and 39-06 fail OPEN on the loss of air.

A. Incorrect - The Reactor Building Isolation Valves have failed closed.

B. Incorrect - Although the FCVs have failed as is, RPV level is controlled by starting and stopping the feedwater pumps as necessary or pinning the feedwater flow control valves and operating them locally.

D. Incorrect - There is no requirement to start the Mechanical Vacuum Pump at this time. The outboard MSIVs fail closed on loss of IA, so the main condenser is not available anyway.

Technical Reference(s): N1-SOP-20.1 (Attach if not previously provided)

N1-OP-16

Proposed references to be provided to applicants during examination: None

Learning Objective: N1101207000C01 RBO 10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	223002, A3.01	
	Importance Rating	3.4	

(K&A Statement) Ability to monitor automatic operations of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF including: System indicating lights and alarms

Proposed Question: Common 17

During a startup, drywell inerting is in progress in accordance with N1-OP-9.

The following annunciators alarm at the times indicated:

11:45 Annunciator H1-1-8, STACK GAS MONITORS HIGH RADIATION, alarms

12:00 Monitor RN10A, OGESMS Radiation Monitor, is above the HIGH-HIGH alarm setpoint

12:05 Monitor RN10B, OGESMS Radiation Monitor, has just reached the HIGH-HIGH alarm setpoint and is rising

Which one of the following describes the effect on the plant?

A. Reactor Building Emergency Ventilation starts at 12:00

B. Reactor Building Emergency Ventilation starts at 12:05

C. Containment vent and purge system isolation occurs at 12:00

D. Containment vent and purge system isolation occurs at 12:05

Proposed Answer: D.

Explanation (Optional):

D. Correct – 2-out-of-2 logic (both RN10's > HIGH-HIGH) is required to initiate isolation of PC vent/purge valves.

C. Incorrect – Both radiation monitors above the HIGH-HIGH setpoint are required to initiate isolation of PC vent/purge valves (2-out-of-2 logic).

A. and B. Incorrect - RN10A/B have no relationship with Secondary Containment/ RBEVS. RBEVS initiation is caused by RN25A/B, which sense radiation in the RB exhaust piping prior to the stack.

Technical Reference(s): N1-OP-50B, Sect. B. 4.4
N1-ARP-H1 (1-8) (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: N1-272000-RBO-05 (As available)

Question Source: Bank # N1-272000-RBO-05-Q-01
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	262001, A3.02	
	Importance Rating	3.2	

(K&A Statement) Ability to monitor automatic operations of the AC Electrical Distribution including: Automatic bus Transfer

Proposed Question: Common 18

The plant is at 100% power with the following conditions:

- Motor-Operated Disconnect (MOD) 8106 between line 1 and line 4 is OPEN
- Because of a transient, a manual reactor scram is inserted
- At the same time the scram is inserted, breaker R10 trips and will NOT re-close

Which one of the following describes the AC Electrical Distribution System response?

A. EDG 102 and EDG 103 are off. PB 11 and PB 12 fast transfer to Transformer 101S, PB 101 is de-energized.

B. EDG 102 and EDG 103 start and auto close on PB 102 and PB 103. All other AC busses do NOT transfer and are de-energized.

C. EDG 102 starts and auto closes on PB 102. A fast transfer powers PB 12 from Transformer T101S, PB 101 is energized, PB 11 does NOT fast transfer.

D. EDG 103 starts and auto closes on PB 103. Fast transfer powers PB 11 from Transformer T101N, PB 101 is energized, PB 12 does NOT fast transfer.

Proposed Answer: C

Explanation (Optional):

C. Correct - With a loss of R10 with 8106 open there will be no power available to Transformer 101N so that on a plant trip PB 11 will not transfer. PB 102 will lose power but the EDG 102 will start and energize the PB 102. PB 101 will be supplied by Transformer 101S, its normal supply and PB 12 will transfer to Transformer 101S.

A. Incorrect – PB 102 loses power and EDG 102 starts and PB 11 is de-energized and PB 101 is energized.

B. Incorrect – EDG 103 does NOT start and PB 12 and PB 101 are energized.

D, Incorrect – EDG 103 does NOT start because PB 103 never loses power and PB 11 cannot transfer to Transformer 101N because it has no power and PB 12 does transfer to Transformer 101S.

Technical Reference(s): N1-OP-30, Sect. B and Attachments 6, 7, and 8. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1101262000C01 RBO 5 (As available)

Question Source: Bank #

Modified Bank # N1-262000-RBO-05-Q-15

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215004, A4.07	
	Importance Rating	3.4	

(K&A Statement) - Ability to manually operate and/or monitor in the control room: Verification of proper functioning/ operability (SRMs)

Proposed Question: Common 19

A reactor startup is in progress. Control rod withdrawal is to be recommenced following a pause for shift turnover, with the following conditions:

- All IRMs are on Range 2
- SRM 11 now reads 4 cps with the detector fully inserted
- SRM 12 now reads 101 cps with the detector partially withdrawn
- SRM 13 now reads 95 cps with the detector partially withdrawn
- SRM 14 now reads 15 cps with the detector fully inserted
- Electrical power is lost to SRM 14 detector drive motor

Which one of the following is causing a Control Rod Block?

A. SRM 11 is downscale

B. SRM 12 is upscale

C. SRM 13 is not fully inserted

D. SRM 14 has lost power to its drive motor

Proposed Answer: C.

Explanation (Optional):

C. Correct – Downscale intermediate - count-rate level interlock to bypass a position switch on the detector retraction mechanism which blocks control rod withdrawal in the START-UP mode unless the detectors are inserted to the startup position. The bypass permits control rod withdrawal with the detector withdrawn as long as a count rate above 100 counts per second is maintained.

A. Incorrect – The administrative downscale limit occurs at 3 cps. With the detector fully inserted, control rod movement is permitted with less than 100 cps.

B. Incorrect – Upscale rod block occurs at 1 x 10^5 cps

D. Incorrect – As long as the detector is fully inserted it is operable with the current count rate. SRM 14 detector will not need to be retracted until count rate reaches the 1 x 10^5 cps rod block.

Technical Reference(s): N1-OP-38A, Sect. B (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-215000-RBO-05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215005, A4.03	
	Importance Rating	3.2	

(K&A Statement) Ability to manually operate and/or monitor in the control room: APRM back panel switches, meters and indicating lights

Proposed Question: Common 20

The plant is operating at 99% power, with the following conditions:

- FPAPDR has been determined to be 1.01
- The Shift Manager has directed an APRM Gain Adjustment in accordance with N1-REP-12
- The nominal APRM setting required due to the high FPAPDR has been calculated as 100%

When adjusting the APRM amplifier gain, which one of the following APRM meter readings is an acceptable value for a successful gain adjustment?

A. 97%

B. 99%

C. 101%

D. 103%

Proposed Answer: C.

Explanation (Optional):

C. The acceptable reading must be +2% to -0 of the nominal value given. Therefore the desired value is between 100 and 102. Answer c 101 is a successful gain adjustment.

A. This value is below the minimum of 100.

B. This value is below the minimum of 100.

D. This value is above the maximum of 102.

Technical Reference(s): N1-REP-12 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-215000-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	212000, 2.4.46	
	Importance Rating	4.2	

(K&A Statement) Emergency Procedures / Plan: Ability to verify that the alarms are consistent with the plant conditions. (RPS)

Proposed Question: Common 21

The plant is operating at 100% power when the following annunciator alarms:

- F3-2-1, APRM FLOW UNIT 12

A check at the G Panel indicates the flow unit has failed low to an indicated zero flow.

Which one of the following lists the annunciator(s) that would also be in alarm?

A. Rod Block ONLY

B. APRM 15 - 17 and Rod Block ONLY

C. RPS Channel 12 Auto Trip and Rod Block ONLY

D. RPS Channel 12 Auto Trip, APRM 15 - 17 and Rod Block

Proposed Answer: D.

Explanation (Optional):

D. Correct - In the event of a downscale failure of an APRM flow unit, the flow signal to its companion flow biased trip unit will be low. The flow biased trip unit will initiate a rod block and a high flux SCRAM on the affected channel due to high power for the indicated recirculation flow. Each flow unit sends its output to four APRMs. Flow unit 12 is powered by RPS channel 12 and feeds APRM channels 15, 16, 17, 18.

A. Incorrect - This condition will cause the APRM to alarm upscale and the RPS trip to alarm.

B. Incorrect - This condition will cause a half scram and therefore the RPS Ch 12 alarm.

C. Incorrect - This condition will cause the APRM to alarm upscale.

Technical Reference(s): N1-ARP-F3-2-1
N1-ARP-F3-1-1
N1-OP-38C, Sect B.

(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1101215000C01 RBO 11 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	264000, 2.1.7	
	Importance Rating	4.4	

(K&A Statement) Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (EDGs)

Proposed Question: Common 22

The plant is operating at 100% power when the following occurs:

- EDG 102 receives an automatic start signal
- EDG 102 fails to reach 200 rpm in 5 seconds

Which one of the following describes the automatic response of the diesel generator and the manual operator actions required to start EDG 102?

A. EDG 102 shuts down immediately. After correcting the start failure condition, place the engine control switch to STOP and then manually restart EDG 102

B. EDG 102 shuts down immediately. After correcting the start failure condition, depress the local 48X and ALARM RESET AND FAST STOP pushbuttons and then verify EDG 102 automatically restarts

C. EDG 102 attempts a second start. If this start fails, after correcting the start failure condition, place the engine control switch to STOP and then manually restart EDG 102

D. EDG 102 attempts a second start. If this start fails, after correcting the start failure condition, depress the local 48X and ALARM RESET AND FAST STOP pushbuttons and then verify EDG 102 automatically restarts

Proposed Answer: D.

Explanation (Optional):

D.Correct - The EDG will attempt a second start. If this fails the operator in the room must correct the failure to start condition and then reset the 48X relay. Should a unit fail to start on signal, it is automatically programmed for a second attempt.

A. Incorrect – The EDG will attempt a second start and to reset the failure to start the 48X pushbutton must be depressed.

B. Incorrect – The EDG will attempt a second start and to reset the failure to start the 48X pushbutton must be depressed.

D. Incorrect –To reset the failure to start the 48X pushbutton must be depressed.

Technical Reference(s): N1-OP-45, Sect D.3.0 (Attach if not previously provided)
N1-ARP-A4-3-5
Nine Mile Point Unit 1 USFAR, Page 947

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-264001-RBO-10 (As available)

Question Source: Bank # N1-264001-RBO-10-Q-02
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam 2005 retake

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215003, K2.01	
	Importance Rating	2.5	

(K&A Statement) - Knowledge of electrical power supplies to the following: IRM channels/detectors

Proposed Question: Common 23

The plant is performing a startup with the following conditions:

- Mode Switch in STARTUP
- Reactor critical
- IRMs steady on Range 2

Which one of the following will result from the failure of the 24 VDC Power Supply Fuses to a single IRM?

	Rod Block	Half Scram
A.	IRM INOP	None
B.	IRM DOWNSCALE	None
C.	IRM INOP	IRM INOP
D.	IRM DOWNSCALE	IRM DOWNSCALE

Proposed Answer: C.

Explanation (Optional):

C. Correct – 24 VDC supplies IRM detector voltage. With a loss of power, the detector will indicate downscale and receive an INOP trip. The INOP trip enforces both a rod block and a half scram on the corresponding RPS channel

A. Incorrect – An INOP half scram is also processed, as well as a rod block

B. Incorrect – An INOP half scram is also processed

D. Incorrect - IRM Downscale does not cause a half scram, only upscale and INOP cause the IRM half scram.

Technical Reference(s): N1101215000C01 pages 124-130 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-215000-RBO-05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41 X
- 55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	207000, 2.1.30	
	Importance Rating	4.4	

(K&A Statement) Conduct of Operations: Ability to locate and operate components, including local controls. (ECs)

Proposed Question: Common 24

The plant is experiencing a transient, with the following:

- CRS directs Emergency Condenser (EC) 11 placed in service
- RO turns EC 11 condensate return valve control switch to OPEN
- After 2 minutes, condensate return valve 11 position indication shows only a green light
- THEN the CRS directs EC 11 be placed in service locally

Which one of the following must be performed locally to place EC 11 into operation per N1-OP-13, Emergency Cooling System?

A. Condensate return valve local test switch is taken to open

B. Manual handwheel on condensate return valve is manipulated

C. Condensate return valve operating solenoid is electrically disabled

D. Instrument air to condensate return valve is isolated and the actuator is vented

Proposed Answer: D.

Explanation (Optional):

D. Correct - N1-OP-13 Section H.2.0 for manual initiation of ECs provides the method for locally initiating EC operation. The method is to vent air off the valve actuator to open the valve and initiate flow.

A. B. C. Incorrect - N1-OP-13 Step H.2.3 states IF EC Loop 11 is initiated locally, THEN vent air off 39-05, EMERG CNDSR RET ISOLATION VALVE 11 at RB El 281_ (North) as follows:
2.3.1 Close 113-529, BV-IA MANIFOLD SUPPLY TO - A-22110-C SH.14
2.3.2 Remove cap from 113-530, VENT - IA MANIFOLD, with wrench
2.3.3 Open 113-530.

Technical Reference(s): N1-OP-13 Section H.2.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-207000-RBO-10 (As available)

Question Source: Bank # N1-207000-RBO-10-Q-02

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	400000, K6.01	
	Importance Rating	2.7	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the following will have on the CCWS: Valves

Proposed Question: Common 25

The plant is operating at 100% power with the following conditions:

- RBCLC Heat Exchangers 11 and 12 are in service
- RBCLC Heat Exchanger 13 has a clearance applied to it for maintenance
- Both Condensate Transfer Pumps are in service
- There is minimal leakage from the RBCLC system

Instrument air supply to valve 71-127 (CLC Make-Up Tank LCV) catastrophically fails.

Which one of the following explains what will happen to the CLC Makeup Tank and the RBCLC system?

CLC Makeup Tank level:

A. remains relatively constant and RBCLC system parameters are not effected.

B. lowers over several days and eventually becomes empty; RBCLC pumps will trip on the loss of NPSH.

C. rises over several days and overflows; RBCLC system flow, and pressure will rise to the high pressure alarm setpoint.

D. rises over about an hour and then overflows; RBCLC system flow, pressure and temperature will remain relatively constant.

Proposed Answer: D.

Explanation (Optional):

D. Correct - LCV 71-127 fails open on a loss of Instrument Air to the valve, this will cause the Makeup Tank to continuously fill and eventually overflow until some manual action is taken to stop this process. The effect on the RBCLC system is negligible in that NPSH is raised slightly and system response to heat loads is virtually the same.

A. Incorrect – Level will rise because the make-up valve fails open.

B. Incorrect – Level will rise because the make-up valve fails open.

C. Incorrect – The makeup valve can supply in excess of 10 gpm (makeup flow alarm setpoint); with the valve failed open the tank level will rise to the overflow in several minutes. The makeup tank is a 2000 gallon tank (Nine Mile Point Unit 1 USFAR Page 1028) which is normally approximately 3/5 full. Conservatively to fill the tank would require about 80 minutes

Technical Reference(s): N1-OP-11, Sect B. (Attach if not previously provided)
C-18022-C, Sht 3
SDBD-503, REACTOR BUILDING CLOSED LOOP COOLING SYSTEM DESIGN BASIS DOCUMENT

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-208000-RBO-8 (As available)

Question Source: Bank # N1-208000-RBO-08-Q02
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	223002, K4.04	
	Importance Rating	3.2	

(K&A Statement) Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: Automatic bypassing of selected isolations during specified plant conditions

Proposed Question: Common 26

The plant is preparing to return to power with the following conditions:

- Mode Switch is in STARTUP
- MSIVs are open

Which one of the following sets of conditions would result in the MSIVs remaining OPEN?

A. Reactor pressure is 500 psig with main condenser vacuum at 5 inches Hg and the IRMs on Range 10.

B. Reactor pressure is 500 psig with main condenser vacuum at 5 inches Hg and the IRMs on Range 2.

C. Reactor pressure is 800 psig with main condenser vacuum at 5 inches Hg and the IRMs on Range 2.

D. Reactor pressure is 800 psig with main condenser vacuum at 9 inches Hg and the IRMs on Range 10.

Proposed Answer: B.

Explanation (Optional):

B. Correct – The MSIVs closure signal on vacuum below 7 inches Hg is bypassed when less than 600 psig with the IRMs on range 2-9. This permits reactor startup with the MSIVs open.

A. Incorrect - Failure to maintain reactor pressure greater than 850 psig, with mode switch in RUN, or STARTUP with IRMs on range 10, will result in an MSIV isolation and reactor scram.

C. Incorrect – With pressure greater than 600 psig condenser vacuum must be above 7 inches Hg.

D. Incorrect - Failure to maintain reactor pressure greater than 850 psig, with mode switch in RUN, or STARTUP with IRMs on range 10, will result in an MSIV isolation and reactor scram.

Technical Reference(s): N1-OP-43A, Sect. D.13.0 (Attach if not previously provided)
N1101239001C01

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-239001-RBO-05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	245000 K1.06	
	Importance Rating	2.6	

(K&A Statement) Knowledge of the physical connections and/or cause- effect relationships between MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS and the following: Component cooling water systems

Proposed Question: Common 27

The plant is operating at 40% power with the following conditions:

- FCV-71-124, TURBINE BUILDING CLOSED LOOP COOLING FLOW CONTROL VALVE, sticks in its current position
- Power is then raised to 100%

Which one of the following results from the failure of FCV-71-124?

A. Recirculation MG Sets will begin to heat up as TBCLC flow is increased to Turbine Generator Auxiliaries.

B. Recirculation MG Sets will begin to cool down as TBCLC flow is decreased to Turbine Generator Auxiliaries.

C. Turbine Lube Oil will begin to heat up as TCV-71-102 (Generator Hydrogen Cooler TCV) begins to open.

D. Turbine Lube Oil will begin to cool down as TCV-71-102 (Generator Hydrogen Cooler TCV) begins to open.

Proposed Answer: A.

Explanation (Optional):

A. Correct - FCV-71-124 bypasses flow around the south TBCLC header to maintain steady system flow and stable heat balance conditions within TBCLC. As generator heat production increases, TCV-71-102 (H2 Cooler TCV) begins to open. These events result in the south TBCLC header flow rising. As total south header flow rises FIC-71-124B positions the bypass valve closed to maintain total system flow stable. If FCV-71-124 cannot close then the amount of bypass flow remains the same at 100% power as it was at 75%. This would lead to TBCLC flow rising in the Turbine Auxiliaries header and lowering in the Recirc MG header. Therefore Recirc MG temperatures will rise.

B. Incorrect – Recirc MG temperatures RISE, not lower

C. Incorrect – Turbine Lube Oil coolers have a TCV that will modulate as required to maintain temperature

D. Incorrect – Turbine Lube Oil coolers have a TCV that will modulate as required to maintain temperature

Technical Reference(s): C-18022-C sht 3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-274000-RBO-11 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41
55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	239001 K2.01	
	Importance Rating	3.2	

(K&A Statement) Knowledge of electrical power supplies to the following: Main steam isolation valve solenoids

Proposed Question: Common 28

The plant is in a startup with the following conditions:

- All IRMs are on range 5
- Main Steam Pressure is 750 psig
- Main Steam Isolation Valves (MSIVs) are open

Then, the following malfunctions occur:

- 125 VDC electrical power is lost to the MSIV solenoids
- 125 VAC electrical power is lost to the MSIV motors

Which one of the following states the FINAL position of the INBOARD and OUTBOARD MSIVs due to this power loss?

	Inboard MSIVs	Outboard MSIVs
A.	Open	Open
B.	Closed	Open
C.	Open	Closed
D.	Closed	Closed

Proposed Answer: C.

Explanation (Optional):

C. Correct – With a loss of DC power to the outboard MSIV solenoids, instrument air pressure is vented, resulting in the outboard MSIVs closing. The inboard MSIVs have AC motors, and fail as is on a loss of power.

A. Incorrect - With a loss of DC power to the outboard MSIV solenoids, instrument air pressure is vented, resulting in the outboard MSIVs closing.

B. Incorrect - The inboard MSIVs have AC motors, and fail as is on a loss of power.

D. Incorrect - The inboard MSIVs have AC motors, and fail as is on a loss of power. The inboard MSIVs have AC motors, and fail as is on a loss of power.

Technical Reference(s): N1-OP-47A, Attachment 5 (Attach if not previously provided)
C-19859-C, Sht 11

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-239001-RBO-04 & 05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	286000 K3.03	
	Importance Rating	3.6	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the FIRE PROTECTION SYSTEM will have on following: Plant protection

Proposed Question: Common 29

Which one of the following results from placing the Fire Zone Disconnect Switch in DISCONNECT for a zone where automatic fire suppression is available?

	Fire Alarms	Automatic Suppression
A.	Available	Available
B.	Available	Defeated
C.	Defeated	Available
D.	Defeated	Defeated

Proposed Answer: D.

Explanation (Optional):

D. Correct - In the Disconnect Mode, the fire alarm and actuation capabilities for a zone are both defeated. This may be desired to prevent inadvertent alarm or actuation during operations such as welding or cutting work.

A. Incorrect – Both alarm and actuation are defeated.

B. Incorrect – Both alarm and actuation are defeated.

C. Incorrect – Both alarm and actuation are defeated.

Technical Reference(s): N1-OP-21E, Sect. B and H.1.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-286000-RBO-05 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41 X
- 55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	204000 K4.07	
	Importance Rating	2.9	

(K&A Statement) Knowledge of REACTOR WATER CLEANUP SYSTEM design feature(s) and/or interlocks which provide for the following: Draining of reactor water to various locations

Proposed Question: Common 30

A plant startup is in progress with the following conditions:

- RPV pressure is 300 psig
- Main condenser vacuum is 20 inches Hg
- RWCU reject flow is established to the main condenser
- BV 33-10, Cleanup to Waste BV is inadvertently opened

Which one of the following is the adverse consequence from this condition?

A. RWCU reject FCV damage from cavitation

B. Condenser vacuum loss through Rad Waste

C. RWCU pump trip due to low suction pressure

D. Waste collector tank damage from water hammer

Proposed Answer: B.

Explanation (Optional):

B. Correct - Both RWCU reject path valves will be open at the same time, then main condenser vacuum is lost to RadWaste.

A. Incorrect – Reject FCV damage not the concern

C. Incorrect – RWCU pump suction path not affected

D. Incorrect – WCT not affected by valve lineup

Technical Reference(s): N1-OP-03, Sect G.5.5.4 (pg 113) (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-204000-RBO-09 (As available)

Question Source: Bank # N1-204001-RBO-09-Q-01

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	201001 K5.08	
	Importance Rating	2.5	

(K&A Statement) Knowledge of the operational implications of the following concepts as they apply to CONTROL ROD DRIVE HYDRAULIC SYSTEM : Solenoid operated valves

Proposed Question: Common 31

When attempting to WITHDRAW control rod 22-07, the following indications are observed:

- Drive water flow initially indicates 4.0 gpm, and the control rod moves into the core one notch
- THEN, drive water flow becomes 0.0 gpm, and the control rod settles at the initial position

Which of the following solenoid operated directional control valve failures has caused the above indications?

Directional Control Valve:

A. 120, WITHDRAW EXHAUST AND SETTLE VALVE, is stuck open.

B. 121, INSERT EXHAUST VALVE, is stuck open.

C. 122, WITHDRAW SUPPLY VALVE, is stuck closed.

D. 123, INSERT SUPPLY VALVE, is stuck closed.

Proposed Answer: C.

Explanation (Optional):

C. Correct - When the rod movement control switch (4S1) is moved to the ROD OUT position, the RMCS timer opens the inlet drive water valve (123) and the exhaust valve (121) and the control rod moves into the core and off the collet fingers. RMCS then should open the withdraw valve (122) and exhaust valve (120). If the withdraw valve (122) does NOT open no pressure is applied to the collet fingers or the area above the drive piston the control rod will settle back onto the collet finger at it's original position. This is further indicated by the 0.0 gpm drive water flow.

A. Incorrect – If 120 was stuck open the control rods would not insert as drive water flow through the 123 valve would flow directly to the exhaust header through the open 120. Additionally withdraw flow would equal stall flow for the CRD.

B. Incorrect – If the 121 valve was stuck open the control rod would insert and not withdraw but the withdraw flow would be high as drive water flow through the 122 valve would flow directly to the exhaust header through the open 121.

D. Incorrect – If 123 was failed closed the control rod would not insert and there would be no insert flow. Additionally withdraw flow would equal stall flow for the CRD.

Technical Reference(s): C-18016-C Sht 1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-201001-RBO-3 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	202001 K6.09	
	Importance Rating	3.4	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION SYSTEM : Reactor water level

Proposed Question: Common 32

The plant is operating at 100% power when the following events occur:

- Power is lost to the ATWS Channel 12 circuitry.
- A subsequent plant transient causes the following conditions:
  - RPV water level lowers to 0 inches and remains there for 11 seconds before recovering
  - RPV pressure spikes to 1125 psig and then lowers to 1050 psig in 5 seconds
- No other operator action is taken

Based on these conditions, which one of the following is the status of the Recirculation Pumps?

A. Tripped immediately on the loss of power to ATWS Channel 12 circuitry.

B. Tripped with minimal coastdown, resulting in a natural circulation condition.

C. Continue to operate because the high RPV pressure lasted less than 9 seconds.

D. Continue to operate because the one channel of ATWS circuitry is de-energized.

Proposed Answer: B.

Explanation (Optional):

B. Correct - A TWO-OUT-OF-TWO-TAKEN-ONCE logic is used, such that a high reactor pressure (1135 psig) or a Lo-Lo reactor level (+5in., 9 + 1 second. TD) in both sensors in the same RPS channel will cause ATWS-RPT to initiate a trip of the recirculation pump M-G set field breaker. This causes the RRPs to trip with minimal coastdown.

A loss of power to a single channel will still allow ATWS-RPT to actuate. The ATWS/RPT initiation on high reactor pressure is instantaneous. However, there is no seal-in function associated with Lo-Lo Reactor Level ATWS-RPT initiation. If the Lo-Lo Reactor Level initiation signals clear prior to the nine second time delay, the recirc pumps will not trip.

A. Incorrect – Loss of power to one channel will NOT cause a trip.

C. and D. Incorrect – Recirculation MG set field breakers will trip.

Technical Reference(s): N1-OP-40, Sect. B (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-202001-RBO-5 (As available)

Question Source: Bank #

Modified Bank # # 87, Power Sys ID: N1-202001-RBO-08-Q-03

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	271000 A1.15	
	Importance Rating	2.7	

(K&A Statement) Ability to predict and/or monitor changes in parameters associated with operating the OFFGAS SYSTEM controls including: Steam supply pressures

Proposed Question: Common 33

When using the Offgas Mixing Jet as an Alternate Pressure Control System per N1-EOP-1, which one of the following methods is used to control RPV pressure?

A. Throttle 06-13, Mixing Jet Steam PCV Bypass, to control RPV pressure as read on PI-06.1-04.

B. Place the Offgas Mixing Steam Flow controller in MANUAL, and use the manual control knob.

C. Place the Offgas Mixing Steam Flow controller in AUTO, and use the setpoint adjustment tape.

D. Throttle 06-11, Mixing Jet Steam PCV Inlet, AND adjust 06-13, Mixing Jet Steam PCV Bypass, to control RPV pressure as read on PI-06.1-04.

Proposed Answer: B.

Explanation (Optional):

B. Correct - Per EOP-1, to control RPV pressure Place the Offgas Mixing Steam Flow controller in MANUAL. (FIC 77.4-02C) and use the manual control knob.

A. Incorrect – This is a method of controlling the steam pressure to the FCV.

C. Incorrect – With the controller in AUTO the FCV will regulate to maintain Off Gas temperature not RPV pressure.

D. Incorrect – This is a method of controlling the steam pressure to the FCV.

Technical Reference(s): N1-EOP-1, Att. 21
N1-OP-25, Sect. H.7.0
C-18010-C Sht 2
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-271000-RBO-12 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	288000 A2.05	
	Importance Rating	2.6	

(K&A Statement) Ability to (a) predict the impacts of the following on the PLANT VENTILATION SYSTEMS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Extreme outside weather conditions: Plant-Specific

Proposed Question: Common 34

The plant is operating at 100% power with the following conditions:

- A severe weather warning is in effect
- The crew has entered N1-SOP-64, HIGH WINDS

Which one of the following describes a problem caused by High Winds and required action(s)?

High Winds could_____.

A. cause high D/Ps across the turbine building walls and damage the building and equipment; open all outside doors and turbine roof vents.

B. cause high D/Ps across the turbine building walls and damage the building and equipment; place the TURB BLDG HVAC DP CONTROLLER to manual.

C. enter the turbine building and cause a positive pressure resulting in an un-monitored release; close all outside doors and turbine building roof vents.

D. enter the turbine building and cause a positive pressure resulting in an un-monitored release; place the TURB BLDG HVAC DP CONTROLLER to manual.

Proposed Answer: C.

Explanation (Optional):

C. Correct – Per SOP-64 high winds may cause the turbine pressure to become positive which could result in an un-monitored release.

A. Incorrect – Opening TB doors and roof vents is counter to what SOP-64 requires.

B. Incorrect – Placing the TURB BLDG HVAC DP CONTROLLER to manual is not required or necessary since the system uses a low D/P selection criteria.

D. Incorrect – Placing the TURB BLDG HVAC DP CONTROLLER to manual is not required or necessary since the system uses a low D/P selection criteria.

Nine Mile Point Unit 1 USFAR
Page 255
A. TURBINE BUILDING
1.0 Design Bases
1.1 Wind and Snow Loadings
Exterior loadings for wind, snow and ice used in the design of the turbine building meet all applicable codes as a minimum. The roof and its supporting structure are designed to withstand a loading of 40 psf of snow or ice. The walls and building structure are designed to withstand an external loading of 40 psf of surface area, which is approximately equivalent to a wind velocity of 125 mph at the 30-ft level.
Pg 264
The turbine building ventilating system is designed to maintain the building at a slightly negative pressure. Differential pressure control will automatically regulate air supply to maintain a negative pressure within the building with respect to the outside. This is to control the release of contaminated air and prevent out-leakage.
Pg 266
During warm weather conditions, the turbine building roof vents and/or exterior doors may be opened to provide additional building cooling. When the roof vents or doors are open, the turbine building differential pressure may approach zero in localized areas. In such cases, procedural controls for air sampling are used to prevent an unmonitored release of radioactivity to the environment.

Technical Reference(s): N1-SOP-64 (Attach if not previously provided)
FSAR
N1-OP-26, Sect. B

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-342-1-01 EO 1.2 (As available)

Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	
Question History:	Last NRC Exam	No	
Question Cognitive Level:	Memory or Fundamental Knowledge	X	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	219000 K5.04	
	Importance Rating	2.9	

(K&A Statement) Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE : Heat exchanger Operation

Proposed Question: Common 35

The plant is shutdown with Containment Spray Loop 111 operating in the torus cooling mode when the following sequence of events occurs:

- A tube ruptures in the Containment Spray Loop 111 heat exchanger.
- One minute later, Containment Spray Pump 111 trips on over-current.

Which one of the following will occur?

Torus water level…

A. rises until the Control Room recognizes the failure and secures the torus cooling lineup.

B. lowers until the Control Room recognizes the failure and secures the torus cooling lineup.

C. remains the same because 80-118, CONT SPRAY TEST TO TORUS FCV closes on the Containment Spray Pump trip.

D. remains the same because Containment Spray Raw Water Pump 111 automatically trips when Containment Spray Pump 111 trips.

Proposed Answer: A.

Explanation (Optional):

A. Correct – There are no auto valve closures associated with the trip of the CSP therefore the RWP will continue to pump water into the torus until the lineup is secured.

B. Incorrect – RW pressure is greater than Cont Spray H/X pressure; therefore a H/X tube rupture results in flow from the RW system into the CS system.

C. Incorrect – There are no auto valve closures associated with the trip of the CSP therefore the RWP will continue to pump water into the torus until the lineup is secured.

D. Incorrect – The RW does not trip therefore flow will continue into the torus raising the level.

Technical Reference(s): N1-OP-14, Sect B and H.5.0. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-226001-RBO-11 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	201001 A4.03	
	Importance Rating	2.9	

(K&A Statement) Ability to manually operate and/or monitor in the control room: CRD system flow control valve

Proposed Question: Common 36

The plant is operating at 100% power with the in-service Control Rod Drive (CRD) Flow Control Valve in automatic when a reactor scram occurs.

Which one of the following describes the CRD Control Room indications immediately following the scram?

A. Total System Flow rises significantly
Drive Water and Cooling Water D/Ps rise slightly
Return Flow to Reactor lowers significantly

B. Total System Flow rises slightly
Drive Water and Cooling Water D/Ps lower significantly
Return Flow to Reactor lowers significantly

C. Total System Flow lowers significantly
Drive Water and Cooling Water D/Ps lower significantly
Return Flow to Reactor lowers significantly

D. Total System Flow lowers slightly
Drive Water and Cooling Water D/Ps lower significantly
Return Flow to Reactor rises slightly

Proposed Answer: B.

Explanation (Optional):

B. Correct - System Total Flow (RD 51, F Panel) actually rises slightly, as the charging water header allows the pump to operate closer to runout (prevented by the restricting orifice) than it would normally. Both DP-s lower (almost to zero) as the Flow Control Valve closes because of the increased flow signal. The Return Flow to Reactor indication (RD 36, F Panel) shows that portion of total system flow that does not go to the charging, drive, or cooling water headers. Normally, without rod movement, Return Flow is about 14E3 lbm/hr, while Cooling Water Flow (RD 42, F Panel) is about 21E3 lbm/hr. On a scram, Return Flow drops to near zero, as almost all system flow is diverted to the charging water header.

A. Incorrect - Total System Flow rises slightly and Drive Water and Cooling Water D/Ps lower significantly

C. Incorrect - Total System Flow rises slightly and Drive Water and Cooling Water D/Ps lower significantly

D. Incorrect - Total System Flow rises slightly and Drive Water and Cooling Water D/Ps lower significantly

Technical Reference(s): C-18016-C Sht 1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-201001-RBO-03 (As available)

Question Source: Bank #

Modified Bank Rx Pwr Sys # 38 (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	201002 2.1.23	
	Importance Rating	4.3	

(K&A Statement) Ability to perform specific system and integrated plant procedures during different modes of plant operation. (RMCS)

Proposed Question: Common 37

The plant is operating at 90% power during a control rod pattern exchange with the following conditions:

- Control rod 06-39 is to be inserted from position 48 to 46.
- All the control rods surrounding 06-39 are fully withdrawn.
- When the rod is given a notch insert signal, it inserts to position 44.

Which one of the following actions is required due to 06-39 moving beyond its intended position in accordance with N1-OP-5?

A. Use the Control Rod Movement Switch to withdraw 06-39 to position 46.

B. Use the Control Rod Movement Switch and the Notch Override Switch to withdraw 06-39 continuously to position 48.

C. Reduce Reactor power as directed by Reactor Engineer, THEN recover 06-39 in accordance with an approved Reactivity Maneuver Instruction.

D. Do NOT change Reactor power OR move the control rod, notify Reactor Engineering and request a Reactivity Maneuver Instruction to recover 06-39.

Proposed Answer: A.

Explanation (Optional):

A. Correct – N1-OP-05, Section H.9.4 states that if while performing Control Rod movement, a rod is inserted beyond its intended position, THEN perform the following:
IF the rod was inserted by 3 OR less notches AND NO control rod tips were crossed, THEN move the rod to its intended position. Since all the rods around 06-39 were fully withdrawn no rod tips were crossed; therefore 06-39 may be placed in position 46.

B. Incorrect – N1-OP-43B, Section D.1. states when continuous rod withdrawal may be used (Rod scram timing Surveillance Testing, Rod stroke timing Surveillance Testing, Directed by Reactor Engineering) and it may NOT be used in this case. The rod is to be recovered to the intended position of 46, not the original position of 48.

C. Incorrect – There is no need to notify Reactor Engineering, lower power or obtain a Reactivity Maneuver Instruction.

D. Incorrect – There is no need to notify Reactor Engineering or obtain a Reactivity Maneuver Instruction.

Technical Reference(s): N1-OP-5, Sect. H.9.4 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-201002-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	290001 K3.01	
	Importance Rating	4.0	

(K&A Statement) Knowledge of the effect that a loss or malfunction of the SECONDARY CONTAINMENT will have on following: Off-site radioactive release rates

Proposed Question: Common 38

The plant has been manually scrammed following a RWCU break in the Reactor Building. The following conditions exist:

- Reactor Building Ventilation radiation levels are reading 40 mr/hr.
- RBEVS train 12 is in service with RBEVS train 11 filter in cooling to remove decay heat.
- A ground fault occurs resulting in a power loss to Powerboard 171B and de-energizing train 12 RBEVS exhaust fan.

Which one of the following identifies the response of plant systems to the conditions specified above?

A. RBEVS train 12 will automatically restart maintaining RB Emergency Ventilation.

B. Normal Reactor Building Ventilation will restart on the loss of RBEVS exhaust pressure.

C. RBEVS Fan 11 will automatically cross-connect to both draw suction on train 11 and cool filter 12.

D. Reactor Building pressure will become positive with the potential of an unmonitored release.

Proposed Answer: D.

Explanation (Optional):

D. Correct – The steam rupture in the Secondary Containment with a failure of EVS will result in a loss of the negative pressure provided by the fans and the pressure will become positive resulting in the potential for an unmonitored release.

A. Incorrect EVS Fan 12 is powered from Powerboard 171B, until power is restored the fan cannot operate.

B. Incorrect RB Ventilation trips on 5 mr/hr with the RB levels at 40 mr/hr it will NOT automatically restart.

C. Incorrect with EVS train 11 filter in cooling its EVS Fan 11 control switch is in PTL.

Technical Reference(s): N1-OP-10, Section B.0, B.3.0, 3.2.2, and Att 2 pg 42. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-290001-RBO-11 (As available)

Question Source: Bank # Ques # 155 from the Containment Sys Bank

Modified Bank # (Note changes or attach parent)

New

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

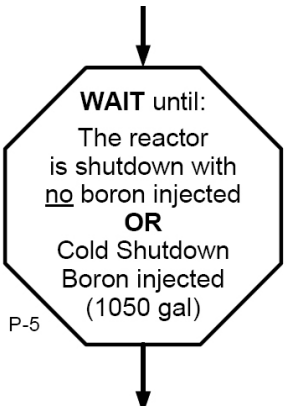
Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295037 EK1.07	
	Importance Rating	3.4	

Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Shutdown margin

Proposed Question: Common 39

A plant transient has occurred resulting in entry to EOP-3, Failure to Scram.

Before a cooldown can begin during the ATWS, an EOP step states:



Which one of the following describes the operational implication of this step?

A. If no boron has been injected into the RPV, the cooldown may be performed if control rod insertion is sufficient to shut down the reactor, even if the shutdown margin is small.

C. If any amount of boron less than the cold shutdown amount (1050 gallons) has been injected, cooldown is not permitted unless the reactor is shutdown, even if the shutdown margin is small.

B. If no boron has been injected into the RPV, the cooldown may be performed if control rod insertion is sufficient to shut down the reactor, but ONLY if the shutdown margin satisfies the Technical Specification requirements.

D. If any amount of boron less than the cold shutdown amount (1050 gallons) has been injected, cooldown is not permitted unless the reactor is shutdown, but ONLY if the shutdown margin satisfies the Technical Specification requirements.

Proposed Answer: A

Explanation (Optional):

A. Correct - Per EOP Bases Rev.1 page 146
WAIT until…
Under ATWS conditions, a cooldown to cold shutdown conditions may be initiated only if (1) the reactor is shutdown and no boron has been injected, or (2) Cold Shutdown Boron has been injected.
If no boron has been injected into the RPV, the cooldown may be performed if control rod insertion is sufficient to shut down the reactor, even if the shutdown margin is small. A return to criticality under these conditions is acceptable since terminating the cooldown will stop the power increase.
If any amount of boron less than the cold shutdown amount has been injected, cooldown is not permitted unless it can be determined that the reactor will remain shutdown under all conditions without the boron. (In this case, the override at the beginning of EOP-3 would take effect and control of level, pressure, and power would return to EOP-2.) The temperature coefficient and response of a partially borated core is difficult to predict. Subsequent steps may not be appropriate if the reactor were to return to criticality with a positive temperature coefficient.

B. Incorrect - Shutdown margin is required in order to state that the reactor is shutdown.
C. Incorrect – Reactor must be determined to be shutdown under all conditions without boron, or 1050 gallons of boron is required.
D. Incorrect - Reactor must be determined to be shutdown under all conditions without boron, or 1050 gallons of boron is required.

Technical Reference(s): EOP-Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-03 EO 1.3 (As available)

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

Question History: Last NRC Exam No

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295005 AK2.04	
	Importance Rating	3.3	

Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Main generator protection

Proposed Question: Common 40

During a Turbine Generator startup which one of the following is the reason for loading the main generator to at least 15-20 MWe within 30 seconds of closure of the first main generator output breaker?

A. Prevent rotor winding end turn overheating.

B. Prevent a trip of the voltage regulator to manual.

C. Prevent stator winding eddy current overheating.

D. Prevent a trip of the generator on reverse power.

Proposed Answer: D

Explanation (Optional):

D. Correct – Applying load will prevent a reverse power condition on the generator. R915 or R925 and SW 18 GENERATOR 1 could trip open if load is not applied to the generator within 30 seconds of closing output breaker.

A. Incorrect – this is not a concern within 30 seconds of connecting to the grid.
B. Incorrect – this is not a concern within 30 seconds of connecting to the grid.
C. Incorrect – this is not a concern within 30 seconds of connecting to the grid.

Technical Reference(s): N1-OP-32, Caution Sect. E. 3.5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: N1-245001-RBO-10 (As available)

Question Source:	Bank #	# 12 of Electrical Systems	ID: N1-245001-RBO-12-Q-02
	Modified Bank #		(Note changes or attach parent)
	New		
Question History:	Last NRC Exam	No	
Question Cognitive Level:	Memory or Fundamental Knowledge	X	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295004 AK1.05	
	Importance Rating	3.3	

Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER Loss of breaker Protection

Proposed Question: Common 41

The plant is operating at 100% power with the following conditions:

- A loss of Battery Board 12 occurs.
- Then, an Operator transfers the DC supply switch from “Battery Board 12” to “Battery Board 11” at Powerboard (PB) 103.

Which one of following describes the effects of these events, if any, on breakers R-1013, RESERVE SUPPLY TO PB 103, and CORE SPRAY PUMP 112 MOTOR BREAKER?

A. R-1013, RESERVE SUPPLY TO PB 103, is not affected.
CORE SPRAY PUMP 112 MOTOR BREAKER is not affected.

B. R-1013, RESERVE SUPPLY TO PB 103, cannot be operated from the control room and will not trip on an overcurrent condition.
CORE SPRAY PUMP 112 MOTOR BREAKER is not affected.

C. R-1013, RESERVE SUPPLY TO PB 103, is not affected.
CORE SPRAY PUMP 112 MOTOR BREAKER cannot be operated from the control room and will not trip on an overcurrent condition.

D. R-1013, RESERVE SUPPLY TO PB 103, cannot be operated from the control room and will not trip on an overcurrent condition.
CORE SPRAY PUMP 112 MOTOR BREAKER cannot be operated from the control room and will not trip on an overcurrent condition.

Proposed Answer: B.

Explanation (Optional):

B. Correct – Powerboard 103 breakers normally receive control power from Battery Board 12 (including core spray pump 112). Per OP-47A, Att. 3 and 4, only the control power to load breakers can be transferred. Therefore the core spray breaker will regain control power when the operator moves the switch to "Battery Board 11". The supply breaker will not regain control power, therefore both remote operation and protective trips will not function.

A. Incorrect – R-1013 does not regain control power.

C. Incorrect - R-1013 does not regain control power, but the Core Spray breaker does.

D. Incorrect – The Core Spray breaker regains control power.

Technical Reference(s): N1-OP-47A, Att. 3 and 4 table (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-262001-RBO-8 (As available)

Question Source: Bank # 25156
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295024 EK2.18	
	Importance Rating	3.3	

Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Ventilation.

Proposed Question: Common 42

The plant is operating at 100% power with the following conditions:

- Control Room Emergency Ventilation System (CREVS) supply fan 11 is running in ON for a maintenance retest.
- CREVS supply fan 12 is in AUTO.

The plant then scrams due to an event with the following conditions:

- Reactor Level has recovered from a low of +1 inch and is now at +65 inches and stable
- Reactor Pressure – 900 psig and stable
- Drywell Pressure – 3.6 psig and slowly rising

All other primary and secondary containment parameters are currently within acceptable ranges.

Which one of the following describes the status of the Control Room Emergency Ventilation System?

A. Due to high drywell pressure ONLY, CREVS Train 12 starts and supplies outside air through the charcoal filter. Train 11 remains aligned with the normal control room ventilation suction and supplies unfiltered outside air.

B. Due to high drywell pressure and low RPV water level, CREVS Train 12 starts and supplies outside air through the charcoal filter. Train 11 remains aligned with the normal control room ventilation suction and supplies unfiltered outside air.

C. Due to high drywell pressure ONLY, CREVS Train 12 starts and supplies outside air through the charcoal filter. Train 11 is already supplying outside air through the charcoal filter.

D. Due to high drywell pressure and low RPV water level, CREVS Train 12 starts and supplies outside air through the charcoal filter. Train 11 is already supplying outside air through the charcoal filter.

Proposed Answer: D

Explanation (Optional):

Per N1-OP-49,

In the event that any of the following signals are received:
Outside air contamination of 168 cpm above background on radiation monitors (MSLB is the most limiting)
LOCA (Lo2 - +5" or High Drywell Pressure – 3.5#)
MSLB (Hi steam tunnel temperature OR high steam flow) then,

Per Student Guide (N1101288003C01)

In AUTO the fan will start and dampers align to supply Control Room makeup air through the charcoal filter package (FLT-201-03R & 04R) on a Control Room Emergency Ventilation initiation signal

In ON the fan starts and dampers align to supply Control Room makeup air through the charcoal filter package

D. Correct – both the high drywell pressure and low RPV level setpoints have been reached causing CREVS 12 to auto start and align. Train11 is already being supplied thru the charcoal filters

A. Incorrect – the low RPV level setpoint was also reached, train 11 is supplied thru the charcoal filters
B. Incorrect – train 11 is supplied thru the charcoal filters
C. Incorrect - the low RPV level setpoint was also reached

Technical Reference(s): N1-OP-49 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-288003-RBO-5 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295003 AK2.01	
	Importance Rating	3.2	

Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: Station batteries

Proposed Question: Common 43

The plant is operating at 100% power with the following conditions:

- Static Battery Chargers (SBC) 161A and 171A are in service.
- PB 16B is inadvertently de-energized.
- The operator re-energizes PB 16B.

With no additional operator action taken, which one of the following is the status of Battery 11 sixty (60) seconds after PB 16B is re-energized?

A. On Float charge

B. On Equalize charge

C. Discharging. A charger will connect forty seconds later

D. Discharging. No charger can be aligned manually or automatically

Proposed Answer: C

Explanation (Optional):

C. Correct - 100 seconds after AC power is restored to SBC161A (from powerboard 16B) the SBC will align itself to the Battery 11 and return voltage to the normal float voltage of 135VDC. Only 60 seconds have expired so the battery is discharging until the charger automatically connects.

A. Incorrect - Not until the charger aligns. See justification above.

B. Incorrect - Not until the charger aligns and operator aligns an equalizer charge. See justification above.

D. Incorrect - A charger will automatically connect in forty seconds.

Technical Reference(s): N1-OP-47A (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-263000-RBO-5 (As available)

Question Source: Bank # 54198
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 x
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295026 EK2.06	
	Importance Rating	3.5	

Knowledge of the interrelations between SUPPRESSION POOL HIGH WATER TEMPERATURE and the following: Suppression pool level

Proposed Question: Common 44

As torus water level rises, the Heat Capacity Temperature Limit curves flatten.

Which one of the following describes the reason for this relationship?

This is due in part because as torus water level rises, _____.

A. a given energy addition results in a larger rise in torus water temperature

B. a given energy addition results in a smaller rise in torus water temperature

C. high RPV pressures have less effect on primary containment pressure

D. low RPV pressures have less effect on primary containment pressure

Proposed Answer: B

Explanation (Optional):

B. Correct
Per EOP Bases – page 27.

Higher torus water levels increase the heat capacity of the torus, but decrease the volume of the torus airspace. A given energy addition thus results in a smaller increase in torus water temperature, but a given temperature increase results in a larger increase in primary containment pressure. As torus water level rises, the Heat Capacity Temperature Limit curves thus flatten, but the low pressure endpoint temperature decreases. Conversely, as torus water level decreases, the Heat Capacity Temperature Limit curves become steeper and the low pressure endpoint temperature rises.

A. Incorrect - a smaller torus water temperature would result
C. Incorrect – as torus water level rises higher RPV pressures have MORE effect on primary containment pressure
D. as torus water level rises lower RPV pressures have MORE effect on primary containment pressure

Technical Reference(s): EOP Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-223001-RBO-12 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295006 AA1.02	
	Importance Rating	3.9	

Ability to operate and/or monitor the following as they apply to SCRAM: Reactor water level control system.

Proposed Question: Common 45

The plant has just scrammed spuriously from 100% power with the following conditions:

- Reactor Water Level is 50 inches and lowering slowly.
- Feedwater (FW) Pump 11 attempted to start on a HPCI signal and tripped.

Which one of the following describes the operator action for the conditions specified above in accordance with SOP-1, Reactor Scram?

A. Reset FW LVL Setpoint Setdown.

B. Set the FW Master Controller setpoint to 55 inches.

C. Place the FW LVL Setpoint Setdown switch in OVERRIDE.

D. Place FW Pump 11 switch to stop and spring return to neutral.

Proposed Answer: D

Explanation (Optional):

D. Correct per SOP-1 flowchart – If a HPCI signal is present and FW pumps 11 and/or 12 trip, Then reset the HPCI logic by placing Feedwater Pump 11 to stop and spring return to neutral.

A. Incorrect – not required by SOP until RPV water level is above 53”
B. Incorrect - not required by SOP unless setpoint setdown fails to initiate
C. Incorrect – not required by SOP with given conditions

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

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-342-1-01 EO 1.2 (As available)

Question Source: Bank # 35303
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295030 EK3.01	
	Importance Rating	3.8	

Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: Emergency Depressurization

Proposed Question: Common 46

Which one of the following describes the Torus water level at which an RPV Blowdown is required and the reason for the blowdown?

	Minimum Level	**Reason**
A.	8 feet	To prevent steam from discharging directly into the Torus airspace when ERVs are opened, which could challenge the Primary Containment Pressure Limit.
B.	8 feet	This level assures ERV operability is maintained during the blowdown and that the Heat Capacity Temperature Limit is not exceeded.
C.	10.5 feet	To prevent steam from discharging directly into the Torus airspace when ERVs are opened, which could challenge the Primary Containment Pressure Limit.
D.	10.5 feet	This level assures ERV operability is maintained during the blowdown and that the Heat Capacity Temperature Limit is not exceeded.

Proposed Answer: A

Explanation (Optional):

A. Correct – Per EOP Bases Page 191 - Torus water level must be maintained above 8 ft. to ensure that all openings in the ERV discharge devices remain submerged. If torus water level is below the elevation of the discharge holes, opening ERVs would discharge steam directly into the torus airspace. The resulting pressure increase could exceed the maximum pressure capability of the primary containment. Since the RPV may not be kept at pressure under these conditions, a blowdown is required.

A. Incorrect - ERV operability is not the concern.
C. Incorrect – Minimum level is 8 feet. 10.5 feet is the EOP entry
D. Incorrect - Minimum level is 8 feet. 10.5 feet is the EOP entry, ERV operability is not the concern.

Technical Reference(s): EOP-4 Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-04 EO-1.3 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295028 EK3.06	
	Importance Rating	3.4	

Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE : ADS

Proposed Question: Common 47

Which one of the following describes why a Blowdown is required when Drywell Temperature cannot be restored and maintained below 300°F?

To limit further release of energy into the Drywell and to ensure the…

A. RPV is depressurized while the ERVs are still operable.

B. RPV is depressurized prior to Recirc Pump seal damage.

C. reliability of all RPV level instrumentation as the RPV is depressurized.

D. reliability of ONLY the Fuel Zone RPV level instrumentation as the RPV is depressurized.

Proposed Answer: A

Explanation (Optional):

A. Correct – Per EOP Bases page 175 - If drywell temperature *cannot* be restored and maintained below 300°F, a blowdown is required. The blowdown is performed to limit further release of energy into the drywell and to ensure that the RPV is depressurized while the ERVs are still operable and before temperature rises high enough to damage the drywell.

B. Incorrect – Recirc Pump seal damage is not the concern
C. Incorrect – not the reason per EOP bases although at higher temperatures indicated vs actual level varies
D. Incorrect – not the reason per EOP bases although at higher temperatures indicated vs actual level varies

Technical Reference(s): EOP Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-006-344-1-04 EO-1.3 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295025 EA1.06	
	Importance Rating	4.5	

Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: Isolation Condenser: Plant-Specific

Proposed Question: Common 48

The plant is at 100% power when a main steam line isolation occurs. Plant conditions stabilize as follows:

- Reactor power is 17%
- Torus water level is 11 feet

Which one of the following describes the operator actions required to stabilize and control RPV pressure for these conditions?

A. Control steam flow through the Turbine Bypass Valves.

B. Cycle only one Emergency Condenser loop as needed.

C. Place one Emergency Condenser loop in service and cycle the other.

D. Place both Emergency Condensers loops in service and cycle ERVs.

Proposed Answer: D

Explanation (Optional):

D. Correct – 11% with plant shutdown indicates an ATWS and EOP-3 entry. With a main steam isolation the bypass valves are useless and an ERV would be cycling. Per EOP-3 step P-2 you initiate ECs and manually open ERVs to control pressure. Startup testing found that the ECs had a heat removal capability of up to ~8.0x10^8 BTU/hr, which equates to ~235MW or 12% of rated power. With 17% power in this question, the ECs alone will not be enough to control pressure. Therefore ERVs will be cycled to control pressure.

A. Incorrect - MSIVs have isolated therefore use of the bypass valves is not an option
B. Incorrect – The given power level is too high for this to control pressure
C. Incorrect – The given power level is too high for this to control pressure

Technical Reference(s): EOP-3, N1101207000C01 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-006-344-1-03 EO-1.2 (As available)

Question Source:
- Bank # 12785
- Modified Bank # _____ (Note changes or attach parent)
- New _____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41 X
- 55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295016 AA1.06	
	Importance Rating	4.0	

Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : Reactor water level

Proposed Question: Common 49

The Control Room has been evacuated due to a fire, with the following conditions:

- The Reactor is scrammed
- The Turbine is tripped
- Control has been transferred to Remote Shutdown Panel 12
- The RPV water level indicators on both Remote Shutdown Panels are damaged
- All systems are operating as designed

Which one of following describes what systems are specified in SOP 21.2, Control Room Evacuation, for maintaining RPV water level, and where alternate RPV water level indications are available?

	Systems for Level Control	**Alternate Level Indications**
A.	Condensate/FW and/or CRD	East Instrument Room
B.	Condensate/FW ONLY	East Instrument Room
C.	Condensate/FW and/or CRD	North Instrument Room
D.	Condensate/FW ONLY	North Instrument Room

Proposed Answer: A

Explanation (Optional):

A. Correct – Per SOP-21.2 flowchart, level is maintained 53-95" using Condensate/FW and/or CRD. The first override step directs using SOP-29.1 for alternate instrumentation as needed. The East and West instrument rooms contain alternate level indication, not the North instrument room.

B. Incorrect - CRD can also be used for level control

C. Incorrect – The North Instrument Room does not contain alternate RPV water level instrumentation

D. Incorrect – CRD can also be used for level control, the North Instrument Room does not contain alternate RPV water level instrumentation

Technical Reference(s): SOP-21.2, SOP-29.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-006-342-1-01 EO-1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295038 EA1.03	
	Importance Rating	3.7	

Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Process Liquid Monitoring system

Proposed Question: Common 50

A High Alarm has occurred on the Service Water Liquid Radiation Monitor.

Which one of the following describes the systems being monitored by this detector, and what operator action is required?

A. Containment Spray Raw Water, Turbine Building & Reactor Building Service Water
Request Chemistry perform a sample to locate source of activity

B. Turbine Building & Reactor Building Service Water ONLY
Request Chemistry perform a sample to locate source of activity

C. Containment Spray Raw Water, Turbine Building & Reactor Building Service Water
Request Radwaste secure any discharges in progress

D. Turbine Building & Reactor Building Service Water ONLY
Request Radwaste secure any discharges in progress

Proposed Answer: B

Explanation (Optional):

B. Correct – Per OP-50B, section B.5.4 - For the Service Water System Radiation Monitoring is provided to monitor the Reactor Building and Turbine Building service water, downstream of the Cooling Water Heat Exchangers. The process monitor samples the Reactor Building and Turbine Building service water, alternating streams every 15 minutes. Per ARP-H1-4-5, upon receipt of the service water rad monitor alarm, Chemistry needs to perform a sample to locate the source of activity.

A. Incorrect – Containment Spray has its own monitor (OP-50B section B.5.3)

C. Incorrect - Containment Spray has its own monitor (OP-50B section B.5.3), this action would be required if the alarm was due to a Radwaste rad monitor

D. Incorrect – this action would be required if the alarm was due to a Radwaste rad monitor

Technical Reference(s): N1-OP-50B, N1-ARP-H1-4-5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-272000-RBO-10 (As available)

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

Question History: Last NRC Exam no

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	600000 AA2.06	
	Importance Rating	2.5	

Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Need for pressurizing control room (recirculating mode)

Proposed Question: Common 51

The plant has experienced a fire in the Main Control Room, with the following conditions:

- Control Room Evacuation has been completed
- The Fire Brigade has extinguished the fire
- The Fire Chief has requested Smoke Purge be initiated for the Main Control Room

Which one of the following describes the operation of the Smoke Purge System and the relationship between Smoke Purge and the Control Room Emergency Ventilation System (CREVS)?

The Smoke Purge System for the Main Control Room is interlocked with the Smoke Purge System for the AUX Control Room to ___(1)___ simultaneous operation. Once in service, the Smoke Purge System will ___(2)___ on a CREVS initiation signal.

	(1)	(2)
A.	ensure	isolate
B.	ensure	NOT isolate
C.	prevent	isolate
D.	prevent	NOT isolate

Proposed Answer: D

Explanation (Optional):

D. Correct – Per N1-OP-21F- Section E.5 Caution - Operation of the Smoke Purge System prevents the Control Room Emergency Ventilation System (CREVS) from performing its design function, since the smoke purge system does not have automatic isolation features, and will not isolate upon receipt of high Control Room radiation signals. Prior to placing the Smoke Purge System in service, CREVS must be declared inoperable, and Tech. Spec. section 3.4.5 must be reviewed for applicability based upon plant conditions

Section E. Notes

Smoke Zone 6 - Control Room (LFP 1)
NOTE: Smoke Zone 6 is interlocked with Zones 4 and 5 to prevent simultaneous operation.

Smoke Zone 5 - Auxiliary Control Room (LFP 1)
NOTE: Smoke Zone 5 is interlocked with Zones 4 and 6 to prevent simultaneous operation.

A. Incorrect – is interlocked to prevent simultaneous operation , will NOT auto isolate
B. Incorrect – is interlocked to prevent simultaneous operation
C. Incorrect – will NOT auto isolate

Technical Reference(s): N1-OP-21F (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-286005-RBO-5 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	700000 AA2.06	
	Importance Rating	3.4	

Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Generator frequency limitations.

Proposed Question: Common 52

The plant is operating at 100% power when the following Annunciators alarm:

- A6-3-3, 345 KV SYS FREQUENCY HIGH-LOW
- A2-3-2, GENERATOR CORE MONITOR

An operator observes the following Control Room indications:

- Generator Frequency is 58 Hz and slowly lowering
- Generator MVAR indication is 125 MVARS TO BUS and slowly rising

Which one of the following is the required operator action?

A. Reduce Generator load as required to maintain stator temperatures < 125°C.

B. Lower Generator load to the self-cooled rating of 9000 bus amperes continuous.

C. Immediately insert a manual Reactor Scram and verify the Main Turbine trips per N1-SOP-31.1.

D. Initiate a Generator load reduction to < 40% load while determining if the core monitor alarm is valid.

Proposed Answer: C.

Explanation (Optional):

C. Correct – IAW N1-SOP-33B.1, Major 345 KV Grid Disturbances if the generator/system frequency variation is ± 1.9 Hz trip the turbine per N1- N1-SOP-31.1, which at 100% power would also cause a scram.

A & B. Incorrect - Reduction in load is wrong although feasible. Both these limits are based on a loss of Bus Duct Cooling.

D. Incorrect – Reduction in load is wrong although per the ARP for generator core monitoring this is a valid step if core monitor alarm is validated.

Technical Reference(s): ARP A6-3-3 (Attach if not previously provided)
SOP-33B.1

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-245001-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295001, AA2.02	
	Importance Rating	3.1	

(K&A Statement) Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Neutron monitoring

Proposed Question: Common 53

The plant is operating at 100% power with all five (5) recirculation pumps operating.

Assuming **NO** operator action, which one of the following describes how a single recirculation pump trip will affect the flow-biased APRM scram and rod block trip setpoints, and the reason for the change?

A. Setpoints are LESS conservative because core flow will indicate higher than actual because reverse flow in the tripped loop will be added to the other loop flows.

B. Setpoints are LESS conservative because core flow will indicate lower than actual because the summer will divide the four (4) operating loop flows by the five (5) inputs.

C. Setpoints are MORE conservative because actual core flow will lower as indicated flow rises due to reverse flow in the tripped loop.

D. Setpoints are MORE conservative because actual core flow will rise as pressure in the RPV bottom head lowers, while indicated flow lowers.

Proposed Answer: A.

Explanation (Optional):

A. Correct - A Recirc Pump trip at power results in non-conservative Recirc Flow-biased APRM scram and rod block trip setpoints due to the reverse-flow through the non-isolated Recirc Loop still being measured as part of total core flow.

B. Incorrect - The setpoints are NON-conservative but not because the core flow will indicate lower than actual. Core flow will indicate higher than actual.

C. Incorrect - Setpoints are NON-conservative when flow reverses in the loop, the summer will continue to add this flow which affects total core flow measurement.

D. Incorrect – Setpoints are NON-conservative, actual flow from the four operating loops may rise due to the lowered pressure in the bottom head but this does not offset the loss of the tripped loop and the added reverse flow.

Technical Reference(s): N1-SOP-1.3, Sect. 5.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-202001-RBO-11 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295021, 2.4.21	
	Importance Rating	4.0	

(K&A Statement) Emergency Procedures / Plan: 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. (Loss of Shutdown Cooling)

Proposed Question: Common 54

The plant is in cold shutdown in preparation for a routine refueling. The following conditions exist:

- The Reactor Vessel Head Studs are still tensioned
- Two (2) loops of Shutdown Cooling are in service

Following a complete loss of Shutdown Cooling, which one of the following calculations will determine the time available to recover decay heat removal before an unplanned mode change?

A. The reactor coolant system volume divided by the rate of rise of the reactor coolant temperature.

B. The rise in reactor coolant temperature required to achieve boiling divided by the rate of rise of the reactor coolant system temperature.

C. The decay heat production rate minus the decay heat removal rate both adjusted for the volume of the reactor coolant system.

D. The thermal capacity per unit mass of the reactor coolant divided by the difference of the decay heat production rate and the decay heat removal rate.

Proposed Answer: B.

Explanation (Optional):

B. Correct – the parameter of concern for these conditions is the time to reach boiling. To determine that the current temperature must be subtracted from 212°F. This is then divided by the rate of rise of the reactor coolant system to give a time to boil (temp of concern for cold shutdown with the RPV head still tensioned).

A. Incorrect – the parameter of concern for these conditions is the time to reach boiling. This calculation determines the inverse of the volumetric rise in reactor coolant temperature but does nothing to determine the time available to recover Shutdown Cooling.

C. Incorrect – the parameter of concern for these conditions is the time to reach boiling. This calculation determines the net heat addition to the reactor coolant system but does nothing to determine the time available to recover Shutdown Cooling.

D. Incorrect – the parameter of concern for these conditions is the time to reach boiling. This calculation will determine the RATE of temperature rise in the reactor coolant, not a time to reach a certain temperature.

Technical Reference(s): N1-ODP-OPS-0108. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-205000-RBO-11 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295031, 2.1.19	
	Importance Rating	3.9	

(K&A Statement) Conduct of Operations: Ability to use plant computers to evaluate system or component status. (Reactor Low Water Level)

Proposed Question: Common 55

The plant has experienced a small loss of coolant accident with the following conditions:

- RPV water level indicates +72 inches on the SPDS display
- The RPV water level indication on the SPDS display has turned to a violet color

Which one of the following describes the significance of the violet color indication and what action is required?

This indicates an…

A. INVALID/ALERT condition; confirm indicated RPV water level with other Control Room instruments.

B. INVALID/ALERT condition; notify System Engineering (Computer Group) to reinitialize the video display generator.

C. ALARM water level value; verify the display is working by a small, blinking square located in upper right corner of CRT Screen.

D. ALARM water level value; verify continuous updating of the time display, located in lower right portion of main display area for all SPDS Displays.

Proposed Answer: A.

Explanation (Optional):

A. Correct – an ALERT condition for SPDS parameter is indicated by numerical value presentation for parameter colored violet. N1-OP-42, Sect H.6.0 directs the operator to confirm indicated condition with hard-wired Control Room instrument.

B. Incorrect – The ALERT designation refers to the value of the parameter. The video display generator is only reinitialized if a purple cursor is received (OP-42 H.1.0), not a purple/violet parameter value.

C. Incorrect – The given value of RPV water level would not cause SPDS to go into an ALARM status.

D. Incorrect – The given value of RPV water level would not cause SPDS to go into an ALARM status.

Technical Reference(s): N1-OP-42, Sect. H.6.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-283000-RBO-5 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295019, 2.4.49	
	Importance Rating	4.6	

(K&A Statement) Emergency Procedures / Plan: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. (Partial or Complete Loss of Instrument Air)

Proposed Question: Common 56

The plant is operating at 100% power with the following conditions:

- A leak has developed in the Breathing Air Supply to the turbine building downstream of isolation valve 114-120
- Instrument Air Pressure is 68 psig and lowering slowly
- 94-19, air systems crosstie valve has **NOT** opened
- Instrument Air Compressor 12 is in Standby but has **NOT** automatically started

Which one of the following is the **FIRST** action to be taken for these conditions?

A. Manually start Instrument Air Compressor 12 and verify instrument air header pressure rises.

B. Place the Reactor Mode Switch in SHUTDOWN and execute N1-SOP-1, Reactor Scram.

C. Direct an operator to manually open 94-19, air systems crosstie valve in accordance with N1-SOP-20.1.

D. Direct an operator to manually close isolation valve 114-120, the Breathing Air Supply to the turbine building.

Proposed Answer: B.

Explanation (Optional):

B. Correct – IAW N1-SOP-20.1, when IA Pressure lowers to < 70 psig SCRAM the Reactor per N1-SOP-1

A. Incorrect – Although this is an appropriate step, with IA pressure less then 70 psig the reactor should be scrammed IAW N1-SOP-20.1

C. Incorrect – Although this is an appropriate step, with IA pressure less then 70 psig the reactor should be scrammed IAW N1-SOP-20.1

D. Incorrect – Although this is an appropriate step, with IA pressure less then 70 psig the reactor should be scrammed IAW N1-SOP-20.1

Technical Reference(s): N1-SOP-20.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-278001-RBO-10 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295023, AK2.03	
	Importance Rating	3.4	

(K&A Statement) Knowledge of the interrelations between REFUELING ACCIDENTS and the following: Radiation monitoring equipment

Proposed Question: Common 57

During refueling operations, an LPRM string is being removed from the core when the following conditions occur:

- An equipment malfunction has resulted in bringing the LPRM above the minimum allowed depth
- The refuel bridge area radiation level reaches 1100 mR/hr.

Which one of the following actions must be taken by the operator in the control room?

A. Determine the current Spent Fuel Pool level and raise level to the FSAR minimum of 24 feet.

B. Manually initiate the Control Room Emergency Ventilation System and verify outside air dampers close.

C. Reset the Fuel Pool High Range Process Radiation Monitor at the J Panel and restart the Spent Fuel Pool Cooling System.

D. Verify automatic isolation of the Reactor Building Ventilation System and the initiation of the Emergency Ventilation System.

Proposed Answer: D.

Explanation (Optional):

C. Correct - The system will auto-initiate on Fuel Pool High Range Rad Monitor Hi at 1000 mr/hr with Refuel/Bypass Switch in REFUEL position. During refueling, the Fuel Pool High Range Mode Switch must be in the Refuel position. This mode switch is located on the Process Radiation Monitor Auxiliaries Panel (Control Room "J" Panel).

A. Incorrect – The LPRM was raised above the minimum depth for shielding there is no indication of a low level in the SFP.

B. Incorrect – There is no direction or need to initiate CREVS.

C. Incorrect – There is no need to reset the Fuel Pool High Range Process Radiation Monitor and there is no trip of the Spent Fuel Pool Cooling System so there is no need to restart the system.

Technical Reference(s): N1-OP-10, Sect B.3.0 (Attach if not previously provided)
N1-OP-50B, Sect. B.8.0

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-272000-RBO-5 (As available)

Question Source: Bank # ID: 242 in EOP, SOP, EP Bank
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295018, AA1.01	
	Importance Rating	3.3	

(K&A Statement) - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Backup systems

Proposed Question: Common 58

The plant is operating at 100% power when a break in the Reactor Building Closed Loop Cooling Water System (RBCLC) piping to the Spent Fuel Pool (SFP) Cooling System occurs.

Which one of the following lineups is used to provide a backup method of Spent Fuel Pool cooling in accordance with N1-SOP-6.1 “Loss of SFP/Rx Cavity Level”?

A. Line up Demineralized Water to the SFP with hoses and lower SFP Surge Tank level to Radwaste.

B. Line up Condensate Transfer to the SFP with hoses and lower SFP Surge Tank level to the condenser.

C. Line up Demineralized flushing water to the SFP Pumps and lower SFP Surge Tank level to the condenser.

D. Line up Condensate Transfer flushing water to the SFP Pumps and lower SFP Surge Tank level to Radwaste.

Proposed Answer: A.

Explanation (Optional):
A – Correct – With a loss of cooling water to the SFP heat exchangers and the plant at power (ie SFP not open to Rx cavity), SOP-6.1 directs a feed and bleed on the SFP. Either Demin Water or Condensate Transfer Water can be added directly to the SFP via hoses on the refuel floor. With the plant at power, water must then be drained from the Surge Tanks to Radwaste. SFP water may not be drained to the condenser while the plant is at power, or a loss of condenser vacuum may result.

B – Incorrect – SFP water may not be drained to the condenser while the plant is at power, or a loss of condenser vacuum may result.

C – Incorrect – Demineralized water is lined up directly to the SFP via hoses on the refuel floor, not by connection to the SFP pumps. SFP water may not be drained to the condenser while the plant is at power, or a loss of condenser vacuum may result.

D – Incorrect – Condensate transfer water is lined up directly to the SFP via hoses on the refuel floor, not by connection to the SFP pumps.

Technical Reference(s): N1-SOP-6.1, Chart C and Attachment 7.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-233000-RBO-8 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295015 AK1.04	
	Importance Rating	3.8	

Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM : Reactor pressure: Plant-Specific

Proposed Question: Common 59

A failure to scram has occurred. The following conditions exist:

- Reactor power is oscillating between 15% and 35%
- ERVs are cycling
- ECs are in service
- Drywell pressure is 1.8 psig and steady
- Drywell temperature is 130°F and steady
- Condenser vacuum is 5 inches Hg and lowering

You are directed to use ERVs to reduce reactor pressure to 965 psig.

Which one of the following describes the reason for this direction?

This action will…

A. allow the turbine bypass valves to be closed.

B. ensure adequate margin to the ERV lift setpoints.

C. decrease the probability of exceeding ERV environmental qualifications.

D. ensure that reactor pressure is within turbine bypass valve steam flow capacity.

Proposed Answer: B

Explanation (Optional):

B. Correct. Per EOP Bases, page 139, ERV cycling is terminated by initiating ECs and opening ERVs to reduce RPV pressure below the ERV lift setpoints. The ERVs should be opened one at a time until a sufficient number have been opened to reduce RPV pressure at least to the value at which steam flow through the main turbine bypass valves is at 100% of bypass capacity (965 psig). If the MSIVs are open and the main turbine control system pressure regulator is in control, lowering below this value will cause the bypass valves to close. Heat which would otherwise be rejected to the main condenser would then be discharged to the torus. If the MSIVs are *not* open or the bypass valve opening jack is in control, this value simply provides an adequate margin to the ERV lift setpoints.

A. Incorrect – TBVs are already closed due to low condenser vacuum
C. Incorrect - ERV failure probability is dependent upon the frequency at which they cycle, and has nothing to do with 965#, specifically.
D. Incorrect - Since the MSIVs are closed, the 100% bypass capacity distractor is irrelevant for this ATWS.

Technical Reference(s): EOP Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-006-344-1-03 EO-1.2 (As available)

Question Source: Bank # 17144
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295008 AK2.09	
	Importance Rating	3.1	

Knowledge of the interrelations between HIGH REACTOR WATER LEVEL and the following: Reactor Water Cleanup (ability to drain): plant-specific.

Proposed Question: Common 60

Given the following conditions:

- The reactor has scrammed from 100% power.
- Feedwater system has responded as designed.
- RPV water level is 80 inches and rising slowly.

Which one of the following describes an authorized operator action to control RPV water level in this situation, in accordance with N1-SOP-1, Reactor Scram?

A. Close Feedwater Isolation Valves.

B. Inject using Feedwater flow control valve 13.

C. Reject to the main condenser using the RWCU system.

D. Position the Feedwater High Level Bypass switch to BYPASS.

Proposed Answer: C

Explanation (Optional):

C. Correct – Per SOP-1 Flowchart, Restore RPV level by rejecting via RWCU
A. Incorrect – only if level is >85”
B. Incorrect – SOP-1 requires termination of injection from 13 FWP if an electric FWP is running and water level is recovering
D. Incorect - not referenced in SOP for given conditions

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

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-006-342-1-01 EO 1.2 (As available)

Question Source: Bank # 2000 NRC
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam 2000 NRC

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295002 AK3.02	
	Importance Rating	3.4	

Knowledge of the reasons for the following responses as they apply to LOSS OF MAIN CONDENSER VACUUM: Turbine Trip

Proposed Question: Common 61

Which one of the following describes the reason for manually tripping the main turbine if exhaust pressure is above 5 inches Hga with generator load less than 190 MWe?

Protects the…

A. main turbine from aerodynamic buffeting.

B. main turbine exhaust hoods from excessive temperatures.

C. main condenser from over-pressurization.

D. main condenser shells from excessive stress due to unbalanced steam loads.

Proposed Answer: A

Explanation (Optional):

A. Correct- per OP-31, D.1.0. , If during operation the exhaust pressure increases above 5" Hga., load should be reduced until proper vacuum is restored. Due to the risk of aerodynamic buffeting or flutter, load reduction for the purpose of improving exhaust pressure should not go below 30% rated (190 MWe) output while above 5" Hga. If exhaust pressure is above 5.0" Hga. when 30% rated output is reached, the turbine should be tripped.

B/C/D. Incorrect - not the basis for this operator action per OP-31.

Technical Reference(s): N1-OP-31, (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-245000-RBO-9 (As available)

Question Source: Bank # 2002 nrc

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam 2002 nrc

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295007 AA1.05	
	Importance Rating	3.7	

Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE : Reactor/turbine pressure regulating system

Proposed Question: Common 62

The plant is operating at 75% power when the following events occur:

- Main generator output begins oscillating between 465 and 495 MWe
- Reactor pressure is oscillating
- No annunciators have alarmed
- Operators determine that the MHC system is malfunctioning

Which one of the following describes the required operator action in accordance with N1-SOP-31.2, Pressure Regulator Malfunctions?

A. Verify the EPR servo stroke is at 100%, then control Reactor pressure with the MPR.

B. Raise the EPR setpoint to 1010 psig, then control Reactor pressure with the MPR.

C. Lower the EPR setpoint until the EPR is in control, then raise the MPR setpoint to the high stop.

D. Lower the MPR setpoint until the MPR is in control, then raise the EPR setpoint to 1010 psig.

Proposed Answer: D

Explanation (Optional):

D. Correct – Per SOP-31.2 flowchart, the MPR is placed in service by lowering its setpoint, then the EPR setpoint is raised out of the way

A. Incorrect – An EPR servo stroke of 100% would indicate the EPR is in control and giving an excessive open signal to the TCVs; per SOP-31.2, EPR servo stroke is verified at 0% after taking control with the MPR

B. Incorrect - Per SOP-31.2, the MPR setpoint is lowered prior to raising the EPR setpoint

C. Incorrect - With the plant in a normal configuration, the EPR is originally in control. Additionally, with no annunciators in, the MPR is not in control. Therefore the EPR is the malfunctioning regulator, and must be taken out of control.

Technical Reference(s): N1-SOP-31.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-248000-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295033 EK2.01	
	Importance Rating	3.8	

Knowledge of the interrelations between HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS and the following: Area Rad Monitoring System

Proposed Question: Common 63

Which one of the following describes the Auxiliary Unit for the Area Radiation Monitors (ARMs)?

A. It boosts signal strength from the ARMs located furthest from the Control Room and provides for reflash capability once a high level trip setpoint is reached.

B. It amplifies the power supply for the ARMs located furthest from the Control Room and provides for reflash capability once a high level trip setpoint is reached.

C. It is used for local alarm and indication in the event of high area radiation levels reaching a high level trip setpoint. It provides no automatic system actuations.

D. It is used for local alarm and indication in the event of high area radiation levels reaching a high level trip setpoint. For the New Fuel Room ARM, the Auxiliary Unit provides the auto initiation signal for RBEVS.

Proposed Answer: C

Explanation (Optional):

C. Correct – IAW N1-OP-50A – Section B. System Description - <u>The Auxiliary Unit is used for local alarm and indication of high level trip.</u> It is installed electrically between the Sensor and Converter and the corresponding Indicator and Trip Unit. Input and output receptacles jumper the connections ordinarily established directly between the Sensor and Trip Unit. A meter on the front panel indicates the radiation level at the Sensor. When a high level trip occurs, operating current is supplied to a relay whose contacts may be used to control external alarm circuits. An amber lamp on the Auxiliary Unit lights when the relay operates.

A. Incorrect – an amplifier provides this function, not the aux unit
B. Incorrect – an amplifier provides this function, not the aux unit
D. Incorrect – It provides for no automatic functions.

Technical Reference(s): N1-OP-50A (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: N1-283000-RBO-2 (As available)

Question Source: Bank # 51110
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295032 2.4.18	
	Importance Rating	3.3	

Emergency Procedures / Plan; Knowledge of the specific bases for EOPs. (High Secondary Cont. Temp)

Proposed Question: Common 64

Due to an event, EOP-5, Secondary Containment Control, has been entered.

Area temperatures have exceeded the maximum safe operating values in two general areas.

Which one of the following actions is required and what is the basis for the action?

With an unisolable (1) leak discharging into the affected areas, RPV Blowdown is required, because (2).

	(1)	(2)
A.	Service Water	it rejects heat to the torus in preference to rejecting it outside the primary containment.
B.	RWCU	it rejects heat to the torus in preference to rejecting it outside the primary containment.
C.	Service Water	operability of the ERVs could be affected as area temperatures continue to rise.
D.	RWCU	operability of the ERVs could be affected as area temperatures continue to rise.

Proposed Answer: B

Explanation (Optional):

B. Correct per EOP Bases pages 228-231

A system is a “primary system” if it is connected directly to the RPV and if reducing RPV pressure will decrease flow through a break in the system. If an unisolable primary system break is known to exist, the procedure branches to #28 (Elements SC-9 through SC-12). If an unisolable primary system break is *not* known to exist, the procedure continues here, in the branch below #27.

A parameter above the Maximum Safe Value in two separate areas is indicative of a widespread problem posing a direct and immediate threat to secondary containment, equipment in the secondary containment, and safe operation of the plant. If a primary system is discharging into the secondary containment and area temperatures, radiation levels, or water levels are above their Maximum Safe Values in two or more areas, a blowdown must therefore be performed in accordance with EOP-8. The blowdown minimizes flow through the break, rejects heat to the suppression pool in preference to outside the containment, and places the primary system in the lowest possible energy state.

In this case, as defined above, RWCU is a “primary system”, SW is not. Therefore a blowdown is required for the reson noted above.

A. Incorrect – service water is not a primary system, so Blowdown is not required
C. Incorrect – service water is not a primary system, so Blowdown is not required; Incorrect reason for a blowdown, ERV operability is a concern on high temperatures INSIDE containment
D. Incorrect – Incorrect reason for a blowdown, ERV operability is a concern on high temperatures INSIDE containment

Technical Reference(s): EOP Bases pages 227-229 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-05 EO-1.2 & 1.3 (As available)

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

Question History: Last NRC Exam No

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	500000 EA2.01	
	Importance Rating	3.1	

(K&A Statement) - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Hydrogen monitoring system availability

Proposed Question: Common 65

A large break LOCA has occurred and the following conditions exist:

- Reactor Level is -60 inches and slowly rising
- Drywell Pressure is 12 psig and slowly rising

Which one of the following describes the availability of the Hydrogen and Oxygen Sampling Systems and what operator actions are required?

The Hydrogen and Oxygen Sampling Systems are…

A. Isolated, bypass the isolation using CAD CHANNEL 11 and 12 RPS BY-PASS switches.

B. Available and lined up, verify proper operation at the H2O2 Monitor Control Panel 11 (TB 291).

C. NOT available, direct Chemistry to manually sample the Containment using N1-ECP-209 OR N1-ECP-210.

D. Isolated, bypass the isolation using CAD CHANNEL 11 and 12 RPS BY-PASS **AND** AUTO VESSEL ISOL CH 11 and Ch 12, switches.

Proposed Answer: A.

Explanation (Optional):

A. Correct – Per N1-OP-9, Sect. H.3, and EOP-4, to recover the H_2 and O_2 sampling systems it is necessary to un-isolate the system by bypassing the Containment Isolation using CAD CHANNEL 11 and 12 RPS BY-PASS switches.

B. Incorrect – The H_2 and O_2 sampling systems are NOT lined up, they isolated when containment pressure exceeded 3.5 psig and/or RPV water level was less than 5".

C. Incorrect – The H_2 and O_2 sampling systems are NOT lined up, they isolated when containment pressure exceeded 3.5 psig and/or RPV water level was less than 5". However, they are available to be lined up per OP-9.

D. Incorrect – It is not necessary to bypass the vessel isolation, the vessel isolation does not isolate the H_2 and O_2 sampling systems.

Technical Reference(s): N1-OP-9, Sect. H.3 (Attach if not previously provided)
N1-EOP-4
N1-SOP-40.2

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-223002-RBO-12 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.1.40	
	Importance Rating	2.8	

Knowledge of refueling administrative requirements

Proposed Question: Common 66

Which one of the following activities would be defined as “Refueling Operations” as described in N1-ODP-NFM-101, Refueling Operations?

A. Detensioning and removing the RPV head from the Reactor while the Reactor Mode Switch is in SHUTDOWN.

B. Inspecting new fuel in the inspection stand on the Refueling Floor while the Reactor Mode Switch is in REFUEL.

C. Placing control rod blades into the Spent Fuel Pool using the Refueling Floor crane while the Reactor Mode Switch is in SHUTDOWN.

D. Moving irradiated fuel using the Refueling Platform from the Reactor to the Spent Fuel Pool while the Reactor Mode Switch is in REFUEL.

Proposed Answer: D.

Explanation (Optional):

D. Correct – IAW N1-ODP-NFM-101, Operations performed while the plant is in Refuel Mode on the Refueling Floor that effect Fuel Pool, Reactor Vessel or Internal Storage Pool components.

A. Incorrect – Reactor Mode Switch must be in REFUEL.
B. Incorrect – This activity does not effect components in the fuel pool.
C. Incorrect – Reactor Mode Switch must be in REFUEL.

Technical Reference(s): N1-ODP-NFM-101, Sect. 4.1 (Attach if not previously provided)
TS section 1.0, N1-OP-34

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-234000-RBO-10 (As available)

Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	
Question History:	2008 NRC Exam	No	
Question Cognitive Level:	Memory or Fundamental Knowledge	X	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.1.23	
	Importance Rating	4.3	

(K&A Statement) Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Proposed Question: Common 67

The plant was operating at 100% power when the following occurred:

- A loss of condenser vacuum resulted in a power reduction and reactor scram.
- Twelve (12) control rods failed to fully insert and are stuck at position 04.

Which one of the following methods is used to insert these rods, in accordance with station procedures?

A. Manually initiate Alternate Rod Insertion (ARI).

B. Reset the scram and insert a second manual scram.

C. Drive the control rods in to 00 using the Emergency In switch.

D. Place the mode switch in REFUEL and drive the rods in normally.

Proposed Answer: D.

Explanation (Optional):

D. Correct – Per EOP-SAP Bases all control rods are inserted to position 04 or less so there is no direction to enter EOP-3. With the control rods still not fully inserted, SOP-1 directs use of N1-OP-5 Control Rod Drive Sys, Sect. H.23. Control Rod Insertion (Shutdown Condition Hot). This section has the operator place the mode switch in refuel and insert the control rods using the normal Control Rod Movement switch.

A. Incorrect – There is no entry to EOP-3 therefore there is no direction to initiate ARI.

B. Incorrect – There is no entry to EOP-3 therefore there is no direction to reset the scram and insert another scram.

C. Incorrect – There is no procedure reference for this and no rods can be selected until the mode switch is placed in REFUEL. OP-5 specifically directs use of the normal Control Rod Movement switch, not the Emergency In switch.

Technical Reference(s): EOP-SAP Bases
N1-SOP-01
N1-OP-05, Section H.23 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-201001-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.2.12	
	Importance Rating	3.7	

(K&A Statement) Knowledge of surveillance procedures.

Proposed Question: Common 68

The plant is operating at 100% power. N1-ST-Q26 will be performed to exercise the Main Steam Isolation Valves.

Which one of the following is required and what plant impact is associated with this test?

A. Verify no RPS half scram signal exists and anticipate a half scram during the test.

B. Lower power below 90% prior to the test and anticipate a half scram during the test.

C. Place Feedwater Control in Single Element Control prior to the test and anticipate a small RPV water level transient.

D. Station a second operator at PB 161B and 171B to monitor Reactor Protection System (RPS) contacts because of the possibility of a partial isolation.

Proposed Answer: A.

Explanation (Optional):

A. Correct because a half scam will occur and N1-ST-Q26 requires verifying no existing scram conditions.

B. Incorrect – there is no need to lower power to <90% the partial closures can be done at 100% power.

C. Incorrect – there is no need to place FWLC in single element, although the procedure warns of a feedwater flow transient any level transient that could be caused by the MSIVs would be minor.

D. Incorrect – There is a precaution in the procedure that contacts at these panels may stick but no requirement to station an operator at PB 161B and PB 171B.

Technical Reference(s): N1-ST-Q26, Sect. 7 and 8 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-239001-RBO-10 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.2.39	
	Importance Rating	3.9	

(K&A Statement) Knowledge of less than one hour technical specification action statements for systems.

Proposed Question: Common 69

The plant is in cold shutdown when it is determined that the Technical Specification requirements for Shutdown Margin (SDM) are NOT met. Which one of the following actions is required?

Initiate action to insert all insertable control rods…

A. immediately, and initiate action within one hour to establish Primary Containment.

B. immediately, and initiate action within one hour to establish Secondary Containment.

C. within one hour, and initiate action within one hour to establish Primary Containment.

D. within one hour, and initiate action within one hour to establish Secondary Containment.

Proposed Answer: B.

Explanation (Optional):

B. Correct – If SDM is not met (TS 3.1.1) with the reactor in hot or cold shutdown then: Immediately initiate action to fully insert all insertable control rods, and Initiate action within 1 hour to restore secondary containment to operable status,

A. Incorrect - Secondary containment must be established.

C. Incorrect – All rods must be inserted immediately and secondary containment must be established.

D. Incorrect – All rods must be inserted immediately.

Technical Reference(s): T.S. 3.1.1.d (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-201001-RBO-14 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.3.7	
	Importance Rating	3.5	

(K&A Statement) Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Proposed Question: Common 70

The plant has been shutdown due to high drywell leakage. A drywell entry is to be made to locate the source of the leak. The following conditions exist:

- All control rods are inserted
- A drywell oxygen sample indicates 21.5%
- Primary containment temperature readings on DW 237' and DW 259' are 101ºF
- Radiation readings on contact with the inside airlock door are 40 mrem/hr.

Which one of the following is required for the initial Primary Containment entry?

A. Specific Radiation Work Permit and a pre-job brief.

B. Standing Radiation Work Permit and a pre-job brief.

C. Emergency Response Radiation Work Permit with a pre-job brief.

D. Emergency Response Radiation Work Permit without a pre-job brief.

Proposed Answer: A.

Explanation (Optional):

A. Correct – IAW S-RPIP-10.4, PRIMARY CONTAINMENT ENTRIES for the conditions above a Specific RWP is required with a pre-job brief.

B. Incorrect – A Standing RWP is only used for routine work, this entry is not routine.

C. Incorrect – An Emergency Response RWP is only used for emergency situations; because time can be taken to prepare for this entry a Specific RWP is required.

D. Incorrect – An Emergency Response RWP is only used for emergency situations; because time can be taken to prepare for this entry a Specific RWP is required. Although no brief is required when using an Emergency Response RWP the procedure of Drywell entry requires a pre-job brief.

Technical Reference(s): GAP-RPP-02, Sect 3 (Attach if not previously provided)
S-RPIP-10.4, Attachment 1

Proposed references to be provided to applicants during examination: None

Learning Objective: S-RPIP-10.4-TO01 (As available)
GAP-RPP-02-TO01

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.3.13	
	Importance Rating	3.4	

(K&A Statement) 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: Common 71

The plant is shutdown for refueling when it becomes necessary to enter the Inner TIP Room. Which one of the following is required?

A Specific RWP, RP Supervision approval, an accompanying Radiation Protection (RP) tech and…

A. SM and RP Manager approvals, only.

B. SM, Security Supervisor and RP Manager approvals, only.

C. Security Supervisor approval, TIP clearance section applied and Inner TIP Room ARM verified.

D. SM and RP Manager approvals, TIP clearance section applied and Inner TIP Room ARM verified.

Proposed Answer: D

Explanation (Optional):

D. Correct - IAW S-RAP-RPP-0801, section 3.8 In addition to the appropriate LHRA or VHRA controls, ensure TIP position and Inner TIP Room ARM Verified prior to entry. The LHRA or VHRA controls include a Specific RWP, RP Supervision approval an accompanying Radiation Protection (RP) tech and SM and RP Manager approvals.

A. Incorrect - The TIP position and Inner TIP Room ARM must be verified.

B. Incorrect – SM and RP Manager approvals are required for entry, Security supervisor approval is NOT required.

C. Incorrect - Security supervisor approval is NOT required. SM and RP Manager approvals are required for entry

Technical Reference(s): S-RAP-RPP-0801 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: GAP-RPP-01-TO01 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.4.32	
	Importance Rating	3.6	

Knowledge of operator response to loss of all annunciators.

Proposed Question: Common 72

A plant shutdown is in progress for an upcoming outage, with the following conditions:

- Reactor power is at 80% and being lowered to 75% by reducing Recirc flow
- You are about to begin N1-PM-M4 “Monthly Service Water Pump Rotation”
- All plant parameters are within normal range
- All equipment is operable

THEN, a Loss of Annunciators occurs on Main Control Room Panels L and K.

Which one of the following describes the actions required in response to this event, in accordance with N1-SOP-42, Loss of Annunciators?

A. The power reduction and Service Water pump rotation must be suspended

B. The power reduction and Service Water pump rotation may continue

C. The power reduction must be suspended and the Service Water pump rotation may continue

D. The power reduction may continue and the Service Water pump rotation must be suspended

Proposed Answer: A

Explanation (Optional):

N1-SOP-42 - LOSS OF ANNUNCIATORS

EVENT DESCRIPTION
Loss of Alarms/Annunciators has occurred at any OR all Control Room Panels

Maintain the plant in a steady state condition:
- Activate the Emergency Plan per EPIP-EPP-18. (Refer to EAL 7.3.1, 7.3.3, 7.3.4)
- Suspend all activities that are NOT absolutely essential for safe plant operation.
- Secure all surveillance/testing activities.
- Do NOT initiate any transients on the plant that are NOT absolutely essential for safe plant operation.

A. Correct - per last 3 bullets of SOP-42.
B. Incorrect – Activities must be suspended.
C. Incorrect – Activities must be suspended.
D. Incorrect - Activities must be suspended.

Technical Reference(s): N1-SOP-42 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: O1-OPS-006-342-1-01 EO-1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.4.20	
	Importance Rating	3.8	

Knowledge of operational implications of EOP warnings, cautions, and notes.

Proposed Question: Common 73

A loss of coolant accident has resulted in the containment being in the **NO SPRAY** area of the Containment Spray Initiation Limit.

Which one of the following explains why initiating containment sprays is not an option for controlling primary containment pressure?

A. The rapid depressurization of the torus could result in siphoning excessive water into the downcomers and ring header.

B. The rapid depressurization of the torus could result in a loss of Net Positive Suction Head to the Containment Spray Pumps.

C. The rapid depressurization of the drywell could result in a negative drywell pressure large enough to damage the primary containment.

D. The rapid depressurization of the drywell could result in displacing the nitrogen in the drywell with steam through the torus-to-drywell vacuum breakers.

Proposed Answer: C

Explanation (Optional):

C. Correct – From EOP Bases:

Containment spray operation reduces drywell pressure and temperature through the combined effects of evaporative and convective cooling. Evaporative cooling occurs when water is sprayed into a dry or superheated atmosphere. The water at the surface of the spray droplets flashes to steam, absorbing the heat of vaporization from the surrounding atmosphere. The associated cooling of the drywell atmosphere can produce a relatively large pressure drop and may occur too quickly to be controlled by operator action. Unrestricted spray operation could thus result in a negative drywell pressure large enough to deinert the primary containment or challenge the primary containment negative pressure capability.

A. Incorrect – The concern is rapid drywell depressurization, not the Torus. Concern is also not with the water level in the downcomers.

B. Incorrect - The concern is rapid drywell depressurization, not the Torus. In this case the Containment Spray Pumps should not be in service. There is nothing in the question to allow that assumption or that torus water temperatures are very high.

D. Incorrect - A concern is drawing air thru the RB-torus vacuum breakers, not equalization of N2 and steam between torus and DW.

Technical Reference(s): NER-1M-095, REV 2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: O1-OPS-006-344-1-05 EO-1.2 (As available)

Question Source: Bank # EOP #66
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.2.2	
	Importance Rating	4.6	

Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.

Proposed Question: Common 74

The following conditions exist:

- A plant heatup using control rods is in progress
- Water is being rejected via RWCU Letdown to the main condenser
- Non-regenerative heat exchanger outlet temperature is 95°F and rising
- RBCLC water temperature is stable

Which one of the following identifies the reason for NRHX temperature rise and describes the operator actions required to reduce the NRHX temperature rise?

	Direct cooling has been reduced to the	**Operator action**
A.	RHX	Raise reject flow
B.	RHX	Lower reject flow
C.	NRHX	Raise RWCU system flow
D.	NRHX	Lower RWCU system flow

Proposed Answer: B

Explanation (Optional):

B. Correct – Water leaving the RHX and flowing to the NRHX is hotter due to reject flow to the condenser diverting cooling flow from the RHX. Therefore as the water leaves the RHX and flows to the NRHX, the NRHX outlet temperature will be higher. Reducing reject flow will increase cooling water flow to the RHX and reduce the temperature rise.

A. Incorrect – Raising reject flow will further reduce RHX cooling water flow and cause higher temperatures.
C. Incorrect – Direct cooling to the NRHX is provided by RBCLC.
D. Incorrect - Direct cooling to the NRHX is provided by RBCLC.

Technical Reference(s): N1-OP-03 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: N1-204000-RBO-9 (As available)

Question Source: Bank # SYS ID #25340
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #		
	K/A #	2.1.7	
	Importance Rating	4.4	

(K&A Statement) Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Proposed Question: Common 75

The following step of N1-ST-Q6A, CONTAINMENT SPRAY SYSTEM LOOP 111 QUARTERLY OPERABILITY TEST, has been performed:

> 8.1.8 Obtain close AND open stroke times for 80-40, CONT SPRAY BYPASS BV 111, as follows:
>
> (IST) a. Close AND record stroke time for 80-40.
>
> Open to Close: _____ sec
> (≥15.6 and ≤26.0 sec)
> {≥ 10.4 and ≤31.3 sec}

A close stroke time of 9.0 seconds is recorded on the initial stroking of the valve.

Which one of the following actions is required?

A. A retest is NOT allowed in this case; declare the valve inoperable.

B. A retest is NOT required in this case; note the time in parenthesis and declare the valve operable.

C. Retest the valve; if the second time exceeds 6.0 seconds but is less than 9.0 seconds declare the valve inoperable.

D. Retest the valve; if the second time exceeds 6.0 seconds but is less than 9.0 seconds note the time in parenthesis and declare the valve operable.

Proposed Answer: A.

Explanation (Optional):

C. Correct – IAW Sect 4.9 acceptance criteria:

Acceptance Criteria for Steps required for compliance with the Inservice Pump and Valve Testing Program Plan and ASME/ANSI OMa-1988 Part 10, 4.2.1.8 (1ST) are shown in parenthesis, such as (<20), and is the IST Acceptable Range. Stroke Times outside the IST Acceptable Range, the Technical Specification and/or Limiting Stroke Time value require **Corrective Action**.

• Values shown as () are the IST **Acceptable** range (or **Acceptance Criteria**), valves outside the IST **Acceptable** range shall be immediately retested (only one time) or declared **INOPERABLE**.

• IST values shown as {} are the **Limiting Stroke Time Values**. Valve times exceeding this range are **INOPERABLE**, retest is not allowed.

• **Technical Specification** values are shown as []. Valve times exceeding this range are **INOPERABLE**, retest is not allowed.

The time of 9.0 secs is outside the Limiting Stroke Time Values of the IST criteria the valve may NOT be retested. The valve must be declared inoperable.

B. Incorrect – the valve must be declared inoperable.

C. Incorrect – the valve may NOT be retested, the time is not acceptable and the valve is inoperable.

D. Incorrect – the valve may NOT be retested, the time is not acceptable and the valve is inoperable.

Technical Reference(s): N1-ST-Q6A, sect 4.9 and 8.1.8 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-226001-RBO-10 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295031 EA 2.02	
	Importance Rating		4.2

Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor power

Proposed Question: SRO 76

The plant was at 100% power when a loss of condenser vacuum occurred. Plant conditions are as follows:

- Reactor power is 14%
- RPV water level is 30 inches
- MSIVs are shut
- Torus temperature is 100°F and rising at 1°F every 5 minutes
- One ERV is being cycled to control pressure

Operators are lowering RPV water level in accordance with EOPs.

Which one of the following describes the required EOP actions associated with controlling RPV water level?

A. Reactor water level must be lowered to at least -41 inches. If reactor power remains above 6%, then remain in EOP-3 for RPV level control.

B. Reactor water level must be lowered to at least -84 inches. If reactor power remains above 6%, then remain in EOP-3 for RPV level control.

C. Reactor water level must be lowered to at least -41 inches. If reactor power drops below 6%, then exit EOP-3 and enter EOP-2 to control RPV level.

D. Reactor water level must be lowered to at least -84 inches. If reactor power drops below 6%, then exit EOP-3 and enter EOP-2 to control RPV level.

Proposed Answer: A

Explanation (Optional):

A. Correct – Per EOP-3 Bases pages 117, 118 – EOP-3 step L-9

Lowering RPV water to prevent instabilities

If the conditions in the first row of the override exist, RPV water level is lowered to prevent thermal-hydraulic instabilities. Core instabilities may occur in a BWR when the reactor is operated at a relatively high power-to-flow ratio and recirculation flow is reduced. The potential for instabilities is largely dependent upon core inlet subcooling. The greater the subcooling, the more likely that power oscillations will occur and increase in magnitude. Prompt level reduction is the most effective method of preventing or suppressing power oscillations. If power remains above 6% (the APRM downscale setpoint) following a reactor scram, RPV water level is lowered to an elevation 2 ft. below the feedwater sparger. The feedwater sparger is at –17 in. and uncovering the sparger heats the incoming feedwater, thereby reducing subcooling at the core inlet. A level 2 ft. below the feedwater sparger is low enough to reduce subcooling by 65%-75%.

Instabilities are of concern only if reactor power remains above the APRM downscale setpoint and RPV water level is above -41 in. At lower power levels, the boiling boundary will be relatively high and the void content will be relatively low. Some oscillations could still occur, but large-scale instabilities leading to core damage are not expected. If RPV water level is already below -41 in., the feedwater sparger is already uncovered and inlet subcooling should be minimal.

Per Page 108

Return to RPV Control
Failure to Scram is entered when one or more control rods are withdrawn past position 04 and it has not been determined that the reactor will remain shutdown under all conditions without boron. If all rods are inserted to at least position 04 or it is determined that the reactor will remain shutdown under all conditions without boron while EOP-3 is in use, the conditions which required entry no longer exist. Boron injection may then be terminated, if in progress, and RPV water level, RPV pressure, and reactor power control may be controlled in accordance with EOP-2, *RPV Control*.

B. Incorrect – At least (-41inches) is the level designated by EOP bases. The override to further reduce RPV water level is contingent on torus temperature above 110°F. Torus temperature is given as less than this value.

C. Incorrect –Must remain in EOP-3.

D. Incorrect – The override to further reduce RPV water level is contingent on torus temperature above 110°F. Torus temperature is given as less than this value. Must remain in EOP-3.

Technical Reference(s): N1-EOP-3 (Bases) (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-03 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41
- 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295016 AA2.06	
	Importance Rating		3.5

Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : Cooldown rate

Proposed Question: SRO 77

Following a control room evacuation, the CRS and CSO have proceeded to Remote Shutdown Panel (RSP) 11. Emergency Condenser (EC) 11 condensate return valve, 39-05, will NOT open.

Per N1-SOP-21.2, Control Room Evacuation, which one of the following actions is directed by the CRS to control the cool down rate, including the cool down rate limitation, under this condition?

A. Remove ERV fuses per Attachment 2, operate ERVs at RSP 11, and keep the cool down rate <100°F/hr.

B. Remove ERV fuses per Attachment 2, operate ERVs at RSP 11, and the cool down rate may exceed 100°F/hr.

C. Verify closed the EC 11 steam isolation valves, relocate to RSP 12, and establish a cool down rate <100°F/hr using EC 12.

D. Verify closed the EC 11 steam isolation valves, relocate to RSP 12, and establish a cool down rate which may exceed 100°F/hr using EC 12.

Proposed Answer: C.

Explanation (Optional):

C. Correct - Per N1-SOP-21.2; if EC at the RSP you are at is not operating correctly, verify steam IVs closed and locate to the other RSP. Cool down rate is <100 degrees F/hr. Changing to the other EC does not affect the cool down rate limit.

A. Incorrect - Cool down using ERVs is not authorized per N1-SOP-21.2.

B. Incorrect - Cool down using ERVs is not authorized per N1-SOP-21.2. Changing to the other pressure control method does not affect the cool down rate limit.

D. Incorrect - Cool down rate is <100 degrees F/hr. Changing to the other EC does not affect the cool down rate limit.

Technical Reference(s): SOP-21.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: N1-296000-RBO-10 (As available)

Question Source:
- Bank # 21179
- Modified Bank # _____ (Note changes or attach parent)
- New _____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41 _____
- 55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295028, EA2.04	
	Importance Rating		4.2

(K&A Statement) Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Drywell pressure

Proposed Question: SRO 78

The following plant conditions exist:

- RPV pressure is 200 psig and falling
- Torus water level is 12 ft
- Drywell average temperature is 285^{o}F
- Torus pressure is 19 psig
- Drywell pressure is 22 psig

Which one of the following actions is required and why?

A. Enter N1-EOP-8 to blowdown the RPV due to exceeding Drywell design temperature

B. Enter N1-EOP-8 to blowdown the RPV due to exceeding pressure suppression pressure

C. Direct execution of N1-EOP-1, Att. 17, to spray the containment to avoid cyclic stresses on the downcomers

D. Direct execution of N1-EOP-1, Att. 17, to spray the containment to avoid excessive d/p across primary containment vent valves

Proposed Answer: C.

Explanation (Optional):

C. Correct - Chugging is predicted to occur at 13 PSIG in the torus which corresponds to the pressure that would result if 95% of the non-condensables were transferred to the Torus airspace at the HCTL for lowest ERV setpoint (1090/113 degrees). Since torus pressure has exceeded this pressure, PCP-4 requires initiation of containment sprays.

A. Incorrect - Blowdown is not required for this drywell temperature. Drywell design temperature is 310 degrees but 301 degrees is EQ for ERVs therefore must initiate sprays unless unable to maintain temperature below 300 degrees at which point a blowdown is directed.

B. Incorrect - At 20 psig torus with 12 feet as level PSP has not been exceeded. It is challenged but not nearly as much as Suppression Chamber Spray Initiation Pressure (13 psig) which has been exceeded.

D. Incorrect - PCPL is based (in part) on the maximum differential pressure at which valves capable of relieving all decay heat from the containment may be cycled. At the indicated torus water level, this is 43 psig.

Technical Reference(s): N1-EOP-4 (Attach if not previously provided)
EOP-SAP Basis Document

Proposed references to be provided to applicants during examination: PCPL, PSP curves ONLY

Learning Objective: O1-OPS-006-344-1-04 EO 1.2 (As available)

Question Source: Bank # # 81 from the EOP, SOP, EP Bank
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41

55.43	X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295006, 2.4.31	
	Importance Rating		4.1

(K&A Statement) Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures. (Scram)

Proposed Question: SRO 79

The plant was operating at 100% power when a hydraulic ATWS occurred. The crew is executing N1-EOP-3.1, Alternate Control Rod Insertion, Sect. 4. Scramming Control Rods by Repeated Manual Scram Signals. The following conditions exist:

- ARI OVERRIDE switch on F-Panel in Override
- RPS Scram Logic Relay Bypass Jumpers are installed
- Control Rod Drive Pump 11 is operating
- 44-167, Charging Water Header Blocking valve is OPEN
- The scram has been reset
- Reactor Pressure is 375 psig
- Charging Water Pressure is 375 psig
- Annunciator N1-ARP-F3-1-5, CRD CHARGING WTR PRESSURE HI/LO is in alarm
- Annunciator N1-ARP-F3-2-5, CRD ACCUMULATOR LEVEL HIGH PRESS LOW is in alarm
- Then, the operator attempts to scram the reactor and **NO** rod movement occurs
- Return Flow to the Reactor indicates 38 x 10^3 lbm/hr

Which one of the following actions is required?

A. Control Rods are mechanically bound; exit EOP-3.1 and continue with Liquid Poison injection per EOP-3.2.

B. Control Rods will not move using EOP-3.1, Sect 4; exit Sect. 4 and enter Sect. 5, Scramming Control Rods by Individual Scram Switches.

C. The CRD System is NOT operating correctly; enter SOP-5.1 and direct an operator to switch CRD flow control valves.

D. The CRD System is NOT operating correctly; enter SOP-5.1 and direct an operator to adjust valve 28-34, Rate Set - CRD Pumps to CRD system to clear the low pressure alarms.

Proposed Answer: C.

Explanation (Optional):

C. Correct –The steps of EOP-3.1 have been done correctly, however all the CRD Flow is going to reactor through the drive water D/P and/or Cooling water D/P control valves; therefore there is no pressure to pressurize the HCUs and provide motive pressure for a scram (Per EOP-3.1 450 psig is required). This is indicative of a FCV failure, and SOP-5.1 directs swap of the FCV.

A. Incorrect – There is no reason to abandon inserting another scram. EOP-3.1, states "Verify Either Reactor Pressure or CRD Charging Water Pressure is greater than 450 psig". This step was not performed and all indications are that CRD Flow is bypassing the charging header and going directly to the reactor. Additionally, there is no indication of Liquid Poison pump failure, therefore using EOP-3.2, Alternate Boron Injection, would not be required.

B. Incorrect – If there is insufficient pressure to move the rods currently going to another scram method will not work.

D. Incorrect – There is lots of CRD flow. The Return Flow to the Reactor indicates 38 x 10^3 lbm/hr, therefore there is no need to adjust valve 28-34, Rate Set - CRD Pumps to CRD system.

Technical Reference(s): EOP-3.1 Sections 4 and 5 (Attach if not previously provided)
N1-ARP-F3
N1-SOP-5.1

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-201001-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41

55.43	x

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295001, 2.4.45	
	Importance Rating		4.3

(K&A Statement) 2.4.45 - Emergency Procedures / Plan: Ability to prioritize and interpret the significance of each annunciator or alarm (Partial or Complete Loss of Forced Core Flow Circulation)

Proposed Question: SRO 80

The plant is starting up with Recirc Pump 14 secured. Reactor power is 95% as operators withdraw control rods and approach the 105% rod line.

Then, the following conditions occur:

- Recirc Pump 15 speed controller inadvertently raises speed to the high stop
- 20 seconds later, Recirc Pump 15 trips

The following annunciators alarm during this transient:

- F2-1-6, APRM 11-14
- F2-2-5, REACT RECIRC M-G SET 15
- F1-1-1, RPS CH 11 REACT NEUTRON MONITOR
- F2-3-5, REACT RECIRC PUMP M-G SET LOCKOUT REL 86 BLOCKED

Which one of the following lists the most significant alarm during the transient and the associated reason for the alarm?

A. F2-1-6, APRM 11-14, because the APRMs have become inoperable because of flow measurement.

B. F2-2-5, REACT RECIRC M-G SET 15, because both recirc loops associated with Shutdown Cooling have tripped.

C. F1-1-1, RPS CH 11 REACT NEUTRON MONITOR, because reactor power has been above the allowable range.

D. F2-3-5, REACT RECIRC PUMP M-G SET LOCKOUT REL 86 BLOCKED, because a locked rotor has occurred.

Proposed Answer: C.

Explanation (Optional):

C. Correct – This annunciator indicates one channel of the APRMs reached it's scram setpoint. Examining the 3 Loop P/F Map the scram setpoint is above the allowable operating range. The exact position on the map must be determined and actions taken.

A. Incorrect – during any recirc pump trip the APRMs become temporarily inoperable until reverse flow through the loop is stopped. Yet in this circumstance, the alarm is in due to a high power to flow condition. This alarm is possibly equally significant to F1-1-1, but not for the reason stated.

B. Incorrect - This alarm indicates that a recirc pump has tripped, when shutdown cooling is needed it will not be significant.

D. Incorrect – A pickup of the 86 relay indicates an electrical fault tripped the recirc pump MG set.

Technical Reference(s): N1-ARP-F2 (Attach if not previously provided)
N1-ARP-F1

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-202001-RBO-5 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 _____
55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295003, 2.1.31	
	Importance Rating		4.3

(K&A Statement) Conduct of Operations: Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup. (Loss of AC)

Proposed Question: SRO 81

The plant is operating at 100% power when the following conditions occur:

- Reserve Transformer 101S experiences an over-current condition
- Lockouts 86TS and 86BS actuate

Which one of the following describes the resulting control board lineup and a necessary operator action?

Note: Given the following noun designators for select breakers:
Breaker R1011 – PB 101 FEED FROM T101N
Breaker R1013 – RESERVE SUPPLY TO PB 103
Breaker R1014 – PB 101 FEED FROM T101S
Breaker R123 – PB 12 RESERVE SUPPLY TRANS. 101S
Breaker R1032 – DIESEL GENERATOR 103 OUTPUT BREAKER

A. Breaker R10 is closed, motor operated disconnects 178 and 8106 are open, Breaker R1014 is open, Breaker R1011 is closed, Breaker R123 is open, PB 12 is de-energized. Enter N1-SOP-33A.1 Loss of 115 KV and take actions to stabilize the unit.

B. Breakers R10 and R40 are closed, motor operated disconnect 178 is open, Breaker R1014 is open, PB 101 is de-energized, Breaker R1013 is open, EDG 103 is operating with R1032 closed. Enter N1-ARP-A5 and recover PB 101.

C. Breaker R10 is closed, motor operated disconnects 178 and 8106 are open, Breaker R1014 is open, Breaker R1011 is closed, Breaker R1013 is open, EDG 103 is operating with R1032 closed. Enter N1-OP-45, Emergency Diesel Generators and restore PB 103 to a normal lineup.

D. Breakers R10 and R40 are closed, motor operated disconnect 178 is open, Breaker R1014 is open, PB 101 is de-energized, Breaker R1013 is open, EDG 103 is operating with R1032 closed. Breaker R123 is open, PB 12 is de-energized. Enter N1-SOP-1 and scram the reactor.

Proposed Answer: B.

Explanation (Optional):

B. Correct - R10 and R40 will both trip open on the fault, the faulted transformers MOD will open (178) then both R10 and R40 re-close. PB 101 is lost when Breaker R1014 opens the loss of PB 101 will cause a power reduction due to the loss of one RRP, Feedwater flow may lower due to loss of a condensate and/or condensate booster pump. PB 101 can be recovered by using the sync switch and closing R1011. Breaker R1013 will open causing a loss of power to PB103, this will start EDG 103 which will supply the bus when R1032 automatically closes. To recover use Sect. H.3 to recover PB 101 and restart the necessary equipment.

A. Incorrect - Both R10 and R40 re-close and only MOD 178 opens, 8106 would open if the fault was on the 115 KV bus. Breaker R1011 must be manually closed using the sync switch. Breaker R123 is open but PB 12 is powered from the Reserve Transformer. There are no entry conditions for SOP-33A.1 because both 115 KV lines were NOT lost.

C. Incorrect - Both R10 and R40 re-close and only MOD 178 opens, 8106 would open if the fault was on the 115 KV bus. Breaker R1011 must be manually closed using the sync switch. If PB 103 was the only problem you would enter OP-45 to restore a normal lineup and secure the EDG

D. Incorrect - Breaker R123 is open but PB 12 is powered from the Station Service Transformer. There is no need for a scram.

Technical Reference(s): N1-OP-30, Section B and H.3 (Attach if not previously provided)
N1-OP-33A, Sect. B
Unit 1 USFAR Page 927

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-262001-RBO-5 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41
55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295038, 2.2.12	
	Importance Rating		4.1

(K&A Statement) Equipment Control: Knowledge of surveillance procedures. (High Off-Site Release Rate)

Proposed Question: SRO 82

The plant is operating at 100% power when Chemistry reports the following data from their weekly isotopic reactor water sample surveillance:

- 10.55 µCi/gm Total Iodine
- 2.23 µCi/gm Dose Equivalent Iodine-131

Which one of the following is required and why?

A. Place the plant in hot shutdown within 12 hours, to ensure Drywell radiation levels will NOT exceed limits following a LOCA.

B. Place the plant in hot shutdown within 12 hours, to ensure off-site release rates will NOT exceed limits following a Main Steam Line Break.

C. Restore reactor coolant activity to below the limit within 48 hours or place the plant in hot shutdown within 12 hours, to ensure Drywell radiation levels will NOT exceed limits following a LOCA.

D. Restore reactor coolant activity to below the limit within 48 hours or place the plant in hot shutdown within 12 hours, to ensure off-site release rates will NOT exceed limits following a Main Steam Line Break.

Proposed Answer: D.

Explanation (Optional):

D. Correct – With reactor coolant activity between 0.2 and 4.0 µCi/gm Dose Equivalent Iodine-131, TS 3.2.4.b requires samples every 4 hours and Dose Equivalent Iodine-131 restored to below the limit of 0.2 µCi/gm Dose Equivalent Iodine-131 within 48 hours. TS 3.2.4.c further requires that if the actions of TS 3.2.4.b cannot be met or if reactor coolant activity exceeds 4.0 µCi/gm Dose Equivalent Iodine-131, the reactor must be in hot shutdown within 12 hours and in cold shutdown within 24 hours. The bases for this TS are to limit the off-site release rate below 10CFR50 limits in the event of a Main Steam Line Break accident outside of primary containment.

A. Incorrect – The plant does not need to be placed in hot shutdown unless the reactor coolant activity cannot be lowered to below 0.2 µCi/gm Dose Equivalent Iodine-131 within 48 hours. The bases for the TS are to limit off-site release in the event of a Main Steam Line Break accident outside of primary containment.

B. Incorrect – The plant does not need to be placed in hot shutdown unless the reactor coolant activity cannot be lowered to below 0.2 µCi/gm Dose Equivalent Iodine-131 within 48 hours.

C. Incorrect - The bases for the TS are to limit off-site release in the event of a Main Steam Line Break accident outside of primary containment.

Technical Reference(s): T.S. 3.2.4 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: TS 3.2.4 with "Objective" blacked out and without bases

Learning Objective: N1-204000-RBO-14 (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41

55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	295020 AA2.06	
	Importance Rating		3.4

Ability to determine and/or interpret the following as they apply to Inadvertent Containment Isolation: Cause of Isolation

Proposed Question: SRO 83

The plant is operating at 100% power when the following occurs:

- L1-3-4, REACT BLDG/ATM DIFF PRESS alarms
- Reactor Building differential pressure (d/p) reads zero (0) inches H_2O
- I&C reports that they inadvertently caused a closure of REACTOR BLDG EXHAUST FAN 11 OUTLET DAMPER 202-08 while the fan was in service

Which one of the following describes the required operator actions?

A. Enter N1-OP-10, manually start the standby exhaust fan, place the Supply Fan FCV in MANUAL and re-establish building d/p.

B. Enter N1-OP-10, verify the standby exhaust fan automatically started and the building d/p is returning to normal.

C. Enter N1-EOP-5, Secondary Containment Control and verify RBEVS automatically started.

D. Enter N1-EOP-5, Secondary Containment Control and start REACTOR BLDG EXHAUST FAN 12.

Proposed Answer: D

Explanation (Optional):

D. Correct - Entry condition to EOP-5 at RB D/P of 0 inches or above, restart RB ventilation per EOP step SC-1.

A. Incorrect – no guidance in OP-10 for this action
B. Incorrect - no guidance in OP-10 for this action
C. Incorrect – no auto start will occur due to no auto isolation signal present

Technical Reference(s): EOP-5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-006-344-1-06 EO-1.2 (As available)

Question Source:
- Bank # 35854
- Modified Bank # ____ (Note changes or attach parent)
- New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41 ____
- 55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	295007 2.2.25	
	Importance Rating		4.2

Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits (High Reactor Pressure)

Proposed Question: SRO 84

Which one of the following describes the basis for the reactor high pressure scram setting?

At high reactor powers, it is …

A. the backup to the neutron flux scram for various reactor isolation transients.

B. relied upon to terminate rapid pressure transients in conjunction with the safety valves.

C. the backup to the generator load rejection scram in the event of an Electrical Pressure Regulator failure.

D. relied upon to terminate rapid pressure transients in conjunction with the solenoid operated relief valves.

Proposed Answer: A

Explanation (Optional):

A. Correct - Per TS Bases Section 2.2.2.B - The reactor high pressure scram setting is relied upon to terminate rapid pressure transients if other scrams, which would normally occur first, fail to function. As demonstrated in Appendix E-I of the FSAR and the Technical Supplement to Petition to Increase Power Level, Page II-12, the reactor high pressure scram is a backup to the neutron flux scram, generator load rejection scram, and main steam isolation-valve closure scram for various reactor isolation incidents. However, rapid isolation at lower power levels generally results in high pressure scram preceding other scrams because the transients are slower and those trips associated with the turbine-generator are bypassed.

B. Incorrect – not per bases

C. Incorrect – An EPR failure will result in a small pressure increase until the MPR takes control or a large pressure decrease as it opens the TCVs and BPVs to their maximum. In neither case will an EPR failure cause a high pressure. In neither case can it cause a generator load rejection.

D. Incorrect – it is not relied upon to scram the reactor in conjunction with any other systems.

Technical Reference(s): TS bases 2.2.2.b (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O1-OPS-008-362-1-01 EO-1.5 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content:
- 55.41
- 55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	295010 2.4.50	
	Importance Rating		4.0

Emergency Procedures / Plan: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual. (High Drywell Pressure)

Proposed Question: SRO 85

The plant is operating at 100% when the following alarms are received:

- F1-1-5, RPS CH 11 DRYWELL PRESS HIGH
- F2-3-4, REACT VESSEL PRESSURE HIGH

The reactor operator reports the following conditions:

- Drywell Pressure is 3.6 psig and rising slowly
- Reactor Pressure is 1030 psig and stable
- Reactor Power is 98%

Which one of the following describes actions you must direct in accordance with the annunciator responses?

A. Enter EOP-4 “Primary Containment Control” and SOP-40.2 “Vessel/Containment Isolation”. No additional EOP or SOP entries are required currently.
Verify proper operation of the Turbine MHC system.

B. Enter EOP-2 “RPV Control” and EOP-4 “Primary Containment Control”. No additional EOP or SOP entries are required currently.
Verify CREVS initiation.

C. Enter EOP-3 “Failure to Scram” and EOP-4 “Primary Containment Control”. No additional EOP or SOP entries are required currently.
Verify proper operation of the Turbine MHC system.

D. Enter EOP-2 “RPV Control”, EOP-4 “Primary Containment Control” and SOP-40.2 “Vessel/Containment Isolation”.
Verify CREVS initiation.

Proposed Answer: D.

Explanation (Optional):

D. Correct per ARP F1-1-5

Operator Actions:
1. IF reactor scram occurred,
THEN enter N1-SOP-1, Reactor Scram.
2. Confirm RPS Channel 11 tripped.
3. Monitor drywell pressure indications to determine actual pressure.
4. IF actual drywell pressure high,
THEN perform following:
a. SCRAM REACTOR AND Enter N1-EOP-2, RPV Control and N1-EOP-4, Primary Containment Control.
b. Verify CONTAINMENT ISOLATION AND Enter N1-SOP-40.2, Vessel/Containment Isolation.
c. Verify CREVS initiated.
d. Notify the Shift Manager/Emergency Director to review EPIP-EPP-01 for classification of an emergency (See EAL 3.1.1).
5. Consult T.S. Table for minimum number of tripped instruments.

A. Incorrect – EOP-2 entry is required. RPV pressure is not high, so MHC does not need to be verified.

B. Incorrect – SOP-40.2 entry is required.

C. Incorrect – SOP-40.2 entry is required. RPV pressure is not high, so MHC does not need to be verified. Also, EOP-3 does not need to be entered until EOP-2 actions have been taken to attempt a manual Rx scram.

Technical Reference(s): ARP F1-1-5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-223001-RBO-10 (As available)

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

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge X

	Comprehension or Analysis		

10 CFR Part 55 Content:	55.41	
	55.43	x

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	300000, A2.01	
	Importance Rating		2.8

(K&A Statement) Ability to (a) predict the impacts of the following on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Air dryer and filter malfunctions

Proposed Question: SRO 86

The plant has scrammed following a loss of all 115KV and 345KV offsite power. Partial electrical power is being provided from the Bennett's Bridge generator. The following conditions exist 5 minutes after the initial power loss:

- RPV water level is being maintained by HPCI.
- RPV pressure is being controlled using the Emergency Condensers (ECs).
- Instrument Air (IA) Receiver #12 pressure is 0 psig.
- IA Receiver #11 and Containment Spray System Air Test Receiver pressures are 100 psig.
- IA 94-19, BV – HSA RECEIVER TO IA SEPARATOR, is closed.
- An NAO dispatched to TB el. 291' reports that with both IA Filters in service the d/p on the filters is 20 psid and rising rapidly.

Which one of the following actions is required?

Prevent the loss of…

A. HPCI by directing the High Level Trip Bypass switch placed in BYPASS using Section H.3.0 of N1-OP-16, Feedwater Booster Pump to the Reactor.

B. IA by directing the operator to manually bypass IA Dryer 94-168 and 94-169 using Section 3.0 of N1-OP-20, Service, Instrument and Breathing Air Systems.

C. HPCI by directing manual make up to the main condenser hotwell in accordance with N1-SOP-20.1, using Section H.13.0 of N1-OP-16, Feedwater Booster Pump to the Reactor.

D. IA by directing the operator to manually open IA-94-19, air systems crosstie valve in accordance with N1-SOP-20.1, using Section 2.0 of N1-OP-20, Service, Instrument and Breathing Air Systems.

Proposed Answer: C.

Explanation (Optional):

C. Correct - If a LOOP occurs the IA Compressors are lost and system components fail to a safe position. Sufficient air is available for approximately 15 minutes in the IA piping volume and Containment Spray Air Test Receiver in order to implement EOP actions and maintain safe plant conditions; In this case the Bennett's Bridge generator can supply some selective loads including HPCI. However IA is being lost because of a high d/p on the IA filters from IA Receiver # 11 and the Containment Spray System Air Test Receiver (the largest reservoir of IA). This loss of IA will result in the hotwell level control valves failing closed. SOP-20.1 directs using OP-16 to manually make up to hotwell to supply the HPCI system.

A. Incorrect – There is no direction or need to place the High Level Trip Bypass Switch in BYPASS. If HPCI flow becomes a problem because of the air failure because the FCVs fail as is (lock up) on loss of IA they do not need to be immediately operated manually. RPV water level can be controlled for the short term by alternately starting and stopping the HPCI Pump until the FCVs are placed in manual.

B. Incorrect – OP-20 does contain a section for bypassing the dryers if necessary to maintain IA pressure, however bypassing the IA Dryers will NOT bypass the filters.
There is no manual (or auto) bypass around the Instrument Air Filters

D. Incorrect - Opening IA-94-19, air systems crosstie valve will not restore IA pressure because the crosstie is upstream of the IA filters. SOP-20.1 directs verifying that !A-94-19 opens but does NOT direct manually opening the valve.

Technical Reference(s): N1-OP-20, Sect B.
N1-SOP-20.1
C18011-C
N1-OP-16, Section B and H.13.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-278001-RBO-10 (As available)

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

Question History: Last NRC Exam No

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	218000 A2.04	
	Importance Rating		4.2

(K&A Statement) Ability to (a) predict the impacts of the following on the AUTOMATIC DEPRESSURIZATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS failure to initiate

Proposed Question: SRO 87

A loss of coolant accident has occurred with the following conditions:

- RPV water level is -15 inches and slowly lowering
- Drywell pressure is 8 psig and slowly rising
- The crew failed to bypass ADS when RPV level lowered, per N1-EOP-2
- The ADS timer has timed out
- The crew notices the automatic ADS actuation and that only ERV 113 opens

Which one of the following lists the impact of the failure of three ERVs to automatically open on ADS operability, and the required action in response to the ADS initiation?

A. Insufficient steam flow exists to ensure removal of decay heat from the core. Open two additional ERVs, IAW N1-EOP-8, RPV Blowdown.

B. Additional inventory will be lost from the RPV without lowering RPV pressure. Open two additional ERVs, IAW N1-EOP-8, RPV Blowdown.

C. Insufficient steam flow exists to ensure removal of decay heat from the core. Bypass ADS to close ERV 113, IAW N1-EOP-2, RPV Control.

D. Additional inventory will be lost from the RPV without lowering RPV pressure. Bypass ADS to close ERV 113, IAW N1-EOP-2, RPV Control.

Proposed Answer: C.

Explanation (Optional):

C. Correct – Per the EOP Bases (Sect 1.2. L) The Minimum Number of ERVs Required for Emergency Depressurization is the least number of ERVs which, if opened, will remove all decay heat from the core at a pressure sufficiently low that Core Spray will be capable of making up the ERV steam flow. Additionally if RPV level can be maintained greater than -84" step L-3 bypasses the ADS initiation for reasons stated in the bases on page 81.

Bypass ADS
As long as RPV water level can be restored and maintained above the top of the active fuel with available injection sources, the core will remain adequately cooled and automatic depressurization is unnecessary. ADS actuation is therefore prevented. Subsequent steps provide explicit and detailed instructions for RPV water level control and identify the specific conditions when a blowdown is required. Permitting automatic ADS initiation may be undesirable for the following reasons:

- ADS actuation can impose a severe thermal transient on the RPV and may complicate efforts to control RPV water level.
- The conditions assumed in the design of the ADS actuation logic (e.g., no operator action for 10 minutes after event initiation) may not exist when the actions specified in this step are being performed.
- The operating crew can evaluate more information than is available to the ADS logic (e.g., equipment out of service for maintenance, operating experience with certain systems, probability of restoration of off-site power, etc.) and can better judge, based on instructions contained in the procedure, when and how to depressurize the RPV.

ADS initiation is prevented in this step only if RPV water level can be restored and maintained above the top of the active fuel and the ADS timer initiates. If the timer does *not* initiate, the ADS logic is not defeated so that the system will still provide an automatic backup for high pressure injection in small break loss of coolant accidents.

A. Incorrect – there is no procedural guidance to open additional ERVs for this condition and EOP-8 has not been entered.

B. Incorrect – The additional inventory loss although a concern is not the basis for ADS opening three ERVs. Pressure will lower with the open ERV. Also there is no procedural guidance to open additional ERVs for this condition and EOP-8 has not been entered.

D. Incorrect - The additional inventory loss although a concern is not the basis for ADS opening three ERVs. Pressure will lower with the open ERV.

Technical Reference(s): N1-EOP-2
EOP-SAP Bases. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-02 EO 1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	205000 2.4.9	
	Importance Rating		4.6

(K&A Statement) Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

Proposed Question: SRO 88

The plant is in cold shutdown with the following conditions:

- Shutdown Cooling (SDC) Loops 11 and 12 are operating
- SDC Loop 13 is shutdown
- Safety Assessment Level for Decay Heat Removal is currently N+1
- Recirc Pumps 14 and 15 are operating
- Tensioning of the RPV head was just completed
- Recirc Loop Suction Temperatures are 100^{o}F and stable
- It is desired to maintain the plant in cold shutdown

Which one of the following describes the required action in response to a total loss of SDC?

Enter N1-SOP-6.1, Loss of SFP/RX Cavity Level/Decay Heat Removal, THEN…

A. Verify RPV water level is at least at the elevation of the Main Steam Lines, enter N1-OP-43C, Plant Shutdown, Section H.4.0 Inoperable Shutdown Cooling and trip Recirc Pumps #14 and #15.

B. Verify RPV water level is at least at the elevation of the Main Steam Lines, establish a feed and bleed using Control Rod Drive and Cleanup systems and perform a time to boil estimation per N1-ODP-OPS-0108.

C. Maximize RWCU Non-Regen H/X flow, establish a feed and bleed using Control Rod Drive and Cleanup systems. Enter N1-OP-43C, Plant Shutdown, Section H.4.0 Inoperable Shutdown Cooling and use RWCU to cool down.

D. Maximize RWCU Non-Regen H/X flow, establish a feed and bleed using Core Spray and vessel drains to the Drywell Equipment Drain Tank. Enter N1-OP-43C, Plant Shutdown, Section H.4.0 Inoperable Shutdown Cooling and use ECs to cool down.

Proposed Answer: C.

Explanation (Optional):

C. Correct – Per SOP-6.1 "Open 70-85, BV-CU NONREGEN HX RBCLC INLET", this will maximize RWCU Non-Regen H/X flow. Then "If Additional DHR is Required" (with two loops of SDC in service this can be assumed – in any case the answer and all distracters all assume additional DHR is required) feed and bleed is initiated. SOP-6.1 directs entry into OP-43. The section for inoperable SDC directs you to trip the Recirc Pumps if more than two are running (IF the Shutdown Cooling System is completely inoperable OR
must be removed from service, THEN reduce heat input by running only two Recirc Pumps, and use RWCU (N1-OP-3) or the Emergency Condensers (N1-OP-13) to cool down.). The second portion directs using RWCU or the ECs to cool down, RWCU must be selected. ECs may only be used when there is steam production in the core. This question states cold shutdown and the RPV head was just tensioned, so no steam production is occurring.

A. Incorrect – There is no requirement or need to raise RPV water level. Reactor water level is only required to be raised if less than two recirc loops are unisolated. Cleanup BV is opened to maximize RWCU Non-Regen H/X flow and Recirc Pumps are NOT tripped.

B. Incorrect - There is no requirement or need to raise RPV water level. Reactor water level is only required to be raised if less than two recirc loops are unisolated. Cleanup BV is opened to maximize RWCU Non-Regen H/X flow and Recirc Pumps are NOT tripped. The Safety Assessment Level for DHR was N+1 but N+1 was lost with the trip of the two operable systems so there is a need to perform a "Time to Boil Calculation after the initial actions are taken.

D. Incorrect –OP-43C must be entered and RWCU or the ECs used to cool down, however since the RPV vessel head was just tensioned and the plant in shutdown an unplanned mode change would be caused by boiling in the core. With no boiling occurring currently the ECs would not operate to cool the reactor coolant.

Technical Reference(s): N1-SOP-6.1
N1-OP-43C, H.4.0 and G.5.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-205000-RBO-10 (As availab

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

	New	X
Question History:	Last NRC Exam	No
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	
	55.43	X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	207000 2.4.40	
	Importance Rating		4.7

(K&A Statement) Equipment Control: Ability to apply technical specifications for a system (ECs)

Proposed Question: SRO 89

The reactor is operating at rated power with the following conditions:

- N1-ST-Q4, REACTOR COOLANT SYSTEM ISOLATION VALVES OPERABILITY TEST is being performed for the following valves following maintenance:
  - 05-01R, EMERG COND VENT ISOLATION VALVE 111
  - 05-11, EMERG COND VENT ISOLATION VALVE 112
  - 05-04R, EMERG COND VENT ISOLATION VALVE 121
  - 05-12, EMERG COND VENT ISOLATION VALVE 122
  - 05-02R, EM COND VENT TO MN STM ISOLATION VALVE 11
  - 05-03R, EM COND VENT TO MN STM ISOLATION VALVE 12
- Valve 05-01R, EMERG COND VENT ISOLATION VALVE 111 has failed to open
- The valve requires 5 days to repair

Which one of the following describes the required action applicable to Emergency Condenser 11?

A. Return 05-01R to service within a maximum of 30 days

B. Return 05-01R to service within a maximum of 14 days

C. Commence a shutdown within 14 days, verify 05-11 is closed

D. Commence a shutdown within 1 hour and be in the cold shutdown condition within 10 hours

Proposed Answer: A.

Explanation (Optional):

A. Correct - Tech Spec 3.1.3 permits restoring the EC to service providing the vent path to the Torus can be restored within 30 days.

B. Incorrect - Since only one EC is involved there is up to 30 days to restore the vent path operability.

C. Incorrect - Since only one EC is involved there is up to 30 days to restore the vent path operability.

D. Incorrect - Since only one EC is involved there is up to 30 days to restore the vent path operability.

Technical Reference(s): TS 3.1.3 d.1
P&ID C-18017-C
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: Sections of Tech Specs containing TS 3.1.3

Learning Objective: N1-207000-RBO-14 (As available)

Question Source: Bank # N1-207000-RBO-14-Q-03
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	263000 A2.02	
	Importance Rating		2.9

(K&A Statement) Ability to (a) predict the impacts of the following on the D.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of ventilation during charging

Proposed Question: SRO 90

The plant is operating at 100% power when Annunciator A3-2-3, LOSS OF VENTILATION BATTERY ROOM 11 OR 12, alarms. The alarm is caused by a failure of the Turbine Building Ventilation to Battery Room 11.

Over the next hour the following events occur:

- Hydrogen levels in Battery Room 11 exceed 2.0%
- Maintenance recommends securing the battery charger for Battery 11

Which one of the following actions is required?

Secure the in-service battery charger (161A or 161B) and…

A. line up MG 167 as an alternate battery charger, TS entry is not required.

B. line up Battery Board 12 to supply Valve Board 11, TS entry is not required.

C. return a battery charger to service within 24 hours or then enter TS 3.1.5.b which requires RPV pressure <110 psig within 10 hours.

D. return a battery charger to service within 24 hours or then enter TS 3.0.1 which requires placing the Mode Switch to SHUTDOWN within 1 hour.

Proposed Answer: C.

Explanation (Optional):

C. Correct - OP-47.D.9. Removal of Static Battery Chargers is treated as loss of a battery system. A battery charger must be returned to service within 24 hours in accordance with T.S. 3.6.3.h or take the action required by T.S. 3.1.5 which requires reactor coolant pressure be reduced to 110 psig or less and reactor coolant temperature be reduced to saturation temperature or less within 10 hours. Although MG 167 can be used as a battery charger, it is not safety related and cannot be used to exit the LCO.

OP-47.C.3 The TBHVAC system must be in operation in accordance with N1-OP-26 to support the 125 VDC Power System.

OP-26, D.7.0 If Battery Room Ventilation is lost and cannot be immediately restored, the atmosphere in the Battery Rooms must be sampled to ensure corrective actions are taken to maintain hydrogen gas level in room below 2% by volume.

Annunciator A3-2-3, Loss of Ventilation Battery Room 11 or 12, requires sampling the Battery Room atmosphere to preclude undetected buildup of hydrogen gas if ventilation cannot be restored.

A. Incorrect - Although MG 167 can be used as a battery charger, it is not safety related and cannot be used to exit the LCO.

B. Incorrect - Although Battery Board 12 can supply Valve Board 11; it cannot be used to exit the LCO.

D. Incorrect - Entry into TS 3.0.1 is not required.

Technical Reference(s): N1-ARP-A3
N1-OP-47
N1-OP-26
TS sect 3.6.3 and 3.1.5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: TS Sections 3.6.3, 3.1.5, and 3.0.1

Learning Objective: N1-263000-RBO-14 (As available)

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

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	
	55.43	2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	286000 A2.07	
	Importance Rating		2.9

(K&A Statement) Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadvertent system initiation

Proposed Question: SRO 91

The plant is operating at 100% power when the following events occur:

04:15 WP-4076, Reactor Bldg. 237' water preaction system initiates. Fire Detectors in the corresponding zone do NOT alarm.

04:25 Fire Brigade reports that there is NO fire in the Reactor Building.

04:30 Annunciator H2-2-1, R BLDG FL DR SUMPS 11-16 AREA WTR LVL LEVEL HIGH alarms.

04:55 Fire Brigade reports that there is over 5 feet of water in the NE Containment Spray Room and the SE Core Spray Room.

Which one of the following is required?

A. At 04:30, enter N1-EOP-5, SECONDARY CONTAINMENT CONTROL and take actions to secure the fire suppression system.

B. At 04:30, remain in N1-SOP-21.1 FIRE IN PLANT, enter N1-EOP-5, SECONDARY CONTAINMENT CONTROL and scram the plant.

C. At 04:55, enter N1-EOP-5, SECONDARY CONTAINMENT CONTROL, enter N1-SOP-1, REACTOR SCRAM and scram the plant.

D. At 04:55, remain in N1-SOP-21.1 FIRE IN PLANT, enter N1-EOP-5, SECONDARY CONTAINMENT CONTROL, and take actions to secure the fire suppression system.

Proposed Answer: A.

Explanation (Optional):

A. Correct there is no entry condition to SOP-21.1 because the fire is NOT confirmed. N1-EPP-28, Sect 4.0 definitions defines Confirmed Fire.

Confirmed Fire. A condition in which credible evidence exists that a fire is actually occurring. A fire may be considered as confirmed given ANY of the following: fire alarm/annunciator AND suppression system activation accompanied by actual flow or discharge, OR Fire Brigade/Leader report, OR SM judgment.

There is an entry condition into EOP-5, Ann H2-2-1. EOP-5 directs Isolate all discharges into affected areas except systems needed for: Damage control or Other EOP actions. Since there is no confirmed fire and no other EOP actions are required the fire suppression system should be secured.

B. Incorrect – There is no need to be in SOP-21.1. SOP-21.1 requires a manual scram if a confirmed fire is not under control in 15 minutes, since the fire is not confirmed no scram is required.

C. Incorrect – EOP-5 should have been entered at 04:30. With two areas above Max Safe EOP-5 requires Shut down the reactor (OP-43C), not a reactor scram.

D. Incorrect - There is no need to be in SOP-21.1 and the actions to isolate the fire suppression system should have been initiated at 04:30 so that levels would be under control.

Technical Reference(s): N1-ARP-H2-2-1 (Attach if not previously provided)
N1-EPP-28, Sect 4.0
N1-SOP-21.1
N1-EOP-5

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-05 EO 1.2 (As available)

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

Question History: Last NRC Exam No

Question Cognitive Level: Memory or Fundamental Knowledge

	Comprehension or Analysis	X

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	215001 2.4.41	
	Importance Rating		4.6

(K&A Statement) Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications (TIPS).

Proposed Question: SRO 92

The plant was operating at 100% power when a loss of Drywell Cooling resulted in a high drywell pressure and subsequent scram. Prior to the scram a Traversing Incore Probe (TIP) trace was in progress. A loss of power to Distribution Panel 167C prevented the TIP from fully withdrawing. The following events have occurred:

- Area Radiation Monitor (ARM) 17, Inner TIP Room, alarmed (600 mr/hr).
- Inner TIP Room ARM has gone off-scale and several other Reactor Building ARMs have alarmed.
- Radiation Protection (RP) reports the following radiation levels:
  - 9200 mr/hr and stable on the West side of the 237' level of the Reactor Building.
  - 8050 mr/hr and stable on the West side of the 261' level of the Reactor Building.
- A damage repair team is being assembled to enter the Reactor Building and attempt repairs which will allow the TIP to be fully retracted.

Which one of the following emergency classifications is required?

A. UNUSUAL EVENT

B. ALERT

C. SITE AREA EMERGENCY

D. GENERAL EMERGENCY

Proposed Answer: B.

Explanation (Optional):

B. Correct – Alert EAL 1.4.4, VALID sustained area radiation levels > 8 R/hr in any area, Table 2 AND Access is required for safe operation or shutdown, is the highest classification that applies. IAW EPIP-EPP-01, if one or more emergency action level thresholds in the Emergency Action Level Matrix (EPIP-EPP-01-EAL), have been matched or exceeded, **THEN** Declare the highest level emergency classification for which an EAL is currently being met or exceeded.

A. Incorrect – This is an accurate classification (UE EAL 1.4.1) but not the highest as required by EPIP-EPP-01.

C. Incorrect – This is NOT an accurate classification because the >8R/hr rad levels are not due to a primary system discharging outside of primary containment (SAE EAL 4.2.1).

D. Incorrect – This is NOT an accurate classification because the >8R/hr rad levels are not due to a primary system discharging outside of primary containment and no specific indications of fuel damage have been given (GE EAL 4.2.2).

Technical Reference(s): EPIP-EPP-01 (Attach if not previously provided)
EPIP-EPP-01-EAL

Proposed references to be provided to applicants during examination: EPIP-EPP-01-EAL

Learning Objective: O3-OPS-006-350-3-21 EO 1.3 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	245000 2.1.30	
	Importance Rating		4.0

(K&A Statement) Conduct of Operations: Ability to locate and operate components, including local controls (Main Turb/Gen Aux)

Proposed Question: SRO 93

The plant is operating at 60% power with the following conditions:

- A fire requires evacuating the Control Room
- The mode switch is taken to SHUTDOWN
- No other immediate actions are completed prior to leaving the Control Room
- The main turbine fails to automatically trip

Which one of the following actions should be directed to trip the main turbine?

A. Enter N1-SOP-21.2, Control Room Evacuation, and go the turbine front standard to rotate and pull the EMERG GOV OIL TRIP switch to TRIP position.

B. Enter N1-SOP-21.2, Control Room Evacuation, and go the turbine front standard to rotate and pull the MASTER TRIP switch to the TRIP position.

C. Enter N1-SOP-31.1, Turbine Trip, and go the turbine front standard to rotate and pull the EMERG GOV OIL TRIP switch to TRIP position.

D. Enter N1-SOP-31.1, Turbine Trip, and go the turbine front standard to rotate and pull the MASTER TRIP switch to the TRIP position.

Proposed Answer: B.

Explanation (Optional):

B. Correct – IAW N1-SOP-21.2 the Main Turbine is tripped by sending an operator to the turbine front standard to trip the main turbine by pulling and turning the TURBINE MASTER TRIP.

A. Incorrect –This method is not used, this trip is used for testing the Emergency Governor.

C. Incorrect – There is no guidance in SOP-31.1 on how to locally trip the Main Turbine and this method is not used, this trip is used for testing the Emergency Governor.

D. Incorrect – There is no guidance in SOP-31.1 on how to locally trip the Main Turbine.

Technical Reference(s): N1-SOP-21.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-342-1-01 EO-1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	2.1.13	
	Importance Rating		3.2

(K&A Statement) Knowledge of facility requirements for controlling vital / controlled access.

Proposed Question: SRO 94

The plant is operating at 100% power with the following conditions:

- An operator on rounds discovers slight damage to components in the 115KV switchyard
- Security determines that the cause is attempted sabotage by an insider
- As the Shift Manager, you have entered the Emergency Plan

Which one of the following is required?

A. Evacuate the Reactor Building and implement EPIP-EPP-14, Emergency Access Control.

B. Conduct an immediate site accountability check and implement EPIP-EPP-05D, Accountability.

C. Implement two person vital area access rules in accordance with EPIP-EPP-10, Security Contingency Event.

D. Direct an immediate emergency evacuation of all vital areas in accordance with EPIP-EPP-05B, Protected Area Evacuation.

Proposed Answer: C.

Explanation (Optional):

C. Correct – IAW EPIP-EPP-10, Att. 3, once it has been determined that there is a threat from an insider the SM shall Implement two person vital area access rules.

A. Incorrect - There is no need or requirement to evacuate the reactor building, Section 3.1 of EPIP-EPP-10 does require evacuation when the site is being attacked but that is for a site evacuation. Section 3.2 Insider Threat Contingency Event does NOT require evacuation IF you are working with another person IAW the two person vital area access rules. Additionally, the classification level for this event would be UE 8.1.1. This level of emergency does not require evacuation or accountability.

B. Incorrect – There is no need or requirement at this time to perform a site accountability check, this would be done if there was a concern that personnel where missing. Additionally there is no need to evacuate as explained in distracter A. Additionally, the classification level for this event would be UE 8.1.1. This level of emergency does not require evacuation or accountability.

D. Incorrect - There is no need or requirement to evacuate the protected area, Section 3.1 of EPIP-EPP-10 does require evacuation when the site is being attached but that is for a site evacuation. Section 3.2 Insider Threat Contingency Event does NOT require evacuation IF you are working with another person IAW the two person vital area access rules. Additionally, the classification level for this event would be UE 8.1.1. This level of emergency does not require evacuation or accountability.

Technical Reference(s): EPIP-EPP-10, Att. 3, and Section 3.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O3-OPS-006-350-3-31 EO-1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	2.2.42	
	Importance Rating		4.6

(K&A Statement) Ability to recognize system parameters that are entry-level conditions for Technical Specifications.

Proposed Question: SRO 95

The plant is operating at 100% power with the following conditions:

- Annunciator K1-2-1, LIQ POISON EXPLOSIVE VALVE 11-12 CONTINUITY alarms.
- Continuity light for Liquid Poison (LP) explosive valve 11 on Panel K is NOT lit.
- Millimeter indicator on Panel 1S-65 in Auxiliary Control Room for LP explosive valve 11 indicates 0 milliamps.
- The electrical lineup is verified correct.

Which one of the following describes the required actions and why?

A. Declare LP System 11 inoperable. A shutdown is required within 24 hours because the single failure criterion assumed in the analysis is not met with one of the two explosive valves inoperable.

B. Declare LP System 11 inoperable. An immediate shutdown is required because if LP is required, the boron injection rate will not meet the requirements to achieve hot shutdown in an ATWS.

C. Declare LP System 11 explosive valve inoperable. Check the other valve and both LP pumps immediately, if they are operable no LCO entries are required at this time because Technical Specification analysis assumes only one pump is injecting.

D. Declare LP System 11 explosive valve inoperable. Enter a seven (7) day LCO. Verify the other valve is operable immediately, then daily thereafter until the explosive valve is fixed.

Proposed Answer: D.

Explanation (Optional):

D. Correct – TS 3.1.2.b, A redundant component is inoperable. The TS requirement is to restore it to operable in 7 days and to immediately check the redundant component (the other explosive valve) immediately and then daily until the LCO statement is met.

A. Incorrect – The entire LP system is not inoperable and an immediate shutdown is not required.

B. Incorrect – The entire LP system is not inoperable and a shutdown in 24 hours is not required.

C. Incorrect – TS 3.1.2.b requires a one week LCO.

Technical Reference(s): TS 3.1.2, 3.1.2.b, 4.1.2.c (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: N1-211000-RBO-14 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 _____
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	2.3.13	
	Importance Rating		3.8

(K&A Statement) 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: SRO 96

The plant is shut down in preparation for a scheduled refueling outage, with the following conditions:

- Operators are rearranging components in the Spent Fuel Pool in preparation for core shuffle
- Workers are removing the RPV head

What precautions must be taken at this time to prevent over exposure of personnel?

A. The Reactor Mode Switch must be in REFUEL.

B. Refuel Platform rod block must be verified operable.

C. No fuel may be stored within 2.5 feet directly in front of the Spent Fuel Gate.

D. Irradiated fuel may not be brought within 6 feet of the inner Spent Fuel Pool Gate.

Proposed Answer: D.

Explanation (Optional):

D. Correct - N1-FHP-24, Moving Fuel and Blade Guides within the Spent Fuel Pool contains the precaution that Irradiated fuel may not be brought within 6 feet of the inner Spent fuel Pool Gate due to the potential for very high radiation streaming up to the 340' elevation.

A. Incorrect – The Reactor Mode Switch is required to be in REFUEL when core alterations are in progress or fuel is being moved into or from the reactor, but not for movement just within the SFP.

B. Refuel platform rod block is only required to be operable during core alterations. The refuel platform rod block will have no effect since the bridge will not be traveling over the core.

C. This is similar to precaution 4.9 of FHP-24. This precaution allows storage of new fuel and irradiated fuel that has been discharged more than a year within the 2.5 feet of the SFP gates. The distractor is wrong because it generalizes the storage limitation to ALL fuel.

Technical Reference(s): N1-FHP-24, Sect. 4 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: N1-234000-RBO-9 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41
55.43 4, 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	2.4.8	
	Importance Rating		4.5

(K&A Statement) Knowledge of how abnormal operating procedures are used in conjunction with EOP's.

Proposed Question: SRO 97

The plant has just scrammed with the following conditions:

- Both 115 KV lines are deenergized.
- N1-SOP-33A.1, Loss of 115 KV, is being performed.
- N1-SOP-1, Reactor Scram, is being performed.
- A loss of feedwater has resulted in RPV water level lowering to 26 inches.

Which one of the following sets of actions is correct?

A. Enter N1-EOP-2, RPV Control. Continue performing N1-SOP-1 and N1-SOP-33A.1. In the event of a conflict between the procedures, N1-EOP-2 is the overriding document.

B. Enter N1-EOP-2, RPV Control. Continue performing N1-SOP-1 and N1-SOP-33A.1. In the event of a conflict between the procedures, the SOPs are the overriding documents.

C. Exit N1-SOP-1 and N1-SOP-33A.1 and enter N1-EOP-2, RPV Control. The SOPs are re-entered at the step in-progress after exiting N1-EOP-2.

D. Exit N1-SOP-1 and N1-SOP-33A.1 and enter N1-EOP-2, RPV Control. The SOP entry conditions are re-evaluated after exiting N1-EOP-2.

Proposed Answer: A.

Explanation (Optional):

A. Correct – IAW the Operations Manual, actions prescribed in the EOPs take precedence over actions specified in lower tiered documents, such as the SOPs. When an EOP is entered, the specified steps are to be executed in sequence unless a deviation is explicitly allowed. There is no requirement to exit the SOPs. In this case the EOP is entered and the steps necessary are taken then as the steps permit the other SOPs are completed.

B. Incorrect – The EOP is a higher tiered procedure, and must be given priority over SOPs.

C. Incorrect – There is no requirement to exit the SOPs.

D. Incorrect – There is no requirement to exit the SOPs.

Technical Reference(s): Operations Manual section C.4.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-344-1-01 EO-1.2 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	2.4.40	
	Importance Rating		4.5

Knowledge of SRO responsibilities in emergency plan implementation.

Proposed Question: SRO 98

A plant event has led to the following conditions:

Time	Condition
0800	Plant conditions support declaration of an ALERT
0801	Plant conditions have improved
	Plant conditions NO LONGER support declaration of an ALERT
	Plant conditions support declaration of an UNUSUAL EVENT
0805	The Shift Manager has assessed plant conditions and is ready to declare the emergency event

Which one of the following describes the EPIP-EPP-20 emergency notification to be made in response to these conditions at time 0805?

A. Declare and report an UNUSUAL EVENT. No mention of the momentary ALERT condition is required.

B. Declare and report an UNUSUAL EVENT. Include a note of the emergency classification met during momentary ALERT.

C. Declare and report an ALERT. Submit a separate notification to indicate the change in classification to an UNUSUAL EVENT.

D. Declare and report an ALERT. Include conditions were momentary and current plant conditions only justify an UNUSUAL EVENT.

Proposed Answer: B

Explanation (Optional):

EPIP-EPP-20 Section 3.2.1.b

b. IF a transitory event has occurred (as defined in EPIP- EPP-01 or 02), AND emergency classification currently exists, the SM/ED shall:
1. Complete a Part 1 Notification Fact Sheet (Attachment 1A) using instruction provided on back of form and;

- On Item 3, circle the emergency classification that currently exists, and;
- Note the emergency classification met during the transitory event and the time and date of termination in Item 4.

B. Correct - Must declare the actual current conditions, and make note of the transitory alert, per EPIP-EPP-20, section 3.2.1.b

A. Incorrect - See justification above. It is required to report the transitory event.
C. Incorrect- It is not necessary to declare an alert. It is necessary to notify agencies of the transitory event on the Part 1 that declares the UE.
D. Incorrect - A notification of an unusual event is required. Declaration of an alert is not required if it is a transitory event.

Technical Reference(s): EPIP-EPP-20 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: O3-OPS-006-350-3-21 EO-1.3 (As available)

Question Source: Bank # 21200
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 ____
55.43 X

Comments:

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

(K&A Statement) Ability to interpret and execute procedure steps.

SRO 99

The plant is operating at 100% power when a loss of level in the Spent Fuel Pool results in the following conditions:

- H1-4-8, AREA RADIATION MONITORS, alarms
- REFUEL BRIDGE (HIGH RANGE) area radiation monitor alarms
- RX BLDG-EAST WALL, EL. 340 area radiation monitor alarms
- WEST END OF SHIELD WALL, RB 340 area radiation monitor alarms
- Affected areas have radiation levels between 8,500 and 10,000 mR/hr
- The Shift Manager has declared an ALERT

Which one of the following identifies the required action and the areas to be evacuated?

	ACTION	**EVACUATION AREA(s)**
A.	Perform an RPV Blowdown	Reactor Building (all areas)
B.	Perform a normal plant shutdown	Refuel Floor (RB 340) ONLY
C.	Perform an RPV Blowdown	Refuel Floor (RB 340) ONLY
D.	Perform a normal plant shutdown	Protected Area (unnecessary personnel)

Proposed Answer: D.

Explanation (Optional):

D. Correct – A shutdown is required by EOP-5, because 2 or more General areas are above Maximum Safe Values of the same parameter (Detail S). There is no indication of a primary system discharging, and the only affected area is the refuel floor. Per EPP-18 Attachment 1/Figure 1, the SRO/Emergency Director should direct the Protected Area be evacuated of all unnecessary personnel due to the ALERT emergency level.

A. Incorrect – A blowdown is not required because an un-isolatable primary system is not discharging into the Reactor Building and the protected area must be evacuated.

B. Incorrect – The protected area must be evacuated.

C. Incorrect – A blowdown is not required because an un-isolatable primary system is not discharging into the Reactor Building and the protected area must be evacuated.

Technical Reference(s): EPIP-EPP-18 Attachment 1/Figure 1
N1-EOP-05 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: O1-OPS-006-342-1-06 EO 1.2 (As available)

Question Source: Bank # X # 90, EOP-SOP-EP Bank
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 ____
55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	2.2.21	
	Importance Rating		4.1

Knowledge of pre- and post-maintenance operability requirements.

Proposed Question: SRO 100

The plant is operating at 100% power with the following conditions:

- Instrument Air Compressor 13 is inoperable due to a motor fault
- The Electric Fire Pump is out of service for preventative maintenance (day 1 of planned 2 day maintenance period)
- Containment Spray Pump 121 is out of service for preventative maintenance (day 1 of planned 3 day maintenance period)
- Core Spray Pump 111 is declared inoperable due to engineering evaluation
- All other equipment is operable

Then, the following conditions occur:

- Emergency Diesel Generator (EDG) 103 is declared inoperable due to a turbo oil pump failure
- Maintenance reports the repairs to EDG 103 will take 24 hours

Which one the following lists the condition(s) that must be met in order to avoid a Technical Specification required plant shutdown?

A. Core Spray Pump 111 must be returned to an operable status within one hour.

B. The Electric Fire Pump must be returned to an operable status within seven days.

C. Containment Spray Pump 121 must be returned to an operable status within one hour.

D. Instrument Air Compressor 13 must be returned to an operable status within one hour.

Proposed Answer: A.

Explanation (Optional):

A. Correct – With EDG 103 OOS, Core Spray pumps 112 and 122 can only be considered operable if their redundant components (Core Spray pump 111 and 121) are operable, per TS 3.0.1. When Core Spray pump 111 becomes inop, TS 3.0.1 is no longer met for Core Spray pump 112 and 121, and they are therefore inop. This leads to 3 Core Spray pumps inop, therefore TS 3.1.4.d applies, requiring a shutdown to be commenced within one hour. Since EDG 103 repairs will take longer than one hour, the only way to avoid this shutdown would be to return Core Spray pump 111 to an operable status within one hour, which would allow exiting TS 3.1.4.

B. Incorrect – The Electric Fire Pump is required to be operable per UFSAR section 10A. However, UFSAR Section 10A 2.5.2.3 requires "With an inoperable redundant pump or water supply line inoperable, restore the inoperable equipment to operable status within 7 days, or provide an alternate backup pump or supply." Therefore, with the Diesel Fire Pump operable, 7 days are available before any compensatory action needs to be taken for the Electric Fire Pump inoperability. Even after the 7 days, the action required would be to provide a backup supply, not perform a plant shutdown. This is unaffected by the unplanned inoperability of EDG 103.

C. Incorrect – EDG 103 inoperability affects the emergency power supply for Containment Spray pumps 121 and 122. Since both Containment Spray pumps 111 and 112 are unaffected and operable, TS 3.3.7.d applies, which allows 7 days to restore a pump to operable status.

D. Incorrect – Instrument Air Compressor 13 is a non-safety related piece of equipment that is not required by Technical Specifications. As long as IAC 11 and 12 (the safety related air compressors) are available, all TS required equipment have their required air supply.

Technical Reference(s): TS 3.0.1, 3.1.4, 3.3.7, UFSAR Section 10A 2.5.2.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: none

Learning Objective: N1-264000-RBO-14 (As available)

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

Question History: Last NRC Exam No

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

10 CFR Part 55 Content: 55.41 _____
55.43 2

Comments: