

2014 NRC Exam RO Written Exam

RO 1

Given:

- Plant is at 100% power
- Steam Generator 2 Steam Flow transmitter to Feedwater Control failed LOW
- The BOP operator took manual control of FWCS Master Controller #2 and raised the output to 40%, but the reactor tripped on Low Steam Generator Level
- All other Feedwater Controllers are in AUTOMATIC

On the Reactor Trip, Reactor Trip Override (RTO) will ____ (1) _____. Contingency actions required by the BOP will include ____ (2) _____.

(1)	(2)
A. align FWCS #2 components to their RTO position	manually closing MFRV #2 <u>and</u> positioning SUFRV #2 to 13 – 21% open
B. align FWCS #2 components to their RTO position	lowering the output of FWCS Master Controller #2 to reset the RTO
C. <u>not</u> align FWCS #2 components to their RTO position	manually closing MFRV #2 <u>and</u> positioning SUFRV #2 to 13 – 21% open
D. <u>not</u> align FWCS #2 components to their RTO position	lowering the output of FWCS Master Controller #2 to reset the RTO

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RO 2

Given:

- Plant is at 100% power
- The following annunciators are in alarm:
PRESSURIZER RELIEF LINE TEMP HI
PRESSURIZER RELIEF VALVE OPEN

Which of the following statements is correct?

- A. Quench Tank temperature will equal T_{sat} for the current Pressurizer pressure.
- B. Quench Tank pressure will equal P_{sat} for the current Pressurizer vapor space temperature.
- C. The downstream Safety Relief temperature detector will indicate T_{sat} for the current Pressurizer pressure.
- D. The downstream Safety Relief temperature detector will indicate T_{sat} for the current Quench Tank pressure.

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RO 4

OP-902-002, LOCA Recovery Procedure states that core uncover and superheated conditions may be expected for up to (1) minutes. The crew is allowed to stay in OP-902-002 in this condition and are not required to exit to OP-902-008, Functional Recovery Procedure, provided (2) .

	<u>(1)</u>	<u>(2)</u>
A.	15	at least one Charging pump is operating with flow > 40 gpm
B.	30	at least one Charging pump is operating with flow > 40 gpm
C.	15	safety injection flow is within the SI flow curves
D.	30	safety injection flow is within the SI flow curves

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RO 5

The Steam Generator Low Flow trip is required to provide protection against a Reactor Coolant Pump (1) event because the DNBR (2) .

<u>(1)</u>	<u>(2)</u>
A. sheared shaft	trip uses RCP speed sensors to measure flow
B. sheared shaft	algorithm is only valid with four RCPs running
C. locked rotor	trip uses RCP speed sensors to measure flow
D. locked rotor	algorithm is only valid with four RCPs running

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RO 6

Given:

- The plant is at 100% power
- A rupture of the charging line has occurred
- Charging Pumps Header Isolation Valve (CVC 209) is isolated
- Letdown is isolated
- Charging flow can not be established through the normal charging pump discharge path and the crew has entered OP-901-112, Charging or Letdown Malfunction

The crew will align the Charging pumps to discharge through HPSI header _____ (1) _____ and restore pressurizer level using the _____ (2) _____ .

	(1)	(2)
A.	A	cold leg injection valves
B.	A	hot leg injection valves
C.	B	cold leg injection valves
D.	B	hot leg injection valves

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RO 7

Given:

- The plant is in mode 6
- A loss of all Shutdown Cooling has occurred
- The crew has entered OP-901-131, Shutdown Cooling Malfunction
- RCS level is 15.13 feet
- CET temperature indicates 130 degrees F
- The plant has been shutdown for 50 days

The calculated RCS time to boil is _____ hours.

- A. 38.9
- B. 58.0
- C. 41.2
- D. 47.0

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RO 8

Given:

- Plant is at 100% power
- Pressurizer Pressure Channel X/Y recorder (RC-IPR-0100) indicates that the in-service Pressurizer Pressure Control Channel instrument has failed high

In accordance with OP-901-120, Pressurizer Pressure Control Malfunction, the CRS will direct the ATC to place the (1) controller in manual to restore pressurizer pressure. The ATC will (2) the output of the controller that was placed in manual to restore pressurizer pressure to setpoint.

	<u> (1) </u>	<u> (2) </u>
A.	Pressurizer Pressure	raise
B.	Pressurizer Pressure	lower
C.	Pressurizer Spray	raise
D.	Pressurizer Spray	lower

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RO 9

Given:

- Plant operating at 90% power
- DRTS is out of service
- A loss of the 1A bus occurs and all 4 RCS low flow trip signals are generated, but NO Reactor Trip Circuit Breakers open. The BOP operator pushes the Reactor Trip push buttons on **CP-8**

Based on these actions, Reactor Trip Circuit Breakers (1) should directly OPEN. If not, the BOP will manually open the (2) feeder breakers.

- | | <u>(1)</u> | <u>(2)</u> |
|----|----------------|-------------|
| A. | 1, 4, 5, and 8 | 31A and 31B |
| B. | 2, 3, 6, and 7 | 31A and 31B |
| C. | 1, 4, 5, and 8 | 32A and 32B |
| D. | 2, 3, 6, and 7 | 32A and 32B |

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RO 10

With a Steam Generator Tube Rupture in progress it is ultimately desired to depressurize the RCS to within (1) psid of the ruptured Steam Generator to (2) and minimize the potential for Steam Generator overfill.

	<u> (1) </u>	<u> (2) </u>
A.	50	minimize the potential release to the environment
B.	50	prevent a loss of subcooled margin
C.	100	minimize the potential release to the environment
D.	100	prevent a loss of subcooled margin

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RO 11

Given:

- An Excess Steam Demand has occurred for Steam Generator #1
- Crew has entered OP-902-004, Excess Steam Demand Recovery Procedure
- Steam Generator # 1 level is 20% WR and lowering
- The CRS has directed the BOP to perform actions to stabilize RCS temperature when conditions permit

The BOP will take actions to stabilize RCS temperature once (1) .

The stabilization of RCS temperature is required to prevent (2) .

	<u>(1)</u>	<u>(2)</u>
A.	CET temperature <u>and</u> pressurizer pressure rise	RCS pressure rising above HPSI shutoff head
B.	CET temperature <u>and</u> pressurizer pressure rise	Pressurized Thermal Shock (PTS)
C.	CET temperature <u>or</u> pressurizer pressure rise	Pressurized Thermal Shock (PTS)
D.	CET temperature <u>or</u> pressurizer pressure rise	RCS pressure rising above HPSI shutoff head

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RO 12

Given:

- Plant is at 100 percent power
- FWCS 1 and 2 in AUTOMATIC

Which of the following conditions would result in entry to OP-902-006, Loss of Main Feedwater Recovery?

- A. Loss of Offsite Power
- B. S/G #1 Wide Range Level 96 percent
- C. Both Steam Generators 75% NR
- D. Condenser vacuum 13 in Hg

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RO 13

Given:

- At 1800, a reactor trip occurred due to a Station Blackout
- At 1810, the crew entered OP-902-005, Station Blackout Recovery
- At 1815, the CRS directs the ATC operator to reduce battery loads

Which of the following describes the clock time limit to accomplish these actions and the reason for those actions?

- A. 1845; meet two hour coping time for 125 VDC buses to carry vital loads.
- B. 1830; meet two hour coping time for 125 VDC buses to carry vital loads.
- C. 1845; meet four hour coping time for 125 VDC buses to carry vital loads.
- D. 1830; meet four hour coping time for 125 VDC buses to carry vital loads.

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RO 14

Given:

- A Loss of Offsite power has occurred
- Crew has entered OP-902-003, Loss of Offsite Power/Loss of Forced Circulation Recovery
- SUPS MA was lost during the event

Auxiliary Component Cooling Water (ACCW) pumps will ____ (1) ____ . CC HX A ACC Outlet TCV (ACC-126A) must be manually throttled because ACCW flow is reading ____ (2) ____ gpm at CP-33.

	(1)	(2)
A. start		0
B. start		> 4000
C. require a manual start		0
D. require a manual start		> 4000

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RO 15

Given:

- Reactor has tripped due to a Grid Disturbance
- SUPS MA is de-energized
- The BOP is verifying Station Loads are energized per OP-902-000, Standard Post Trip Actions

The minimum Vital AC instrument channel(s) required for electrical train A is (1). The vital instrument channel(s) ensures (2) is available.

<u>(1)</u>	<u>(2)</u>
A. not met	control power for remote operation of breakers
B. not met	monitoring and limited control of other safety functions
C. met	control power for remote operation of breakers
D. met	monitoring and limited control of other safety functions

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RO 16

Given:

- An Excess Steam Demand Event has occurred
- At time 1630, a Containment Spray Actuation Signal has been initiated.

Reactor Coolant Pumps must be secured no later than time (1) .

Reactor Coolant Pumps (RCPs) are secured to prevent (2) .

<u> (1) </u>	<u> (2) </u>
A. 1640	RCP seal failure
B. 1640	damage to the RCP bearings
C. 1633	RCP seal failure
D. 1633	damage to the RCP bearings

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RO 17

Given:

- Plant is at 100% power
- WCT A basin level was lowered to 95% due to maintenance
- STA reports rising temperature on the WCT B basin

When the WCT B basin temperature rises above the Technical Specification limit of (1) then (2) train(s) of the Ultimate Heat Sink will be considered inoperable.

- | | <u> (1) </u> | <u> (2) </u> |
|----|------------------------|------------------------|
| A. | 86°F | only one |
| B. | 86°F | both |
| C. | 89°F | only one |
| D. | 89°F | both |

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RO 19

Given:

- Plant is at 100% power
- All CEAs are fully withdrawn
- ONE (1) CEA from Reg Group 4 drops into the core
- RCS pressure reduces to a minimum of 2210 PSIA
- Proportional heaters are at 100% firing rate
- Backup heaters are in AUTO and are not energized
- The crew enters OP-901-102, CEA or CEDMCS Malfunctions

The crew will match Tave and Tref using turbine load and (1) . The pressurizer pressure control system (2) functioning properly.

- | <u> (1) </u> | <u> (2) </u> |
|----------------------|----------------------|
| A. CEA manipulations | is not |
| B. RCS boron changes | is not |
| C. RCS boron changes | is |
| D. CEA manipulations | is |

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RO 20

Given:

- A Reactor trip and Loss of Offsite Power has occurred
- Three CEA's are stuck out on the Reactor trip
- Emergency boration is in progress using BAM pump A

After five minutes, the RAB watch reports a large lube oil leak on EDG A and the CRS directs securing EDG A by pulling the overspeed trip mechanism. Which of the following actions should the crew take as a result of the changing plant conditions?

- A. Restore Emergency Boration using BAM Pump B.
- B. Restore Emergency Boration using the Gravity Feed valves.
- C. Commence a plant cooldown to 400°F using ADVs and EFW.
- D. Depressurize the RCS to less than 1400 psia and initiate HPSI flow into one cold leg.

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RO 21

Given:

- The plant is in Mode 5
- RCS level is 19.0 feet
- The last OP-903-090 Shutdown Margin calculated a Keff of 0.965
- Charging pump A and AB are in operation to support RCS CRUD cleanup
- Charging pump B breaker is racked out
- Startup Channel #2 has just failed high

Which describes all required actions to comply with Tech Specs 3.1.2.9?

- A. Isolate all Primary Water flow paths to the RCS.
- B. Determine RCS boron concentration within 1 hour and every 90 minutes thereafter.
- C. Determine RCS boron concentration within 1 hour, isolate all Primary Makeup Water flow paths to the RCS. Secure an additional charging pump and rack out the pump breaker.
- D. Determine RCS boron concentration within 1 hour, Isolate all Primary Makeup Water flow paths to the RCS and secure the remaining charging pumps.

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RO 22

Given:

- A Steam Generator Tube leak on #1 Steam Generator is in progress
- The crew is performing the actions in OP-901-201, Steam Generator Tube Leakage or High Activity

The crew will perform a plant cooldown using the ____ (1) ____ .

Steam Generator #1 will be isolated when ____ (2) ____ temperature is lowered to 520° F.

____ (1) ____	____ (2) ____
A. Atmospheric Dump Valves	cold leg
B. Atmospheric Dump Valves	hot leg
C. Steam Bypass Control System	hot leg
D. Steam Bypass Control System	cold leg

RO 23

During a LOCA or Steam Line Break in Containment, the _____ (1) _____
Radiation Monitor(s) will read erroneously _____ (2) _____ while Containment
temperature is rising.

- | _____ (1) _____ | _____ (2) _____ |
|---------------------------|-----------------|
| A. Containment PIG | low |
| B. Containment PIG | high |
| C. Containment High Range | low |
| D. Containment High Range | high |

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RO 24

Per TS 3.7.1.7, Atmospheric Dump Valves, the Atmospheric Dump Valve controller setpoints are required to be operable prior to exceeding (1) percent power. The basis for this requirement is to mitigate the effects of a (2).

- | | <u>(1)</u> | <u>(2)</u> |
|----|------------|------------------|
| A. | 70 | Small Break LOCA |
| B. | 70 | Station Blackout |
| C. | 85 | Small Break LOCA |
| D. | 85 | Station Blackout |

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RO 25

Given:

- Chemistry reports a high RCS Activity in the RCS
- The crew has entered OP-901-410, High Activity in the Reactor Coolant System

Per OP-901-410, the crew will _____.

- A. Start a backup Charging Pump to maximize letdown flow through the Purification Ion Exchanger
- B. Place a standby Purification Ion Exchanger in service to remove more activated products
- C. Bypass the Purification Ion Exchanger to prevent contamination of the Purification Ion Exchanger resin
- D. Stop backup Charging Pumps to minimize contamination of Purification Ion Exchanger resin

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RO 26

Given:

- Plant is in MODE 5
- The RCS was drained to 14.5 ft. MSL
- LPSI pumps have been secured due to RCS leakage
- HPSI Pump B has been started in accordance with OP-901-131, Shutdown Cooling Malfunction
- RCS level has been raised to and is being maintained at 16 ft MSL

To restore a Shutdown Cooling train to service in accordance with OP-901-131, the crew will vent and start LPSI Pump ____ (1) ____ because HPSI Pump B is injecting to ____ (2) ____ .

	<u>(1)</u>	<u>(2)</u>
A.	A	Hot Leg 1
B.	A	Hot Leg 2
C.	B	Hot Leg 1
D.	B	Hot Leg 2

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RO 27

Given:

- Emergency Feedwater Pump 'AB' is tagged for maintenance
- REACTOR TRIP occurred due to a loss of main feedwater
- On the trip, all offsite and onsite AC power was lost
- Both steam generator levels indicate 0% WR
- Both steam generator pressures indicate 15 psia

Emergency Feedwater Pump B is now available. Which of the following describes the appropriate method for restoring feedwater?

- A. Slowly restore feed to ONE SG.
- B. Slowly restore feed to BOTH SGs.
- C. Rapidly restore feed to ONE SG.
- D. Rapidly restore feed to BOTH SGs.

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RO 28

OP-902-005, Station Blackout Recovery, directs the operator to verify closed the CCW non safety header containment isolation valves, CC-641, CC-710, ad CC-713. What is the reason for this?

- A. To prevent running out the CCW pumps
- B. To prevent thermal shocking the RCP seals
- C. To prevent thermal shocking the CEDM coolers
- D. To prevent water hammer in the Containment Building piping

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RO 29

Given:

- A Plant startup is in progress
- The crew is purging the VCT to establish a Hydrogen blanket in accordance with section 8.19 of OP-002-005, Chemical and Volume Control Procedure
- The ATC is directed to raise VCT level to 90%

The crew will be required to align the VCT Inlet/Bypass Valve, CVC-169, control switch to the (1) position to prevent CVC-169 from diverting to the (2) on a high level.

<u> (1) </u>	<u> (2) </u>
A. VCT	Boric Acid Condensate Tanks
B. VCT	Hold-Up tanks
C. Mid	Hold-up tanks
D. Mid	Boric Acid Condensate Tanks

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RO 30

Given:

- Shutdown Cooling (SDC) Train B is in service
- Component Cooling Water (CCW) to SDC Heat Exchanger B was lost 10 minutes ago
- Reactor Coolant System temperature is 220 degrees
- The crew has entered OP-901-131, Shutdown Cooling Malfunction
- Low Pressure Safety Injection Pump B has been secured

Per OP-901-131, Shutdown Cooling Malfunction, the crew must reinitiate
____ (1) ____ flow to SDC Heat Exchanger B slowly to prevent damage to
____ (2) ____ .

____ (1) ____	____ (2) ____
A. Component Cooling Water	Safety Injection piping
B. Component Cooling Water	Component Cooling Water Piping
C. Shutdown Cooling	Safety Injection piping
D. Shutdown Cooling	Component Cooling Water Piping

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RO 31

Following a large break LOCA with a failure of ESFAS to automatically initiate a SIAS, the Technical Specification Safety Limit for the ____ (1) ____ temperature could exceed its melting threshold of ____ (2) ____ degrees without operator intervention.

	<u>(1)</u>	<u>(2)</u>
A.	cladding	5080
B.	cladding	3350
C.	fuel centerline	5080
D.	fuel centerline	3350

RO 32

Which of the following describes the interlock setpoint associated with SI-401A, RC Loop 2 SHDN Cooling Upstream Isolation?

- A. Can **only** be opened if RCS pressure is ≤ 368 psia and RCS temperature is less than 350° F.
- B. Can **only** be opened if RCS pressure is ≤ 368 psia and can only be closed if LPSI pump A is off.
- C. Can **only** be opened if RCS pressure is ≤ 386 psia and can only be closed if LPSI pump A is off.
- D. Can **only** be opened if RCS pressure is ≤ 386 psia and RCS temperature is less than 350° F.

RO 33

A Steam Generator Tube Rupture has occurred that resulted in an automatic SIAS/CIAS.

Which of the following could result in a Quench Tank Rupture Disc failure and rising containment pressure, due to **automatic** alignment to the Quench Tank?

- A. RCP Control Bleed Off
- B. RCP Vapor Seal Leak Off
- C. Reactor Head Vent Header
- D. Pressurizer Vent Header

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RO 34

Given:

- The crew is performing a fill and drain of the Quench Tank to reduce Quench Tank temperature in accordance with OP-007-001, Boron Management

The crew will fill the Quench Tank with _____(1)_____ and then drain the Quench Tank to the _____(2)_____ .

- | _____ (1) _____ | _____ (2) _____ |
|----------------------------|----------------------|
| A. Primary Makeup (PMU) | Equipment Drain Tank |
| B. Primary Makeup (PMU) | Reactor Drain Tank |
| C. Condensate Makeup (CMU) | Equipment Drain Tank |
| D. Condensate Makeup (CMU) | Reactor Drain Tank |

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RO 35

Given:

- At time 0205, the crew manually initiated a SIAS and CIAS due to a Steam Generator Tube Rupture event.
- At time 0210, CCW Pump B tripped
- The crew has diagnosed to OP-902-007, Steam Generator Tube Rupture Recovery Procedure
- Station loads are powered from the Startup Transformers

To prevent damage to Emergency Diesel Generator B, the crew must align CCW flow before time ____ (1) ____ . If CCW flow cannot be restored to EDG B, the diesel will be secured using the ____ (2) ____ .

- | | <u>(1)</u> | <u>(2)</u> |
|----|------------|---|
| A. | 0220 | emergency Shutdown push buttons on CP-1 |
| B. | 0220 | overspeed trip plunger |
| C. | 0235 | overspeed trip plunger |
| D. | 0235 | emergency Shutdown push buttons on CP-1 |

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RO 36

Given:

- The crew has entered OP-901-130, Reactor Coolant Pump Malfunction due to a high bearing temperature on RCP 2B
- The CRS has directed the BOP operator to lower RCP 2B bearing temperature using DCT fans

Per OP-901-130, Reactor Coolant Pump Malfunction, CCW temperature should be maintained above (1) °F to prevent (2) .

	<u> (1) </u>	<u> (2) </u>
A.	75	degradation of the reactor coolant pump seals
B.	75	essential chiller trips on low refrigerant pressure
C.	60	degradation of the reactor coolant pump seals
D.	60	essential chiller trips on low refrigerant pressure

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RO 37

Given:

- Plant is at 100% power
- A loss of all Pressurizer heaters has occurred
- The crew has entered OP-901-120, Pressurizer Pressure Control Malfunction
- Pressurizer Level Setpoint source input has been shifted at CP-31 and a plant shutdown has commenced in accordance with OP-010-005, Plant Shutdown

During the shutdown, the crew is required to ____ (1) ____ . Pressurizer level setpoint will be controlled ____ (2) ____ .

(1)	(2)
A. maintain pressurizer level constant	manually by the operator
B. raise pressurizer level	automatically from the Reactor Regulating System
C. maintain pressurizer level constant	automatically from the Reactor Regulating System
D. raise pressurizer level	manually by the operator

RO 38

Which of the following is correct in relation to the DNBR-Low trip?

- A. The Reactor Protection Trip setpoint is 1.24 and is automatically bypassed below the 10 E-4 bistable setpoint.
- B. The Reactor Protection Trip setpoint is 1.24 and may be bypassed by manually enabling the operating bypass below the 10 E-4 bistable setpoint.
- C. The Reactor Protection Trip setpoint is 1.26 and is automatically bypassed below the 10 E-4 bistable setpoint.
- D. The Reactor Protection Trip setpoint is 1.26 and may be bypassed by manually enabling the operating bypass below the 10 E-4 bistable setpoint.

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RO 39

Given:

- Pressurizer pressure is 1650 PSIA and slowly lowering
- Containment pressure is 16.7 and slowly rising
- Steam Generator 1 pressure is 700 PSIA and lowering
- Steam Generator 2 pressure is 680 PSIA and lowering

Which of the following ESFAS signal(s) will have been generated?

- A. SIAS only
- B. SIAS and CIAS only
- C. SIAS, CIAS, and MSIS only
- D. SIAS, CIAS, MSIS, and CSAS

RO 40

Containment Fan Cooler C is powered from which bus?

- A. SWGR 31A
- B. SWGR 31B
- C. MCC 317A
- D. MCC 317B

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RO 41

Given:

- Plant is at 100% power
- Containment Fan Coolers A, B, & D are in operation
- CEDM Fans A and D are in operation
- Reactor is manually tripped and SIAS is manually actuated

Which of the following describes the response during the event?

- A. Containment Fan Coolers A, B, C, & D operate in slow speed. CEDM Fans A and D trip.
- B. Only Containment Fan Coolers A, B, & D operate in slow speed. CEDM Fans A and D trip.
- C. Containment Fan Coolers A, B, C, & D operate in slow speed. CEDM Fans A and D continue to operate.
- D. Only Containment Fan Coolers A, B, & D operate in slow speed. CEDM Fans A and D continue to operate.

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RO 42

Given:

- A large break LOCA occurred
- Containment Spray Line A pipe failure occurred in the -35 Wing Area

Which of the following conditions describes the operational concern for the Emergency Core Cooling systems following RAS initiation?

The (1) will not have adequate water inventory for operation of the (2) pumps.

- | | <u> (1) </u> | <u> (2) </u> |
|----|--------------------|--------------------|
| A. | RWSP | LPSI |
| B. | RWSP | HPSI |
| C. | SI sump | LPSI |
| D. | SI sump | HPSI |

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RO 43

Given:

- A reactor trip occurred
- The crew is performing OP-902-000, Standard Post Trip Actions
- SG #1 and SG #2 pressures are 1060 psia
- SG #1 and SG #2 NR levels are 5% and steady
- Main Feedwater is available
- Tc indicate 555° F and stable

The crew is required to raise feedwater flow to maintain SG levels (1)
NR and verify (2) being restored back into the bands required by
OP-902-000 using the SBCS.

- | <u> (1) </u> | <u> (2) </u> |
|----------------------|--------------------------------------|
| A. 10-76% | RCS temperature only is |
| B. 10-76% | RCS temperature and SG pressures are |
| C. 55% - 70% | RCS temperature and SG pressures are |
| D. 55% - 70% | RCS temperature only is |

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RO 44

Given:

- The plant is at 100% power
- ES-205, ES to #2 Heaters Isolation closed causing all three heater drain pumps to trip
- The crew has entered OP-901-221, Secondary System Transient

Which of the following describes the response during the event?

- A. Condensate Polisher D/P will lower, both Main Feedwater Pumps will trip 10 seconds after reaching the suction pressure trip setpoint.
- B. Condensate Polisher D/P will lower, one Main Feedwater Pump will trip 10 seconds after reaching the suction pressure trip setpoint.
- C. Condensate Polisher D/P will rise, both Main Feedwater Pumps will trip 10 seconds after reaching the suction pressure trip setpoint.
- D. Condensate Polisher D/P will rise, one Main Feedwater Pump will trip 10 seconds after reaching the suction pressure trip setpoint.

RO 45

Given:

- A plant power reduction is in progress
- Reactor power is 40% and slowly lowering
- Main Feedwater pumps A & B are providing Feedwater in AUTO mode
- The BOP reports Feedwater Master Controller #1 output has failed LOW
- The BOP reports NO response while attempting to operate the Master Controller #1 in MANUAL

Which of the following should be operated in MANUAL mode to restore and maintain Steam Generator level within band?

- A. Main Feedwater Regulating valve #1 M/A station only
- B. Startup Feedwater Regulating valve #1 M/A station only
- C. Main Feedwater Pump Speed #1 M/A station only
- D. Both the SUFRV #1 M/A station and Main Feedwater Pump Speed #1 M/A station

RO 46

Given:

- The reactor has tripped
- Pressurizer Pressure is 1800 PSIA and lowering
- SG #1 Level is 51% WR and lowering
- SG #2 Level is 43% WR and stable
- SG #1 Pressure is 645 PSIA
- SG #2 Pressure is 710 PSIA
- Containment Pressure is 15.2 PSIA and stable

The initial response of Emergency Feedwater flows to the Steam Generators is _____(1)_____ gpm to Steam Generator #1 and _____(2)_____ gpm to Steam Generator #2.

	<u>(1)</u>	<u>(2)</u>
A.	200	400
B.	200	200
C.	0	400
D.	0	200

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RO 47

Given:

- An Excess Steam Demand has occurred
- SIAS, CIAS, and MSIS are present
- The crew is performing actions of OP-902-004, Excess Steam Demand
- Station loads are energized from the Startup transformers

The CRS has directed the ATC to stabilize RCS pressure.

To restore pressurizer heaters, the crew will _____.

- A. reset the back-up heater banks from CP-2
- B. verify the 32A and 32 B feeder breakers closed on the sequencer after .5 seconds and then reset heater banks from CP-2
- C. manually close the 32A and 32B feeder breakers after 205 seconds and then reset heater banks from CP-2
- D. reset the SIAS, close the 32A and 32B feeder breakers and then reset heater banks from CP-2

2014 NRC Exam RO Written Exam

RO 48

Given:

- The plant has experienced a Station Blackout
- The crew has entered OP-902-005, Station Blackout
- The crew has completed the step for reducing battery loads

The crew will monitor Spent Fuel Pool level using guidance located in _____.

- A. OP-500-008, Annunciator response procedure
- B. OP-002-006, SFP Cooling and Purification
- C. OP-901-513, SFP Cooling Malfunction
- D. OP-902-008, Functional Recovery procedure

2014 NRC Exam RO Written Exam

RO 49

Given:

- Plant is at 100% power
- EDG A is synchronized to the grid for a post-maintenance test
- EDG A output is 2.2 MW

If a loss of A-DC occurs, Emergency Diesel Generator A will (1) and the Emergency Diesel Generator A output breaker will (2) .

- | <u> (1) </u> | <u> (2) </u> |
|------------------------|------------------------|
| A. trip | trip open immediately |
| B. trip | remain closed |
| C. remain running | trip open immediately |
| D. remain running | remain closed |

2014 NRC Exam RO Written Exam

RO 50

The CROAI Radiation monitors isolate the Control Room Ventilation (HVC) on a high radiation level to prevent Control Room staff from receiving a maximum dose of (1) for the (2) of the event.

- | | <u>(1)</u> | <u>(2)</u> |
|----|------------|---------------|
| A. | 5 rem | duration |
| B. | 5 rem | first 2 hours |
| C. | 2 rem | duration |
| D. | 2 rem | first 2 hours |

2014 NRC Exam RO Written Exam

RO 51

Given:

- Reactor tripped due to a loss of Main Feedwater
- Crew entered OP-902-006, Loss of Main Feedwater Recovery
- Condensate Storage Pool (CSP) level is 35% and lowering with CMU-141, CSP LCV Bypass, open

To prevent cavitation of the EFW Pumps, the transfer of EFW Pump suction to _____ (1) _____ side(s) of Auxiliary Component Cooling Water (ACCW) must be completed before CSP level lowers to _____ (2) _____.

	<u>(1)</u>	<u>(2)</u>
A.	both	11%
B.	both	25%
C.	one	11%
D.	one	25%

2014 NRC Exam RO Written Exam

RO 52

Given:

- A Loss Of Coolant Accident (LOCA) is in progress
- Auxiliary Component Cooling Water (ACCW) Pump A tripped on overcurrent
- Component Cooling Water temperature is 90°F and rising
- All Dry Cooling Tower A fans are in SLOW speed operating in AUTO

If Component Cooling Water System temperature continues to rise, all Dry Cooling Tower A fans start simultaneously in FAST speed when CCW temperature reaches (1) and Essential Chillers will swap to the WET tower mode when CCW temperature reaches (2) .

	<u> (1) </u>	<u> (2) </u>
A.	100 °F	95 °F
B.	92 °F	102 °F
C.	100 °F	102 °F
D.	92 °F	95 °F

2014 NRC Exam RO Written Exam

RO 53

Given:

- Plant is at 100% power
- Instrument Air Header pressure is 115 PSIG

An air leak occurs, causing Instrument Air Header pressure to drop to 92 PSIG. The crew enters OP-901-511, Instrument Air Malfunction.

The crew will verify that SA-125, SA Backup Supply for IA Press Cntl valve, is _____(1)_____ and IA-123, Instrument Air Dryer Bypass Solenoid valve, is _____(2)_____ .

	(1)	(2)
A.	open	open
B.	closed	open
C.	open	closed
D.	closed	closed

2014 NRC Exam RO Written Exam

RO 54

On a Loss of TGB-DC Bus, the reactor will be manually tripped when Instrument Air header pressure lowers to ____ (1) ____ due to a loss of power to ____ (2) ____.

- | | <u>(1)</u> | <u>(2)</u> |
|----|------------|---|
| A. | 80 | IA and SA compressor
unloader valves |
| B. | 80 | Instrument Air Dryers |
| C. | 65 | IA and SA compressor
unloader valves |
| D. | 65 | Instrument Air Dryers |

2014 NRC Exam RO Written Exam

RO 55

Given:

- Containment Pressure is 16.9 PSIA
- RCS Pressure is 1600 PSIA
- CC-641, CCW RCP Inlet Outside Isol Valve is OPEN
- BAM-133, Emergency Boration Valve is OPEN
- SI-343, SI Tanks Drain to RWSP Valve is CLOSED
- MS-120A, Main Steam Line 1 Normal Drain Valve is OPEN

Which ONE of the following valves requires operator action for the current plant conditions?

- A. CC-641
- B. BAM-133
- C. SI-343
- D. MS-120A

2014 NRC Exam RO Written Exam

RO 56

Given:

- Plant is at 90% power
- An inadvertent dilution event is in progress
- The crew entered OP-901-104, Inadvertent Positive Reactivity Addition
- The ATC reports that "Reactor Coolant Tavg-Tref Hi" annunciator is in
- Steam Bypass Control Valves are closed

The crew will verify a _____ (1) _____ signal being sent to CEDMCS. This signal will prevent withdrawal of _____ (2) _____ control element assemblies in the Auto Sequential mode.

	(1)	(2)
A. Automatic Withdrawal Prohibit (AWP)		regulating group
B. Automatic Withdrawal Prohibit (AWP)		all
C. Automatic Motion Inhibit (AMI)		regulating group
D. Automatic Motion Inhibit (AMI)		all

2014 NRC Exam RO Written Exam

RO 57

Given:

- Plant is steady state at 75% power
- Tavg is being maintained on program
- A Letdown malfunction has occurred, requiring letdown flow control valves to be placed in manual

The CRS directs Pressurizer level to be restored to program level prior to placing the letdown flow control valves back in auto. What is the target level?

- A. 45%
- B. 46.5%
- C. 49.5%
- D. 51.5%

2014 NRC Exam RO Written Exam

RO 58

Given:

- Plant power is 100%
- Safety Channel 1 and 2 High Voltage On Select Switches are positioned to Primary (PRI)
- Safety Channel A middle detector has just failed low

Describe the status of the Startup Channels.

- A. Only Startup Channel 1 high voltage is on
- B. Only Startup Channel 2 high voltage is on
- C. Both Startup Channels high voltage are on
- D. Both Startup Channels high voltage is off

RO 59

Given:

- The in-service Pressurizer pressure control channel has just failed low

Which of the following prevents a simultaneous Reactor Protection System (RPS) Trip bistable actuation?

- A. Separate circuits are used for **protection** channel and **control** channel functions.
- B. Each circuit is provided with two separate outputs; one for **control** channel, one for **protection** channel.
- C. Isolation amplifiers from the output of each circuit ensure that feedback from the **control** signal will not affect the **protection** channel.
- D. Circuit outputs are multiplexed to be processed separately by the **control** channel and **protection** channel circuitry.

2014 NRC Exam RO Written Exam

RO 60

Core Exit Thermocouples are located (1) the fuel alignment plate and is the instrumentation used when verifying RCS temperature (2) .

- | <u> (1) </u> | <u> (2) </u> |
|------------------------|--|
| A. below | anytime less than four Reactor Coolant Pumps are running |
| B. below | during natural circulation conditions |
| C. above | during natural circulation conditions |
| D. above | anytime less than four Reactor Coolant Pumps are running |

2014 NRC Exam RO Written Exam

RO 61

Given:

- Plant tripped due to a Large Break LOCA event and TSC directed that both Hydrogen Recombiners were to be placed in service
- Hydrogen Recombiner A failed and was removed from service
- Hydrogen Recombiner B is operating with a setting of 25 KW output
- Hydrogen Analyzers indicate Containment H₂ concentration of 4.2% and rising slowly

The CRS directs the Hydrogen Recombiner B output raised in accordance with OP-008-006, using Attachment 11.2, to reduce Hydrogen concentration.

Post-LOCA Containment pressure is 17.7 PSIA and Pre-LOCA Containment Temperature was 105° F.

The final setting on the B potentiometer will be ____ KW to establish the required value.

- A. 53
- B. 55
- C. 57
- D. 59

2014 NRC Exam RO Written Exam

RO 62

Given:

- Plant is at 100% power
- Containment Purge is in progress in accordance with OP-002-010, Reactor Auxiliary Building HVAC and Containment Purge
- CAP-203, Containment Purge Exhaust Inside Containment, has failed closed

In relation to the Containment Purge Malfunction and three minutes into the event, Containment Pressure will _____ (1) _____ because _____ (2) _____ .

- | _____ (1) _____ | _____ (2) _____ |
|---------------------|---|
| A. remain the same | containment purge inlet dampers close when CAP-203 closes |
| B. remain the same | RAB normal Exhaust fan trips on low flow |
| C. continue to rise | containment purge outlet dampers are closed |
| D. continue to rise | RAB normal Exhaust fan trips on low flow |

2014 NRC Exam RO Written Exam

RO 63

Given:

- Plant is at 100% power
- A Gaseous Waste Discharge is in progress when the Waste Gas Flow and Radiation Recorder, GWM-IFRR-0648, fails
- The recorder cannot be immediately repaired

Which of the following describes the impact of the failure, and the action required?

- A. Waste Gas Discharge automatic isolation is inoperable; stop the release until the recorder is returned to operable status. The release may resume **ONLY** when a new release permit is issued.
- B. Waste Gas Discharge automatic isolation is inoperable; stop the release until the recorder is returned to operable status. The release may resume under the existing release permit after verifying **NO** new additions to the WGD Tank(s) being released.
- C. Waste Gas Discharge automatic isolation remains operable but flow indication is lost; verify the flow setpoint on GWM-309 remains below the limit specified on the release permit, and continue the release.
- D. Waste Gas Discharge automatic isolation remains operable but flow indication is lost; estimate discharge flow rate by determining the change in GDT pressure over time to ensure flow rate remains within limits.

2014 NRC Exam RO Written Exam

RO 64

Auxiliary Component Cooling Water (ACCW) Pump B is powered from which bus?

- A. SWGR 31B
- B. SWGR 3B
- C. SWGR 1B
- D. SWGR 2B

2014 NRC Exam RO Written Exam

RO 65

Per FP-001-020, Fire Emergency/Fire Report, if a fire detector located in the Control Room or _____ (1) _____ room alarms, the control room will direct the TGB Switchgear Operator to the TGB Switchgear and the Field Operator to the _____ (2) _____.

- | | <u>(1)</u> | <u>(2)</u> |
|----|-----------------|----------------|
| A. | cable vault | +35 Relay Room |
| B. | cable vault | Control Room |
| C. | Isolation Panel | +35 Relay Room |
| D. | Isolation Panel | Control Room |

RO 66

A licensee has NOT stood the required number of proficiency watches prior to the end of the calendar quarter. In addition to conducting a plant tour, which one of the following correctly describes the 10CFR55 provision for the licensee to perform licensed duties during the next quarter?

- A. Active status may be continued provided the remaining proficiency watches are stood during the first month of the following calendar quarter.
- B. Active status may be continued provided 12 hours of under instruction watches are completed within the first month of the following calendar quarter.
- C. The license must become inactive. 40 hours of under instruction watches shall be stood to return the license to active status.
- D. The license must become inactive. Seven 8-hour or five 12-hour under instruction watches shall be stood to return the license to active status.

2014 NRC Exam RO Written Exam

RO 67

Per OI-042-000, Watch Station Process, coordinating activities outside of the Control Room is listed as a responsibility for the ____ (1) ____ and the ____ (2) ____ .

- | | (1) | (2) |
|----|--------------------------|--------------------------------|
| A. | Shift Manager | extra Nuclear Plant operator |
| B. | Shift Manager | At the Controls (ATC) operator |
| C. | Field Support Supervisor | extra Nuclear Plant operator |
| D. | Field Support Supervisor | At the Controls (ATC) operator |

2014 NRC Exam RO Written Exam

RO 68

Given:

- Plant is in a refueling outage and in DEFUEL mode

Which one of the following completes the statement below?

The crew will declare the plant to be in Mode 6 when informed by the Refuel SRO that the first fuel bundle is located in the upender on the.....

- A. fuel handling building side and is capable of being transported to the containment side
- B. fuel handling building side and the transfer carriage has been sent to the containment side
- C. containment building side and the containment upender is vertical
- D. containment building side and is grappled by the refueling machine

.

RO 71

Which ONE of the following radiation monitors **(1)** is specified as the primary monitor with the designed sensitivity to measure small Primary to Secondary leakage **AND** which radiation monitor **(2)** is specified as qualified for use if the primary monitor fails?

	(1)	(2)
A	MS Line N-16 Monitor PRM-RE5501-1 (2)	Steam Generator 1 and 2 Blowdown PRM-IRE-0100X
B	MS Line N-16 Monitor PRM-RE5501-1 (2)	AE Discharge Monitor PRM-IRE-0004
C	AE Discharge Monitor PRM-IRE-0004	Steam Generator 1 and 2 Blowdown PRM-IRE-0100X
D	AE Discharge Monitor PRM-IRE-0004	MS Line N-16 Monitor PRM-RE5501-1 (2)

RO 72

Per OI-038-000, Emergency Operating Procedures Operations Expectations/Guidance, following a momentary loss of power or voltage dip, some radiation monitors needed for Emergency Plan may require _____?

- A. a restart of the sample pump
- B. verification of proper setpoint
- C. reset of their power supply
- D. local purge operation

2014 NRC Exam RO Written Exam

RO 73

Per OP-100-017, Emergency Operation Procedure Implementation Guide:

Simultaneous performance of more than one Emergency Operating (EOP) **Recovery** Procedure is ____ (1) ____ . Simultaneous performance of an Off-Normal Operating Procedure and an Emergency Operating Recovery Procedure is allowed ____ (2) ____ .

- | ____ (1) ____ | ____ (2) ____ |
|----------------|--|
| A. allowed | at the discretion of the CRS |
| B. allowed | only if the Emergency Operating Recovery Procedure directs its use |
| C. not allowed | at the discretion of the CRS |
| D. not allowed | only if the Emergency Operating Recovery Procedure directs its use |

RO 74

Given:

- An Excess Steam Demand is in progress
- The crew is performing required actions in OP-902-004, Excess Steam Demand
- Chemistry is unable to obtain an RCS Boron sample
- Reactor power is dropping

Emergency Boration may be terminated if which of the following conditions are met?

- A. Pressurizer level is approaching the upper end of the control band and HPSI Throttle Criteria is being met.
- B. Pressurizer level is approaching the upper end of the control band and a Shutdown Margin calculation is performed as soon as plant conditions permit.
- C. Reactor Vessel Level Monitoring indicates the core is covered and HPSI Throttle Criteria is being met.
- D. Reactor Vessel Level Monitoring indicates the core is covered and a Shutdown Margin calculation is performed as soon as plant conditions permit.

RO 75

Per OP-100-017, Emergency Operating Procedure Implementation Guide, which of the following criteria (if any) would allow the crew to remain in a selected Optimal recovery procedure if the safety function status checklist is not being met?

- A. The crew must exit to the functional recovery procedure any time the safety function status checklist is not met.
- B. Two events are in progress and a shift brief is performed which must include the Shift Manager.
- C. A single event is in progress and transitioning to the functional recovery procedure will provide no additional guidance to correct the failed safety function.
- D. The reason for not meeting the safety function is known and TSC concurrence must be obtained.

2014 NRC Exam SRO Written Exam

SRO 1

Given:

- Plant is at 15% power
- The crew is making preparations to synch the Main Generator to the grid
- Main Feedwater Pump 'A' is operating
- Startup Transformer 'B' trips on the Sudden Pressure Relay resulting in a reactor trip
- Pressurizer pressure is 1950 PSIA and rising
- Pressurizer level is 15% and stable
- One backup Charging Pump has started
- RCS Temperature is 541°F and rising
- EDG 'B' is running loaded
- NAO reports no precipitation

Which of the following describes the correct procedure entry and required action?

- A. OP-902-001, Reactor Trip Recovery and perform Appendix 20, Operation of DCT Sump Pumps within 30 minutes
- B. OP-902-001, Reactor Trip Recovery and start an additional Charging Pump
- C. OP-902-003, Loss of Offsite Power/ Loss of Forced Circulation Recovery and perform Appendix 20, Operation of DCT Sump Pumps within 30 minutes
- D. OP-902-003, Loss of Offsite Power/ Loss of Forced Circulation Recovery and start an additional Charging Pump

2014 NRC Exam SRO Written Exam

SRO 2

Given:

- The plant is at 100% power
- The AB bus is aligned to the B Train
- HPSI Pumps A and B are aligned for service
- LPSI Pump A is tagged out
- Technical Specification 3.5.2.a has been entered

HPSI Pump B breaker develops a malfunction that causes the breaker to be unable to close. Regarding ECCS equipment available to mitigate a SBLOCA, which of the following is true in accordance with Technical Specifications?

- A. TS 3.5.2.b is applicable and may be exited once the AB HPSI pump is aligned to replace the B HPSI pump.
- B. TS 3.5.2.b is applicable and may **ONLY** be exited when one ECCS pump is restored.
- C. TS 3.0.3 is applicable and may be exited once the AB HPSI pump is aligned to replace the B HPSI pump.
- D. TS 3.0.3 is applicable and may **ONLY** be exited when one ECCS pump is restored.

2014 NRC Exam SRO Written Exam

SRO 3

Given:

- A LOCA has occurred
- The crew is performing the actions of OP-902-002, LOCA Recovery Procedure
- Pressurizer level indicates 10% and rising
- Steam Generator #1 level is 51% NR and rising
- Steam Generator #2 level is 50% NR and rising
- Both Steam Generator levels are being controlled with EFW in manual
- CET temperature is 430 degrees F
- RCS pressure is 524 psia
- QSPDS Reactor Vessel level 5 indicates NOT VOIDED
- Containment temperature is 210 degrees F

Which of the following must the CRS direct prior to the crew throttling HPSI flow?

- A. Raise vessel plenum level until Vessel Plenum level indicates 100%.
- B. Raise Steam Generator levels to greater than 55% NR.
- C. Raise subcooling to $\geq 28^{\circ}$ F.
- D. Raise pressurizer level to greater than 23%.

2014 NRC Exam SRO Written Exam

SRO 4

Given:

- Plant is operating at 100% with the following Annunciators in alarm:
 - CCW Surge Tank Level LO-LO on Panel M & N
 - CCW FLOW LO red alarms for all Reactor Coolant Pumps
 - Controlled Bleedoff Temperature Hi alarms for all Reactor Coolant Pumps
- CCW Surge Tank A level is 0%.
- CCW Surge Tank B level lowered to 15% but is being restored via the CCW Makeup Pumps

The crew has entered OP-901-510, CCW System Malfunction. To mitigate this event, the CRS will complete subsection (1). The crew will be required to (2).

	<u>(1)</u>	<u>(2)</u>
A.	E ₃ High System Temperature and transition to E ₁ System Leakage	isolate the leak and then restore flow to the AB loop
B.	E ₃ High System Temperature and transition to E ₁ System Leakage	restore flow to the AB loop and then isolate the leak
C.	E ₁ System Leakage only	restore flow to the AB loop and then isolate the leak
D.	E ₁ System Leakage only	isolate the leak and then restore flow to the AB loop

2014 NRC Exam SRO Written Exam

SRO 5

Given:

- Plant at 100% power and steady state
- N-16 Radiation Monitor for Steam Generator 2 reads 65 GPD
- PSLR reads 85 GPD
- Chemistry reports primary to secondary leakage in Steam Generator 2 is consistent with PSLR

Technical Specification 3.4.5.2, Operational Leakage, is (1).

The Nuclear Energy Institute recommended a limit of 150 GPD for primary to secondary leakage; however, the limit in Technical Specification 3.4.5.2 is more restrictive (2).

	<u>(1)</u>	<u>(2)</u>
A.	not met	to ensure the magnitude of leakage does not interfere with the detection of UNIDENTIFIED LEAKAGE by the leakage detection systems
B.	met	to ensure the magnitude of leakage does not interfere with the detection of UNIDENTIFIED LEAKAGE by the leakage detection systems
C.	not met	because the proximity of the east ADV to the east control room air intake could result in unacceptable radiological consequences
D.	met	because the proximity of the east ADV to the east control room air intake could result in unacceptable radiological consequences

2014 NRC Exam SRO Written Exam

SRO 6

Given:

- Plant is in Mode 1
- The Shift Manager receives a call from the grid operator informing him that Waterford's post-trip grid voltage would be 222 kV.
- Current Line A and B grid voltages do **NOT** meet the requirements of OP-903-066, Electrical Breaker Alignment Check

Based on this information, the crew should (1) because (2) .

	(1)	(2)
A.	declare both AC off-site circuits inoperable and enter both Tech Spec 3.8.1.1 and TRM 3.8.1.1	sufficient power may not exist to supply safety related equipment needed for the mitigation of a design basis accident
B.	declare both AC off-site circuits inoperable and enter both Tech Spec 3.8.1.1 and TRM 3.8.1.1	post trip excessive current from this reduced voltage will actuate the SUT protective relays
C.	enter only TRM 3.8.1.1	sufficient power may not exist to supply safety related equipment needed for the mitigation of a design basis accident
D.	enter only TRM 3.8.1.1	post trip excessive current from this reduced voltage will actuate the SUT protective relays

2014 NRC Exam SRO Written Exam

SRO 7

Given:

- Plant is stable at 100% power
- RCS Temperature loop1 Hot Leg (RC-ITI-0111X) has failed low
- The crew has entered OP-901-110, Pressurizer Level Control Malfunction

As a result of the failed temperature instrument, Letdown flow will (1) .
The CRS will implement subsection (2) of OP-901-110.

<u> (1) </u>	<u> (2) </u>
A. rise	E1 Pressurizer Level Control Channel Malfunction
B. lower	E1 Pressurizer Level Control Channel Malfunction
C. rise	E2 Pressurizer Level Setpoint Malfunction
D. lower	E2 Pressurizer Level Setpoint Malfunction

2014 NRC Exam SRO Written Exam

SRO 8

Given:

- Plant is operating at 100%
- The crew is discharging Gas Decay Tanks
- The following annunciators is received:
 - Waste Gas Disch Rad High Dryer/Mon Trouble (Cabinet G, E-10)
- The ATC operator informs the CRS that the discharge activity exceeds the Gaseous Release Permit set point

The CRS will direct the crew to verify the ____ (1) ____ high alarm set point set in accordance with the release permit. The annunciator response procedure will refer the CRS to ____ (2) ____ and close GWM-309, Waste Gas Discharge Flow Control.

	(1)	(2)
A.	Plant Stack PIG Monitor A <u>or</u> B (PRM-IRE-0100.1 <u>or</u> 0100.2)	OP-007-003, Gaseous Waste Management
B.	Plant Stack PIG Monitor A or B (PRM-IRE-0100.1 or 0100.2)	OP-901-413, Waste Gas Discharge High Radiation
C.	Gaseous Waste Management Monitor (PRM-IRE-0648)	OP-901-413, Waste Gas Discharge High Radiation
D.	Gaseous Waste Management Monitor (PRM-IRE-0648)	OP-007-003, Gaseous Waste Management

2014 NRC Exam SRO Written Exam

SRO 9

Given:

- The site is under attack from armed adversaries. The crew has entered OP-901-523, Security Events
- The site has been notified by Security that the Control Room is the target of the attack.

The CRS will enter OP-901-502, subsection (1). OP-901-523, Security Events, states that the NRC Headquarters Operation Center shall be notified within (2) minutes of discovery of the security based event.

	<u>(1)</u>	<u>(2)</u>
A. E1 Control Room Evacuation with Fire		60
B. E1 Control Room Evacuation with Fire		15
C. E2 Control Room Evacuation		15
D. E2 Control Room Evacuation		60

2014 NRC Exam SRO Written Exam

SRO 10

Given:

- Plant was operating at 100% power with EDG A danger tagged
- An Excess Steam Demand occurred
- SIAS, CIAS, and MSIS have been initiated
- Pressurizer level is 0%
- After entering OP-902-004, Excess Steam Demand Recovery, the following conditions change:
 - Representative CET temperature and RCS pressure start to rise.
 - A Loss of Off Site Power occurs

All components respond as designed to the event.

Based on these conditions, the CRS will ____ (1) ____ and ____ (2) ____

	(1)	(2)
A.	remain in OP-902-004	direct the ATC to stabilize RCS pressure <u>above</u> HPSI Pump shutoff head.
B.	remain in OP-902-004	direct the ATC to stabilize RCS pressure <u>below</u> HPSI Pump shutoff head.
C.	exit OP-902-004 and enter OP-902-008, Functional Recovery	direct the ATC to stabilize RCS pressure <u>above</u> HPSI Pump shutoff head.
D.	exit OP-902-004 and enter OP-902-008, Functional Recovery	direct the ATC to stabilize RCS pressure <u>below</u> HPSI Pump shutoff head.

2014 NRC Exam SRO Written Exam

SRO 11

Given:

- A SGTR event is in progress with S/G #2 faulted
- The crew has completed the rapid cooldown of the RCS
- RCS T_{HOT} is 518 °F
- RCS T_{COLD} is 504 °F
- RCS pressure is 1450 PSIA
- S/G #2 pressure is 650 PSIA
- Reactor Coolant Pumps 1B and 2B are operating
- OP-902-007, Steam Generator Tube Rupture Recovery directs the reduction of RCS pressure.

Based on plant conditions, the CRS should direct the ATC to reduce RCS pressure, with a MINIMUM pressure of

- A. 700 PSIA
- B. 940 PSIA
- C. 1100 PSIA
- D. 1200 PSIA

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SRO 12

Given:

- RCS temperature is 340°F
- RCS pressure is 380 PSIA
- SDC Train A is in service
- SDC Train B is in standby

The following annunciators are received:

- SIAS Train A Logic Initiated (Cabinet K, G-19)
- SIAS Train B Logic Initiated (Cabinet K, G-20)
- LOOP 1 SDC RELIEF VLV ACTIVE (Cabinet N, A-17)
- LOOP 2 SDC RELIEF VLV ACTIVE (Cabinet M, A-7)

The CRS will direct the BOP to FIRST (1) in accordance with the guidance in (2).

<u>(1)</u>	<u>(2)</u>
A. secure HPSI Pumps	OP-901-131, Shutdown Cooling Malfunction
B. secure LPSI Pump B	OP-901-131, Shutdown Cooling Malfunction
C. secure LPSI Pump B	OP-901-504, Inadvertent ESFAS Actuation
D. secure HPSI Pumps	OP-901-504, Inadvertent ESFAS Actuation

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SRO 13

The following plant conditions exist:

- The plant is in Mode 1
- Channel 'B' Wide Range Pressure transmitter (RC-IPI-0102B) has failed low
- Appropriate bistables have been bypassed on Channel 'B'
- Subsequently, Channel 'C' Lo Pressurizer Pressure bistable has failed in the actuated state.

If the CRS directs bypassing the Channel 'C' Lo Pressurizer Pressure bistable, then:

- A. Channel 'B' Lo Pressurizer pressure remains bypassed and Channel 'C' Lo Pressurizer pressure remains bypassed. No additional actions are required.
- B. Channel 'B' Lo Pressurizer pressure remains bypassed, Channel 'C' does not bypass. Channel 'C' must be placed in trip to comply with Tech Spec 3.3.1.
- C. A Reactor Trip and SIAS occurs. OP-901-504, Inadvertent ESFAS Actuation directs that Instrument Air will be restored to containment by opening IA-909, CNTMT ISOLATION INSTRUMENT AIR.
- D. A Reactor Trip and SIAS occurs. OP-901-504, Inadvertent ESFAS Actuation directs that emergency boration may only be secured after Shutdown Margin is verified through Chemistry analysis.

2014 NRC Exam SRO Written Exam

SRO 15

Given:

- Plant is at 100% power
- A loss of the 3B Safety bus has occurred

All indications for this condition are normal with the following exceptions:

- Auxiliary Cooling Water Pump (ACCW) B tripped at the 17 second load block
- All Emergency Diesel Generator (EDG) B Sequencer load block lights have extinguished
- EDG B Sequencer LOCKOUT light is LIT

The (1) de-energized. The CRS will direct the crew to (2).

<u>(1)</u>	<u>(2)</u>
A. Train B loads only after block 17 are	secure EDG B IAW OP-009-002, Emergency Diesel Generator
B. Train B loads only after block 17 are	rack down ACCW Pump B breaker IAW OP-901-311, Loss of Train B Safety Bus
C. Entire 3B safety bus is	rack down ACCW Pump B breaker IAW OP-901-311, Loss of Train B Safety Bus
D. Entire 3B safety bus is	secure EDG B IAW OP-009-002, Emergency Diesel Generator

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SRO 16

The following plant conditions exist:

- The plant is MODE 6 and dry fuel operations are in progress
- Fuel Handling Building Normal Ventilation Train A is in service.
- Two minutes ago the crew received a report of a dropped dry fuel cask in the Fuel Handling Building
- A Fuel Handling Accident (FHA) Signal has not yet been generated
- Crew has implemented OP-901-405, Fuel Handling Incident.

Based on these conditions, the crew should expect the (1) to detect any initial airborne activity rise and should start the (2) following the FHA signal.

- | | (1) | (2) |
|----|---|--|
| A. | Fuel Handling Building PIG
A Radiation Monitor | Fuel Handling Building HV Room Exhaust Fan A |
| B. | Fuel Handling Building PIG
A Radiation Monitor | FHB WRGM sample pump |
| C. | Fuel Handling Building
WRGM | Fuel Handling Building HV Room Exhaust Fan A |
| D. | Fuel Handling Building
WRGM | FHB WRGM sample pump |

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SRO 17

Given:

- Plant is at 100% power
- Control Rod testing is in progress in accordance with OP-903-005, Control Element Assembly Operability Check
- CEA #28 in Shutdown Bank A is being tested.
- The initial position for CEA #28 is fully withdrawn at 149.5 inches.

During the surveillance testing for CEA #28, entry into TS 3.1.3.5, Shutdown CEA Insertion Limit (1) be required. The basis for the Shutdown CEA insertion limit is to (2) .

- | | <u> (1) </u> | <u> (2) </u> |
|----|------------------------|------------------------------------|
| A. | will | prevent axial Xenon redistribution |
| B. | will | maintain minimum shutdown margin |
| C. | will not | maintain minimum shutdown margin |
| D. | will not | prevent axial Xenon redistribution |

SRO 18

Given:

- Plant is at 100% power
- Reactor Power Cutback is in service

A Turbine Trip occurred due to an overspeed condition

- The following annunciator is illuminated associated with the Main Turbine:
 - Turbine Trip Overspeed/DEH Power Lost

The CRS will direct the crew to _____.

- A. verify a reactor power cutback and perform OP-901-101, Reactor Power Cutback only
- B. verify a reactor power cutback and perform OP-901-101, Reactor Power Cutback and OP-901-210, Turbine Trip concurrently
- C. trip the reactor and perform OP-902-000, Standard Post Trip Actions and OP-901-210, Turbine Trip concurrently
- D. trip the reactor and perform OP-902-000, Standard Post Trip Actions only

2014 NRC Exam SRO Written Exam

SRO 19

Given:

- Reactor is shutdown with all CEAs fully inserted
- RCS Boron concentration is 2100 ppm
- Keff is 0.945
- RCS temperature is 195°F

Which of the following correctly describes the minimum required shift staffing in accordance with Tech Spec 6.2.2?

- A. 1 SM, 1 SRO, 2 ROs, 1 STA and 2 NAOs
- B. 1 SM, 1 RO, and 1 NAO
- C. 1 SM, 1 RO, 1 STA and 1 NAO
- D. 1 SM, 1 SRO, 2 ROs and 2 NAOs

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SRO 20

Regarding EOP usage, to verify the RCS **is not** water solid with Pressurizer level indicating 100%, the crew will verify (1). If the RCS **is** considered water solid, the crew will (2).

	(1)	(2)
A.	RCS inventory or temperature changes do not produce severe pressure responses	remain in the selected Optimal Recovery Procedure and control RCS temperature and throttle HPSI flow
B.	RCS inventory or temperature changes do not produce severe pressure responses	transition to the Functional Recovery Procedure and establish a bubble in the Pressurizer
C.	Reactor vessel <u>plenum</u> level is less than 100%	remain in the selected Optimal Recovery Procedure and control RCS temperature and throttle HPSI flow
D.	Reactor vessel <u>plenum</u> level is less than 100%	transition to the Functional Recovery Procedure and establish a bubble in the Pressurizer

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SRO 21

If plant conditions require the removal of a danger tag, the ____ (1) ____ may perform Alternate Release Authorization. One procedural condition required for this authorization is that the Tagout/Work Order Holder ____ (2) ____.

	(1)	(2)
A.	Duty Plant Manager	will be notified immediately upon return to the site and prior to starting work
B.	SM or designee	will be notified immediately upon return to the site and prior to starting work
C.	Duty Plant Manager	is contacted per-telecom if not on site
D.	SM or designee	is contacted per-telecom if not on site

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SRO 22

The plant is at 100%. The rubber seal has been reported torn on Door 153, a CVAS boundary door, and the door has been declared inoperable. Door 161, the other door in that airlock, is operable. Which of the following is true concerning requirements to establish CVAS Boundary operability?

- A. Perform OP-903-124, CVAS Pressure Boundary Testing, with Door 153 held open and Door 161 closed.
- B. Perform OP-903-124, CVAS Pressure Boundary Testing, both Door 153 and Door 161 closed.
- C. No testing is required until Door 153 has been restored to operable status.
- D. No testing is required; only one door is required to be operable in each CVAS air lock.

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SRO 23

The stated limit in EP-002-030, Emergency Radiation Exposure Guidelines and Controls, for Emergency Team Members chosen to perform Life Saving activities is ____ (1) ____ REM TEDE. These limits may be exceeded only ____ (2) ____.

- | | (1) | (2) |
|----|-----|---|
| A. | 25 | if the NRC is consulted prior to authorizing the exposure |
| B. | 30 | if the NRC is consulted prior to authorizing the exposure |
| C. | 30 | by volunteers fully aware of the risks involved |
| D. | 25 | by volunteers fully aware of the risks involved |

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SRO 24

Given:

- Waste Condensate Tank 'B' is being discharged to the Circ Water system
- EFFLUENT RAD MONT SYS ACT HI-HI annunciator is in alarm on CP-36
- WASTE LIQUID RAD MONITOR TROUBLE annunciator is in alarm on CP-4
- LWM-IFRR-0647, Liquid Waste Flow Recorder, indicates rising activity level
- The automatic isolations did not automatically close as designed
- The ATC operator has closed LWM-441 and LWM-442

Based on these conditions, for Waste Condensate Tank B to be approved for discharge before the Liquid Waste Radiation Monitor is repaired, which of the following is a required action per TRM 3.3.3.10, Radioactive Liquid Effluent?

- A. Complete a valve lineup to ensure that Waste Condensate Tank A is isolated from the discharge.
- B. Initiate a Department Action Statement Notice requiring samples every 4 hours during discharge.
- C. Initiate a Technical Specification Addendum Log to calculate release flow rate every 4 hours during the discharge.
- D. Ensure release rate calculations have been verified by two technically qualified personnel prior to the discharge.

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SRO 25

Per EP-002-100, Technical Support Center Activation, Operation and Deactivation, the lowest level of event classification that requires activation of the Technical Support Center (TSC) is an (1) . It is the responsibility of the (2) to direct the activities of the TSC including overall management of the onsite Emergency Response Organization.

- | | <u> (1) </u> | <u> (2) </u> |
|----|--|--|
| A. | Unusual Event | TSC Manager |
| B. | Unusual Event | Emergency Plant Manager |
| C. | Alert | TSC Manager |
| D. | Alert | Emergency Plant Manager |

2014 NRC Written Examination
Waterford 3
Reactor Operator and Senior Reactor Operator

1.	<u>B</u>	
2.		<u>D</u>
3.		<u>D</u>
4.		<u>D</u>
5.	<u>A</u>	
6.	<u>A</u>	
7.		<u>D</u>
8.		<u>D</u>
9.		<u>D</u>
10.	<u>A</u>	
11.	<u>B</u>	
12.		<u>D</u>
13.		<u>D</u>
14.	<u>B</u>	
15.		<u>D</u>
16.		<u>C</u>
17.		<u>D</u>
18.		<u>D</u>
19.		<u>C</u>
20.	<u>B</u>	
21.		<u>C</u>
22.		<u>C</u>
23.		<u>D</u>
24.	<u>A</u>	
25.	<u>A</u>	
26.	<u>B</u>	
27.	<u>A</u>	
28.	<u>B</u>	
29.	<u>B</u>	
30.	<u>B</u>	
31.		<u>C</u>
32.		<u>C</u>
33.	<u>A</u>	
34.	<u>B</u>	
35.		<u>C</u>
36.	<u>B</u>	
37.	<u>A</u>	
38.		<u>D</u>
39.	<u>B</u>	
40.		<u>C</u>
41.	<u>A</u>	
42.		<u>D</u>
43.		<u>C</u>
44.		<u>D</u>
45.	<u>A</u>	
46.		<u>C</u>
47.		<u>C</u>
48.		<u>C</u>
49.	<u>B</u>	
50.	<u>A</u>	

2014 NRC Written Examination
Waterford 3
Reactor Operator and Senior Reactor Operator

51.	<u>C</u>	S1.	<u>B</u>
52.	<u>C</u>	S2.	<u>A</u>
53.	<u>A</u>	S3.	<u>D</u>
54.	<u>C</u>	S4.	<u>C</u>
55.	<u>D</u>	S5.	<u>C</u>
56.	<u>A</u>	S6.	<u>A</u>
57.	<u>C</u>	S7.	<u>C</u>
58.	<u>B</u>	S8.	<u>C</u>
59.	<u>A</u>	S9.	<u>B</u>
60.	<u>C</u>	S10.	<u>A</u>
61.	<u>B</u>	S11.	<u>C</u>
62.	<u>A</u>	S12.	<u>D</u>
63.	<u>D</u>	S13.	<u>C</u>
64.	<u>B</u>	S14.	<u>C</u>
65.	<u>A</u>	S15.	<u>C</u>
66.	<u>C</u>	S16.	<u>B</u>
67.	<u>C</u>	S17.	<u>B</u>
68.	<u>A</u>	S18.	<u>B</u>
69.	<u>B</u>	S19.	<u>B</u>
70.	<u>B</u>	S20.	<u>A</u>
71.	<u>D</u>	S21.	<u>B</u>
72.	<u>A</u>	S22.	<u>A</u>
73.	<u>C</u>	S23.	<u>D</u>
74.	<u>A</u>	S24.	<u>D</u>
75.	<u>C</u>	S25.	<u>D</u>