QUESTION # 001

Given the following:

Unit 1 was operating at full power when a manual reactor trip signal was generated. Which of the following correctly describes what occurs due to this signal?

a. Reactor Trip AND Bypass breakers' shunt trip coils are de-energized.

b. Reactor Trip AND Bypass breakers' shunt trip coils are energized.

c. ONLY Reactor Trip breakers' shunt trip coils are de-energized.

d. ONLY Reactor Trip breakers' shunt trip coils are energized.

ANSWER:
d.
REFERENCES:
Lesson Plan RO-C-01200, Rod Control and Rod Position Indicating System
Lesson Plan RO-C-01101, Solid State Protection System
Proposed References to be provided to applicants during examination: NONE
NEW
FUNDAMENTAL
K/A: 007.EK2.02 Reactor Trip: Knowledge of the interrelations between a reactor trip and the following: Breakers, relays and disconnects.
EXPLANATION:

a. Incorrect: The Reactor Trip breakers (not the bypass breakers) trip coils are normally energized by the associated train's Shunt Trip Coil. A reactor protection signal interrupts power to reactor trip breaker UV coils and energizes reactor trip breaker shunt coils.
b. Incorrect. The Reactor Trip breakers (not the bypass breakers) trip coils are normally energized by the associated train's Shunt Trip Coil. A reactor protection signal interrupts power to reactor trip breaker UV coils and energizes reactor trip breaker shunt coils.
c. Incorrect. The Reactor Trip breakers trip coils are normally energized by the associated train's Shunt Trip Coil. A reactor protection signal interrupts power to reactor trip breaker UV coils and energizes reactor trip breaker shunt coils.
d. Correct.

QUESTION # 002

A Unit 1 PRZ vapor space LOCA is being addressed per E-1, Loss of Reactor or Secondary Coolant. The following plant conditions exist:

- PRZ Level - 100%
- RCPs - Stopped
- Subcooling - 0°F
- A yellow path on the Inventory CSFST indicates entry conditions for FR-I.3, Response to Voids in Reactor Vessel, have been met.

The appropriate operator response to the yellow path is that actions per FR-1.3:

a. must be performed after SI has been terminated to ensure the core is refilled.

b. are not applicable until SI has been terminated because other plant conditions are more pressing.

c. must be performed before SI has been terminated to ensure continued ECCS flow to the core.

d. are not applicable until SI has been terminated because SI flow will eliminate all reactor vessel voids.

ANSWER:
b.
REFERENCE:
RO-C-EOP10 Lesson Plan Pg 100
OHP 4023.FR-I.3 Background
BANK
HIGHER
K/A: 008AK3.03: Pressurizer Vapor Space Accident: Knowledge of the reasons for the following responses as they apply to the Pressurizer Vapor Space Accident: Actions contained in EOP for PZR vapor space accident / LOCA
EXPLANATION:

QUESTION # 003

Which of the following is correct concerning LBLOCA analysis?

a. The results show that peak cladding temperatures remain below 2200°F, and no zirc-water reaction takes place.

b. ECCS flow to the faulted loop spills to containment, however the accumulator injection for that loop does reach the core.

c. The RHR pumps must not be realigned for RHR spray prior to 50 minutes after the onset of the event to ensure decay heat levels are within the heat removal capability of one CCP and one SI pump.

d. Core safety could be challenged if the operators interrupt CCP and SI flow to the core during transfer to cold leg recirculation for more than 5 minutes due to the loss of suction to the CCPs and SI pumps, rendering them unavailable for long term cooling.

ANSWER:
c.
REFERENCE:
RO-C-EOP09-E36
Lesson Plan RO-C-EOP09, E-1 Series EOPs, and Background Information
Proposed References to be provided to applicants during examination: None
CM-3247, Vision #33993
FUNDAMENTAL
K/A: 011.EA2.05: Large Break LOCA: Ability to determine or interpret the following as they apply to a Large Break LOCA: Significance of charging pump operation.
EXPLANATION:
a. Incorrect. Some Zirc-Water reaction is expected
b. Incorrect. The Accumulator Flow will also spill to Containment
c. CORRECT
d. Incorrect. The 5 minute value is appropriate for RHR and CTS flow during cold leg recirculation.

QUESTION # 004

Unit 2 Reactor Startup is in progress with Reactor Power at 2% and rising.

The following conditions exist:

- RCP No. 3 Lower Bearing water temperature is 208°F and stable.
- RCP No. 3 Motor Bearing temperature is 187°F and stable.
- RCP No. 3 Seal Leakoff temperature is 179°F and stable.
- RCP No. 3 Motor Temperature is 148°C and rising.
- Annunciator 207 Drop 40, RCP Motor Overheated – LIT.

Which of the following operator actions MUST be taken based upon these conditions?

a. Do NOT trip the reactor. Maintain power less than 5% (Mode 2). Trip the No. 3 RCP.

b. Initiate reactor shutdown per 2-OHP-4021-001-003, Power Reduction, and trip the No. 3 RCP.

c. Manually trip the reactor, Enter 2-OHP-4023-E-0, Reactor Trip or Safety Injection, perform immediate actions, then trip the No. 3 RCP.

d. Immediately Trip the No. 3 RCP. Initiate reactor shutdown per 2-OHP-4021-001-003, Power Reduction and be in Mode 3 within 6 Hours.

ANSWER:
b.
REFERENCE:
02-OHP-4022-002-001, Malfunction Of A Reactor Coolant Pump step 10.
BANK
FUNDAMENTAL
K/A # APE 015/17 2.1.23: RCP Malfunctions: Ability to perform specific system and integrated plant procedures during all modes of plant operation.
EXPLANATION
The RCP Motor Temperature has exceeded the limit of 145°C. This requires the reactor to be shut down and the RCP tripped within 8 Hours.

a. Incorrect - RCP Lower bearing temperature is elevated but has not exceeded the trip setpoint of 225°F. (Motor Bearing Temperature is limited to 200°F). Additionally, the Plant is not analyzed/licensed to operate with less than 4 RCPs. Tech Specs require Mode 3 within 6 hours with less than 4 RCP loops.
b. Correct
c. Incorrect - RCP Lower bearing temperature is elevated but has not exceeded the trip setpoint of 225°F. (Motor Bearing Temperature is limited to 200°F). An Immediate trip is not required for the RCP Motor Temperature.
d. Incorrect - RCP Lower bearing temperature is elevated but has not exceeded the trip setpoint of 225°F. (Motor Bearing Temperature is limited to 200°F). An Immediate trip is not required for the RCP Motor Temperature. The Plant is not analyzed/licensed to operate with less than 4 RCPs.

QUESTION # 005

Given the following:

- The Unit 2 Reactor Coolant System (RCS) is in mid-loop condition.
- The running Residual Heat Removal (RHR) pump shows fluctuating amps and flows.

Which of the following statements is correct regarding the standby RHR pump?

The standby RHR Pump should…

a. NOT be immediately started because a loss of both trains of RHR could result due to air entrainment.

b. be immediately started because following a loss of RHR flow an RCS pressurization may occur precluding gravity feed makeup.

c. be immediately started because under certain loss of RHR conditions core uncovery or voiding may occur within 15 to 20 minutes.

d. NOT be immediately started because starting an idle RHR pump under these current conditions could result in reducing reactor shutdown margin.

ANSWER:
a.
REFERENCE:
2-OHP-4022-017-001, LOSS OF RHR COOLING
Proposed References to be provided to applicants during examination: None
MODIFIED
FUNDAMENTAL
K/A: 025.AK2.02: Loss of RHR System: Knowledge of the operational implications of the following concepts as they apply to Loss of Residual Heat Removal System: LPI or Decay Heat Removal/RHR pumps.
EXPLANATION:
a. Correct. The AOP requires that once indications of cavitation are experienced, both RHR pumps are placed in PTL. Starting the other RHR pump could transfer the problem to the other pump leading to a complete loss of the RHR system.
b. Incorrect: Plausible because gravity makeup is a required action but starting the RHR pump is not an immediate requirement.
c. Incorrect. While plausible that core uncovery or voiding could occur in a relatively short period of time, the RHR pump should not be immediately started in this plant condition.
d. Incorrect. Although the pump should not be started, it is incorrect that SDM would be affected in this condition since it would be already verified procedurally to meet TS plant conditions. Plausible since SDM is a concern and RHR flow helps ensure proper mixing and SDM.

QUESTION # 006

Given the following plant conditions:

- A LOCA has occurred.
- Safety Injection has failed to actuate.
- The crew is performing 2-OHP-4023-E-0, Reactor Trip or Safety Injection.
- RCS pressure is 100 psig and lowering.
- Containment pressure is 5.5 psig and rising.
- The crew is attempting to initiate ECCS flow.

Which of the following describes the operation of RCPs for this event?

a. Maintain RCPs running to provide core cooling until SI is actuated.

b. Maintain RCPs running to prevent phase separation of RCS liquid.

c. Trip all RCPs to minimize mass flow out of the RCS break.

d. Trip all RCPs to prevent damage due to loss of cooling water flow.

ANSWER:
d.
REFERENCE:
2-OHP-4023-E-0, FOP Item 1 (Including PSBD)
Proposed References to be provided to applicants during examination: None
BANK
HIGHER
K/A: 026.AK3.03: Loss of Component Cooling Water: Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: Guidance actions contained in EOP for Loss of CCW.
EXPLANATION:

a. Incorrect: Plausible because RCP Trip criteria for Westinghouse SBLOCA requires SI or Charging Pumps running to allow trip of RCPs.
b. Incorrect: RCPs will be tripped, but plausible because the Westinghouse analysis for RCP trip on SBLOCA indicates that phase separation is a concern if RCPs are not tripped in a timely manner, and are subsequently tripped later in the event due to loss of power or other reason.
c. Incorrect: Correct operation of pumps, but a LBLOCA is in progress. SBLOCA analysis is concerned with mass being pumped out of the break, consistent with (b.) above.
d. Correct: Phase B has occurred and CCW to RCPs is lost. RCPs must be stopped to prevent running with no cooling water. EOP Basis: Item #1: RCP Trip Criteria: RCPs must also be stopped upon actuation of a Phase B isolation due to loss of CS cooling water. Continued pump operation without cooling water will result in pump damage.

Question # 007

Unit 1 is operating at 100% power with the following conditions:

- Pressurizer PRESS CTRL SELECTOR switch is in the Channel 1-2 position
- 1-NPP-153, Channel 3 pressurizer pressure failed high four minutes ago
- 1-RU-27, PRZ Pressure Controller has just failed to 100%

How will the failure of the pressurizer pressure master control to 100% demand affect pressurizer pressure?(Assume NO operator actions)

a. No PORVs will open. Pressurizer heaters will energize. Pressure will rise to the reactor trip setpoint.

b. PORV NRV-152 remains CLOSED and NRV-153 and 151 will OPEN. Pressure will lower to the backup heater setpoint. Pressurizer heaters will energize.

c. Pressurizer sprays will open. PORV NRV-152 will OPEN and NRV-153 and 151 will remain CLOSED. Pressure will lower to the reactor trip setpoint.

d. Pressurizer sprays will open. No PORVs will open. Pressure will lower to the reactor trip setpoint.

ANSWER:
d.
REFERENCE: SOD-00202-001 & SOD-202-002.
None Provided
Lesson Plan/Objective:RO-C-00202\#6, 15, & 16
NRCAUDIT07-0978 Vision #40279, - NRC EXAM 2012-45
FUNDAMENTAL
K/A: 027.AA1.01: Pressurizer Pressure Control System Malfunction: Ability to operate and/or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: PZR Heaters, Sprays, and PORVS
EXPLANATION:

a. Incorrect: This is the response for the Controlling Channel failing High or the controller failing Low.
b. Incorrect: NRV-153 & 151 have arming signals from Channel 3 but not the open signal from Channel 2. Heaters will not energize since RU-27 is failed high.
c. Incorrect: NRV-152 is Not armed (Channel 4). This would be correct if Channel 3 armed NRV-152.
d. CORRECT: The indications given represent a failure high of 2-RU-27,PRZ Press Control. This will cause the spray valves to open, the high pressure alarm, and actual pressure to lower. The pressure master controls all heaters, pressurizer spray and PORV NRV-152 & but it is not armed (From Channel 4). With the RU 27 Demand at 100% the signal is sent to Open the Sprays fully (and PORV NRV-152 except it is not armed). This will result in Lowering PRZ Pressure. The heaters will not energize since the Signal from RU-27 remains high.

QUESTION # 008

Unit 2 is at full power when the following events occur:

- Both main feed pumps trip
- The RO attempted a Manual Reactor Trip
- Reactor power is approximately 98%
- RCS Tavg is rising
- All turbine stop valve closed status lights are NOT LIT.
- Main turbine load is 1120 MWe
- Rods are inserting at 72 steps per minute

Which of the following statements is the EOP basis for immediately tripping the turbine for this event?

a. Maintain or extend steam generator inventory.

b. Place steam dumps in service for additional heat removal.

c. Prevent turbine overspeed when the main generator trips.

d. Prevent an uncontrolled cooldown and positive reactivity addition.

ANSWER:
a.
REFERENCE:
OHP-4023-FR-S. 1, Response to Nuclear Power Generation/ATWS & associated ERG basis
LESSON PLAN/OBJ: RO-C-EOP04-E15
Proposed references to be provided to applicants during examination: None.
NRCAUDIT07-0361 Vision #39664
BANK
FUNDAMENTAL
K/A: 029.EA2.05: ATWS: Ability to determine or interpret the following as they apply to a ATWS: System component valve position indications.
EXPLANATION:

a. Correct - If the turbine is tripped within 30 seconds for the loss of feed ATWS, RCS pressure transient, although severe, leads to acceptable results.
b. Incorrect - The basis in the EOPs is to maintain or extend SC inventory Plausible: may believe steam dumps will yield additional heat removal.
c. Incorrect - The basis in the EOPs is to maintain or extend SC inventory Plausible: concern for the operation of the turbine.
d. Incorrect - The basis in the EOPs is to maintain or extend SC inventory Plausible: this is the reason in E-O for tripping the turbine.

QUESTION # 009

A SGTR event occurred and the operators just completed the initial cooldown per E-3, “Steam Generator Tube Rupture,” with the RCPs running. Ruptured NR SG level reached 70%.

If offsite power had been lost at the beginning of the event, the ruptured SG NR level would be _____ than 70% because the cooldown with loss of offsite power would _____.

a. less; take longer due to a larger RCS ΔT

b. less; occur faster due to the target temperature being higher

c. greater; occur faster due to the target temperature being higher

d. greater; take longer due to the increased loop transport time

ANSWER:
d.
REFERENCE:
None Provided
Proposed References to be provided to applicants during examination: None
MODIFIED (Q# 3650)
HIGHER
K/A: 038.2.2.44: Steam Gen. Tube Rupture: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.
EXPLANATION:
a. Incorrect. The SG NR level would be higher.
b. Incorrect. The cooldown would be slower.
c. Incorrect. The cooldown would be slower.
d. Correct.

QUESTION # 010

Given the following conditions on Unit 2:

- Steam Gen 1/2/3/4 SF>FWF Flow Mismatch Alarms - LIT.
- Reactor Coolant System T_{avg} is 574°F and rising.
- Rods are stepping in.
- Main Steam flows are 3.6 x 10^6 lbm/hr and stable.
- Main Feedwater (FW) flows are 2.1 x 10^6 lbm/hr and rising.

Which of the following describes the cause and required action to be taken for the above conditions?

a. A Steam Line Break exists. Perform a Reactor Trip and Main Steamline Isolation.

b. UPC-101, Bypass Steam Header Pressure has failed HIGH. Place Steam Dump control selector switches in OFF.

c. A Feed Line Break exists. Perform a Reactor Trip and Main Feedwater Isolation.

d. MPC-253, Turbine First Stage Impulse Pressure has failed LOW. Perform actions for a failed Turbine First Stage Impulse Pressure transmitter.

ANSWER:
c.
REFERENCE:
Bank Question #3611
Proposed References to be provided to applicants during examination: None
MODIFIED
HIGHER
K/A: 054.AK1.01: Loss of Main Feedwater: Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): MFW line break depressurizes the S/G (similar to a steam line break).
EXPLANATION:
a. Incorrect. If a steam break existed RCS temperature would be lowering. Plausible as the alarms are associated with feed and well as steam.
b. Incorrect. Plausible as UPC-101 is an input to steam dump (in the Steam Pressure Mode). However, in this condition, (higher) power level, Tavg Mode is used.
c. Correct. Based on the conditions presented a FW break has occurred. Steam flow is indicating at the 97 to 98% power. A Reactor Trip and Steam Line isolation is warranted.
d. Incorrect. If MPC-253 failed low the alarms would come in (Steam flow higher than calculated power) but SF/FWF mismatch would not be this high. Plausible as this failure would drive some of the alarms being received.

QUESTION # 011

Given the following Unit 1 plant conditions:

- 1-OHP-4023-ECA-0-0, Loss of All AC Power, is in effect.
- Efforts to restore AC power have NOT been successful.
- Reactor Coolant Pump seal leakage has caused steam void formation in the reactor vessel head and in the Steam Generator (SG) U-tubes.

If AC power is NOT restored over the next hour, natural circulation flow will...

a. stop, because the steam in the vessel head blocks the hot leg inlet.

b. stop, because the SG U-tubes are steam bound preventing fluid flow.

c. continue at the same flow rate, since the rate of heat generation is the same.

d. continue at a lower flow rate, because the steam in the vessel head transfers more heat from the core.

Answer:
b.
REFERENCES:
RO-C-EOP14 (Pg. 30-31, Section F.4)
RO28 AUDIT, BYRON 2010 Exam – 049.
Proposed References to be provided to applicants during examination: None
BANK (3851)
HIGHER
K/A: 055.EK1.02: Station Blackout: Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural circulation cooling.
EXPLANATION:

a. INCORRECT. The steam formation in the vessel HEAD will not block the NC flow, but the U-Tube voiding will impede natural circulation.
b. CORRECT. The steam formation in the vessel HEAD will not interfere with NC flow. Steam in the SG U-tubes will stop NC, since there is little density difference in the steam on the SG tubes' hot side compared to cold side. The rate of heat generation will be maintained, but will cause a heatup because of the lower mass flow rate.
c. INCORRECT. The steam formation in the vessel HEAD will not interfere with NC flow, but the U-tube voiding will impede natural circulation.
d. INCORRECT. The steam formation in the vessel HEAD will not interfere with NC flow, but the U-Tube voiding will impede natural circulation. Plausible since vessel head cooling is a concern in natural circulation.

QUESTION # 012

Unit 2 operators are performing 2-OHP-4023-ES-0.2, Natural Circulation Cooldown.

- 2-OHP-4023-ES-0.2, Natural Circulation Cooldown, has been entered because offsite power had been lost.
- The EDGs started and energized the AC emergency buses.
- The CRDM cooling fans cannot be manually loaded onto the AC emergency buses.
- Condensate storage tank water inventory is adequate for the cooldown.

Which of the following describes how the inoperability of the CRDM fans affects the cooldown and depressurization?

a. The total upper head area cooldown rate will be less, so greater subcooling must be maintained.

b. It has no effect because the amount of RCS heat removed by running the CRDM fans is insignificant compared to the heat removed by steaming the secondary plant.

c. Transition to 2-OHP-4023-ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel, will be required because cooldown and depressurization will cause formation of a void in the upper head area.

d. Less subcooling should be maintained to enhance the cooldown of the upper head area, which reduces the formation of voids.

ANSWER:
a.
REFERENCES:
2-OHP-4023-ES-0.2, Natural Circulation Cooldown, (Steps 5 & 14 and Background)
Cook NRC Exam 2002-023-2
Proposed References to be provided to applicants during examination: None
BANK #3541
FUNDAMENTAL
K/A: 056.EK3.02: Loss of Off-site Power: Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Actions contained in EOP for loss of offsite power.
EXPLANATION:
a. CORRECT. 2-OHP-4023-ES-0-2, Natural Circulation Cooldown requires an RCS subcooling of 220°F in the event CRDM fans are NOT running to preclude void formation in the upper head. Normal natural circulation RCS subcooling is 90°F.
b. INCORRECT. Does NOT address the issue of a reduced upper head cooldown rate.
c. INCORRECT. Transition to 2-OHP-4023-ES-0-3, Natural Circulation Cooldown with Steam Void in Vessel, is NOT required given conditions which do NOT warrant an increased cooldown rate on natural circulation (i.e., CST inventory adequate for cooldown).
d. INCORRECT. The absence of the CRDM fans requires a greater RCS subcooling.

QUESTION # 013

Given the following plant conditions on Unit 2:

- The unit was operating at 100%.
- A loss of 250 VDC Train A occurred.

Ten (10) seconds after the loss of Train "A" 250 VDC, CRID 1 and 2 distribution buses will be…

a. automatically energized from CRP-3 lighting.

b. energized from their respective 600 VAC alternate supply.

c. de-energized, but may be manually aligned to CRP-3 lighting.

d. de-energized due to a concurrent loss of Train "A" AC electrical buses.

ANSWER:
b.
REFERENCES:
2-OHP-4024-220, Drop 29
RO-C-AOP-D13.
Proposed References to be provided to applicants during examination: None
BANK #2327
FUNDAMENTAL
K/A: 058.AA1.03: Loss of DC Power: Ability to operate and / or monitor the following as they apply to the Loss of DC Power: Vital and battery bus components.
EXPLANATION:
a. INCORRECT. The transfer is to 600 VAC vital bus.
b. CORRECT. Auto transfer will occur to the vital bus on a loss of the normal 250 VDC feed to the inverter.
c. INCORRECT. The transfer is in Automatic.
d. INCORRECT. The transfer is in Automatic. The transfer is to 600 VAC vital bus.

QUESTION # 014

Given the following conditions:

- Unit 1 is at 100% power.
- The crew has entered 1-OHP-4022-019-001, ESW System Loss/Rupture, due to a large leak just downstream of the U1 East ESW Pump Discharge Valve, WMO-701.
- The control room crew has closed WMO-707, Unit 2 ESW Header Crosstie, as directed by the procedure.
- The 1E ESW pump is NOT running.

Which of the following list of components have completely lost ESW flow capability due to these actions?

a. DG1CD Cooling Water Supply
East MDAFP Emergency Suction
North Control Room Air Conditioning ESW Supply
East CCW Hx Cooling Water Supply

b. DG1AB Cooling Water Supply
West MDAFP Emergency Suction
South Control Room Air Conditioning ESW Supply
West CCW Hx Cooling Water Supply

c. West MDAFP Emergency Suction
East MDAFP Emergency Suction
North Control Room Air Conditioning ESW Supply
East CCW Hx Cooling Water Supply

d. TDAFP Emergency Suction
West MDAFP Emergency Suction
South Control Room Air Conditioning ESW Supply
West CCW Hx Cooling Water Supply

ANSWER:
c.
REFERENCES:
SOD-01900-001
LESSON PLAN/OBJ: RO-C-01900/#2
Proposed References to be provided to applicants during examination: None
BANK 2007-0406 Vision #39107
FUNDAMENTAL
K/A: 062.AA2.01: Loss of Nuclear Svc Water: Ability to determine & Interpret - Location of Leak
EXPLANATION:
a. Incorrect - DG1CD normal supply is lost, but the alternate supply is still available.
b. Incorrect - DG1AB alternate lost but the normal supply is still available. N CRAC and E CCW Hx are affected.
c. Correct - East and West MDAFPs, N CRAC, and E CCW Hx, are supplied by the 1E ESW Pump Header.
d. Incorrect - TDAFP is supplied by opposite train. N CRAC and E CCW Hx are affected.

QUESTION # 015

Unit 2 was operating at full power when annunciator "100 PSI CONTROL AIR PRESSURE LOW" illuminated.

- The crew has entered 2-OHP-4022-064-001, Control Air Malfunction Response.
- Indicator XPI-100 reads 78 psig and slowly lowering.

Which of the following actions are now required?

a. Verify compliance with Technical Specifications.

b. Transition to 2-OHP-4022-064-002, Loss of Control Air Recovery.

c. Immediately trip the reactor and go to 2-OHP-4023-E-0, Reactor Trip or Safety Injection.

d. Verify the control air compressor was started and then check the line pressure in the outlet line of the dry control air receiver.

ANSWER:
c.
REFERENCE:
2-OHP-4024-222, Drop 23
2-OHP-4022-064-001, Control Air Malfunction.
Proposed References to be provided to applicants during examination: None
NEW
FUNDAMENTAL
K/A: 065.2.4.31: Loss of Instrument Air: Knowledge of annunciator alarms, indications, or response procedures.
EXPLANATION:
a. INCORRECT. This action is required if the control air compressor has not started and assumes that air header pressure remained greater than 80 psig.
b. INCORRECT. This action is required if it was necessary trip the plant as directed by 4022-064-001 and stabilization /cooldown is required.
c. CORRECT. Per ARP 2-OHP-4024-222 Drop 23, “If at ANY time control air pressure, using any reliable indication lowers to less than or equal to 80 psig, THEN immediately trip the reactor and go to 2-OHP-4023-E-0, Reactor Trip or Safety Injection.”
d. INCORRECT. This action is required if the header pressure continues to decrease and assumes that air header pressure remained greater than 80 psig.

QUESTION # 016

Given the following conditions:

- 1-OHP-4023-ECA-1.1, Loss of Emergency Coolant Recirculation, has been entered
- Refueling Water Storage Tank (RWST) level is currently 10.0%

Which of the following pumps should be stopped?

a. CTS and SI pumps.

b. CTS pumps ONLY.

c. RHR and SI pumps.

d. RHR and CTS pumps.

Answer:
d.
REFERENCE:
1-OHP-4023-ECA-1.1, Loss of Emergency Coolant Recirculation (Steps 25 and 26 on page 27).
Proposed References to be provided to applicants during examination: None
NEW
FUNDAMENTAL
K/A: W/E11.EK1.1: Loss of Emergency Coolant Recirculation: Knowledge of the operational implications of the following concepts as they apply to the (Loss of Emergency Coolant Recirculation): Components, capacity, and function of emergency systems.
EXPLANATION:
a. INCORRECT. While CTS pumps are required to be stopped when RWST level is <11%, SI pumps are not required to be stopped until RWST level is <7%.
b. INCORRECT. While CTS pumps are required to be stopped when RWST level is <11%, RHR pumps are also required to be stopped until RWST level is <11%.
c. INCORRECT. While RHR pumps are required to be stopped when RWST level is <11%, SI pumps are not required to be stopped until RWST level is <7%.
d. CORRECT. Per step 25, both RHR and CTS pumps are required to be stopped when RWST level is <11%.

QUESTION # 017

Given the following plant conditions:

- A Reactor Trip and Safety Injection have occurred.
- While implementing 2-OHP-4023-E-0, “Reactor Trip or Safety Injection,” Step 10, it is determined that AFW flow can NOT be established.
- All SG NR levels are off-scale low.
- All SG WR levels are 58% and lowering.
- The crew has just entered 2-OHP-4023-FR-H.1, “Response to Loss of Secondary Heat Sink.”
- RCS Pressure is 175 psig and stable.
- Intact SG pressures are 475 psig and trending down.

Which of the following describes the plant conditions and action required? Steam Generators are…

a. NOT required to provide secondary heat sink. Return to 2-OHP-4023-E-0, “Reactor Trip or Safety Injection.”

b. NOT required to provide secondary heat sink. Go to 2-OHP-4023-ES-0.0, “Rediagnosis.”

c. required to provide secondary heat sink. Remain in 2-OHP-4023-FR-H.1, “Response to Loss of Secondary Heat Sink,” to establish AFW Flow.

d. required to provide secondary heat sink. Initiate Bleed and Feed per 2-OHP-4023-FR-H.1, “Response to Loss of Secondary Heat Sink.”

ANSWER:
a.
REFERENCES:
2-OHP-4023-E-0
2-OHP-4023-FR-H.1
Proposed References to be provided to applicants during examination: None
BANK
HIGHER
K/A : W/E05.EK2.2: Inadequate Heat Transfer - Loss of Secondary Heat Sink: Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following: Facility’s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.
EXPLANATION:
a. CORRECT. Secondary heat sink is not required if SGs are at a higher pressure than the RCS. They act as a heat source. Crew returns to E-0.
b. INCORRECT. If SGs are NOT required for heat sink, the crew will return to E-0.
c. INCORRECT. SGs are NOT required, because RCS pressure is below SG pressure
d. INCORRECT. Secondary heat sink is not required if SGs are at a higher pressure than the RCS. They act as a heat source.

QUESTION # 018

Given the following conditions:

- Unit 1 is at 75% power
- UNIT OR SYSTEM FREQ HIGH OR LOW alarm is LIT
- Grid problems have resulted in frequency dropping to 58.9 Hz

Which of the following represents the proper course of action?

a. Reduce generator load until frequency is restored to at least 59.5 Hz.

b. Manually trip the reactor after 15 minutes if frequency remains below 59.0 Hz.

c. Transfer the safeguards busses to their Emergency Diesel Generators and maintain current system load.

d. Reduce power to approximately 50 MWe (to supply in-house loads) within 30 minutes, then open the generator output breakers.

ANSWER:
d.
REFERENCE:
2-OHP-4024-121, Drop 03.
Proposed References to be provided to applicants during examination: None
BANK #3279
FUNDAMENTAL
K/A: 077.AK3.02: Generator Voltage and Electric Grid Disturbances: Knowledge of the reasons for the following responses as they apply to Generator Voltage and Electric Grid Disturbances: Reactor and turbine trip criteria.
EXPLANATION:
a. INCORRECT. Unlimited operating time is permitted as long as frequency is greater than 59 Hz. Below 59 Hz power must be reduced and unloaded in 30 minutes.
b. INCORRECT. Rx Trip is only required if Frequency is < 58.2 Hz.
c. INCORRECT. The Safety Busses are not the only concern, the non-safety loads, and generator/grid stability are concerns at low frequencies.
d. CORRECT. Unlimited operating time is permitted as long as frequency is greater than 59 Hz. Maximum operating period is 30 minutes when frequency is less than 59 Hz but greater than 58.2 Hz.

QUESTION # 019

During a power escalation, Control Bank C - Group 1 Rod B-8 dropped. At the time the event occurred, reactor power was 48% and Rod B-8 was fully withdrawn. While recovering the rod per 1-OHP-4022-012-005, Attachment B, “Recovery By Positioning Single Rod,” a Rod Control Urgent Failure alarm occurred.

Which of the following explains why the alarm actuated?

a. A Multiplex Error has occurred in the Power Cabinet.

b. An Oscillator Failure has occurred in the Logic Cabinet.

c. A printed circuit card has been jarred loose from the Power Cabinet.

d. All Control Bank C - Group 2 rod lift coil disconnect switches are open.

ANSWER:
d.
REFERENCE:
1-OHP-4022-012-005, Attachment B, Recovery By Positioning Single Rod
1-OHP-4024-110, Annunciator #110 Response: Flux Rod, Drop 26 Rod Control Urgent Failure.
Proposed References to be provided to applicants during examination: None
MODIFIED (#3306)
HIGHER
K/A: 003.2.1.27: Dropped Control Rod: Knowledge of system purpose and/or function.
EXPLANATION:

a. INCORRECT. While this could be an actual cause of an Urgent Failure alarm, the AOP recovery requirements verified previously ensured that no other causes existed prior to going to Attachment A.
b. INCORRECT. While this could be an actual cause of an Urgent Failure alarm, the AOP recovery requirements verified previously ensured that no other causes existed prior to going to Attachment A.
c. INCORRECT. While this could be an actual cause of an Urgent Failure alarm, the AOP recovery requirements verified previously that ensured no other causes existed prior to going to Attachment A.
d. CORRECT

QUESTION # 020

Unit 1 was operating at full power for several weeks with a symmetrical axial power distribution that peaked at the core mid-plane. Reactor power was then reduced to 50% by inadvertently opening the emergency boration valve, QMO-410, while maintaining control rods fully withdrawn.

During this power reduction, the axial power distribution will…

a. shift toward the top of the core.

b. shift toward the bottom of the core.

c. remain symmetrical and peaked at the core mid-plane.

d. peak at the top and bottom of the core (mid-plane depressed).

ANSWER:
a.
REFERENCE:
None Provided
Proposed References to be provided to applicants during examination: None
MODIFIED #1311
HIGHER
K/A: 024.AK1.02: Emergency Boration: Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: Relationship between boron addition and reactor power.
EXPLANATION:

a. CORRECT. Xenon production will begin to exceed its depletion as power decreases, especially at the core mid-plane, and reactor power will shift to those areas where Xenon production is less. Since rods are being kept at the top of the core, power will shift there.
b. INCORRECT. Xenon production will begin to exceed its depletion as power decreases, especially at the core mid-plane, and reactor power will shift to those areas where Xenon production is less. Since rods are being kept at the top of the core, power will shift there.
c. INCORRECT. Xenon production will begin to exceed its depletion as power decreases, especially at the core mid-plane, and reactor power will shift to those areas where Xenon production is less. Since rods are being kept at the top of the core, power will shift there.
d. INCORRECT. Xenon production will begin to exceed its depletion as power decreases, especially at the core mid-plane, and reactor power will shift to those areas where Xenon production is less. Since rods are being kept at the top of the core, power will shift there.

QUESTION # 021

Given the following plant conditions:

- A Unit 1 startup is in progress
- The reactor is critical in the source range
- N41 Power Range channel is removed from service (all bistables placed in the trip condition) for surveillance testing
- A loss of power to the CRID 2 bus occurs

Which of the following actions will occur?

a. Reactor trips and BOTH source range channels are de-energized.

b. The reactor is critical and BOTH source range channels are de-energized.

c. Reactor trips and N32 Source Range channel is de-energized. N31 Source Range channel is still in operation.

d. The reactor is critical and N32 Source Range channel is de-energized. N31 Source Range channel is still in operation.

ANSWER:
a.
REFERENCE:
None provided
BANK
HIGHER
K/A Reference: 000032 K2.01 Loss of Source Range NI: Knowledge of the interrelations between the Loss of Source Range Nuclear Instrumentation and the following: Power supplies, including proper switch positions.
EXPLANATION:
a. CORRECT: A loss of CRID 2 causes a loss of power to N42. This loss also causes a loss of power to RPS channel 2. This will cause a trip condition for Power range trips for channel 2. Since N41 is already removed from service its bistable are in the tripped condition. This meets the 2/4 logic to cause a reactor trip. Additionally the signal for 2/4 power range channels above P-10 will cause the SR channels to deenergize.
b. INCORRECT: Reactor trips on a number of PR/SR trip setpoints.
c. INCORRECT: P-10 will be met, both SRs will de energize.
d. INCORRECT: Reactor trips on a number of PR/SR trip setpoints. Also, P-10 will turn off both SRs.

QUESTION # 022

Given the following conditions on Unit 2:

- Reactor status: Tripped from 100% power
- Reactor trip breakers: OPEN
- One turbine stop valve: OPEN
- Auto Stop oil pressure Zero
- Circ Water pumps: 2 running, 2 tripped off
- Condenser vacuum: 16.0 inches of Hg vacuum
- RCS T_{avg}: 550°F

The Steam Dump System…

a. IS dumping steam to the condensers with 2 Circ Water pumps running.

b. IS NOT dumping steam to the condensers because of a blocking signal.

c. IS dumping steam to the condensers with group 1, 2 and 3 trip open solenoid bistables energized.

d. IS NOT dumping steam to the condensers because it is not required to reduce temperature at the conditions given.

ANSWER:
b.
REFERENCE:
SOD-05200-001
None Provided to the candidates
MODIFIED
FUNDAMENTAL
K/A: 000051K3.01: Loss of Condenser Vacuum: Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum.
EXPLANATION:
a. INCORRECT - The steam dump control circuit would be energized except C-9 is in effect
b. CORRECT – The steam dump interlock is blocked at C-9 (3/3 sections $\geq$20.6” Hg vacuum)
c. INCORRECT – The steam dump control circuit would be energized except C-9 is in effect
d. INCORRECT – The steam dumps maintain RCS T_{avg} at 547^{o}F

QUESTION # 023

Given the following plant conditions:

- A release of the #7 Gas Decay Tank is in progress.
- The Auxiliary Building Exhaust Fan status is as follows:
    - 1-HV-AX-1 Running
    - 1-HV-AX-2 Off
    - 2-HV-AX-1 Running
    - 2-HV-AX-2 Running

Auxiliary Building Exhaust Fan 1-HV-AX-1 Trips.

Which of the following describes your response concerning the release due to 1-HV-AX-1 tripping?

a. Notify the WDS operator to VERIFY that RRV-306, Waste Gas Decay Tank Release Valve has AUTOMATICALLY tripped closed.

b. Notify Unit 2 to monitor the release since it is all going out the Unit 2 Vent Stack through the 1-HV-AX-VD-3, Aux Building Ventilation Exhaust Plenum's Crosstie Damper.

c. Instruct the Unit 1 operator to close 1-HV-AX-VD-3, Aux Building Ventilation Exhaust Plenum's Crosstie Damper to direct the release through the Unit 2 Vent stack.

d. Notify the WDS operator that he must MANUALLY close RRV-306, Waste Gas Decay Tank Release Valve since dilution flow has been reduced.

ANSWER:
a.
REFERENCE:
12-OHP-4021-023-002, Release Of Radioactive Waste From Gas Decay Tanks Att. 2 Step 4.10, RO-C-02300 & SD-02300 Waste Gas System
BANK (Master Bank AS07-17)
FUNDAMENTAL
K/A: 000060A102: Accidental Gaseous Radwaste Rel: Ability to operate and / or monitor the following as they apply to the Accidental Gaseous Radwaste: Ventilation system
EXPLANATION:
a. CORRECT. Loss of all Unit 1 exhaust fans will cause a closure of RRV-306.
b. INCORRECT. 1-HV-AX-VD-3, Aux Building Ventilation Exhaust Plenum's Crosstie Damper is required to be closed while a GDT release is in progress. The GDTs discharge to the Unit 1 Vent Stack.
c. INCORRECT. 1-HV-AX-VD-3, Aux Building Ventilation Exhaust Plenum's Crosstie Damper is required to be closed while a GDT release is in progress. The GDTs discharge to the Unit 1 Vent Stack.
d. INCORRECT. The RRV-306 is interlocked to Automatically close on a loss of Unit 1 exhaust fans.

QUESTION # 024

Given the following:

- EDG AB and EDG CD are in standby
- A non-licensed operator has confirmed that a fire exists in the hallway between the EDG rooms and has resulted in a CO_2 discharge into EDG CD room

What is the status of EDG CD?

a. ONLY the CO_2 Actuation signal has to be reset to normally start EDG CD.

b. EDG CD Lockout Relay 87X-DGCD has to be reset to normally start EDG CD.

c. EDG CD will start on a station blackout signal and sequence on loads normally.

d. EDG CD 250VDC Diesel Generator CD Starting Solenoid has to be re-energized.

ANSWER:
b.
REFERENCE:
12-OHP-4025-001-002 FIRE RESPONSE GUIDELINES
RO-C-03200, Emergency Diesel Generator
NEW
FUNDAMENTAL
K/A Reference: 000067A2.14: Plant Fire On-site: Ability to determine and interpret the following as they apply to the Plant Fire on Site: Equipment that will be affected by fire suppression activities in each zone
EXPLANATION:
a. Incorrect: The CO_2 actuation signal trips the 87X relay
b. Correct:
c. Incorrect: The CO_2 actuation signal feeds into the EDG trip circuit
d. Incorrect: The 250VDC solenoid does not de-energize on the CO_2 actuation

QUESTION # 025

Given the following events and conditions:

- Unit 1 was operating at 85% power following a transient.
- A Control Bank D rod was found to be misaligned.
- The misaligned rod is at 200 steps
- The remaining Control Bank D rods are at 220 steps.
- Troubleshooting by MTI determined that the misaligned control rod will move in the inward direction but will NOT move outward.
- The misaligned rod was found to have an electrical problem and was declared INOPERABLE.

Which of the following statements describes the effect (if any) that the inoperable rod will have on shutdown margin (SDM) prior to the transient?

a. SDM does NOT change because the stuck rod is trippable.

b. SDM does NOT change because the rod is NOT trippable.

c. SDM lowers by the worth of the misaligned rod.

d. SDM rises by the worth of the misaligned rod.

ANSWER:
a.
REFERENCE: RO-C-GF10-E26, RO-C-GF2
OBJECTIVE: RO-C-AOP0240412-E1
1-OHP-4022-012-005, Dropped Or Misaligned Rod.
Bank: NRCAUDIT07-0328 Vision #39631
FUNDAMENTAL
K/A Reference: 000005 G 2.1.37: Inoperable/Stuck Control Rod Knowledge of procedures, guidelines, or limitations associated with reactivity management.
EXPLANATION:
a. Correct -The problem is electrical and rods are above the RIL, therefore SDM is unaffected.
b. Incorrect - If the rod were NOT trippable, SDM would lower.
c. Incorrect - SDM has NOT changed. If candidate believes the rod is NOT trippable, SDM lowers for a stuck rod.
d. Incorrect - SDM has NOT changed. If candidate assumes that the rod is NOT trippable and that SDM raises (vice lowers) when determining SDM for stuck rods.

QUESTION # 026

Unit 1 reactor has been manually tripped due to a secondary system malfunction. 1-OHP-4023-E-0 has been performed and a transition made to 1-OHP-4023-ES-0.1, “Reactor Trip Response.” The STA has identified a YELLOW path on the Heat Sink Status Tree for steam generator pressure.

The crew has entered 1-OHP-4023-FR-H.2, “Response to Steam Generator Overpressure.”

Given the following plant conditions:

- Steam Generator #12 Pressure: 1100 psig
- Steam Generator #12 NR Level: 72%

Which of the following describes the component(s) that is (are) used to reduce SG pressure in accordance with FR-H.2?

a. Dump steam using 1-DRV-407, SG Stop Valves Drain Valve.

b. Dump steam using 1-MRV-221 and/or 1-MRV-222, SG Stop Valve Dump Valves.

c. Initiate SG Blowdown using 1-DRV-321 and 1-DRV-322 SG, Blowdown Flow Control Valves.

d. Dump steam using 1-MRV-223, SG PORV or 1-MCM-221, Turbine Driven AFW Steam Supply.

ANSWER:
d.
REFERENCE:
RO-C-EOP-11
BANK
HIGHER
K/A: W/E13: Steam Generator Over-pressure: Knowledge of the operational implications of the following concepts as they apply to the (Steam Generator Overpressure): Components, capacity, and function of emergency systems.
EXPLANATION:
a. INCORRECT. This valve is NOT used in FR-H.2 and would require the MSIV to be open (and tied to the other SGs)
b. INCORRECT. These valves are NOT used in FR-H.2 and the flow that would be available would be minimal.
c. INCORRECT. SG blowdown is an action that would be performed in FR-H.3. May confuse these actions since the indicated level in the SG is 72% and think this is the cause of the high pressure.
d. CORRECT. The SG pressure is relieved using the PORV or TDAFP Steam Supply valves.

QUESTION # 027

Chemistry had confirmed two leaking fuel rods on Unit 1 when a Small Break LOCA occurred 12 hours ago.

The following conditions exist on Unit 1:

- All Red and Orange Paths have been addressed.
- Containment pressure is 1.0 psig.
- Containment air temperature is 215°F.
- Lower Containment high range area monitors, (VRA-1310/1410) are reading 10 R/HR
- 01-OHP-4023-FR-Z.3, "Response to High Containment Radiation Level," has been entered.

In accordance with 01-OHP-4023-FR-Z.3, which of the following must be verified?

a. Containment Ventilation Isolation has occurred.

b. Control Room Ventilation System is in ISOLATE.

c. Both Containment Recirculation Fans (CEQ) are running.

d. Upper and Lower Containment Ventilation Fans (CUV/CLV) are running.

ANSWER:
a.
REFERENCE:
01-OHP-4023-FR-Z.3, Response to High Containment Radiation Level pg. 2
BANK
HIGHER
K/A Reference: W/E16 High Containment Radiation / 9 EK2.1, RO - Knowledge of the interrelations between the (High Containment Radiation) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features. (3.8)
EXPLANATION:
a. 01-OHP-4023-FR-Z.3 requires the crew to verify Containment Ventilation Isolation.
b. c, d - Incorrect - Control Room Ventilation is aligned during a SI but is not addressed in 01-OHP-4023-FR-Z.3.

QUESTION # 028

Given the following:

- Unit 2 is at 50% power with all controls in Automatic.
- A failure of turbine first stage pressure instrumentation caused rods to slowly withdraw.
- Rods continued to withdraw slowly when placed in Manual.

Assuming NO (further) operator actions, which of the following trips is designed to ensure DNB parameters are NOT exceeded for this transient?

a. Pressurizer High Level

b. Overpower-Delta Temperature

c. Overtemperature-Delta Temperature

d. Power Range High Flux (high setpoint)

ANSWER:
c.
REFERENCE:
1100-1, RPS/ESFAS Signals TRNS: TRNS, Transient and Accident Analysis
BANK
FUNDAMENTAL
K/A: 003K5.01: Reactor Coolant Pump Knowledge of the operational implications of the following concepts as they apply to the RCPS: The relationship between the RCPS flow rate and the nuclear reactor core operating parameters (quadrant power tilt, imbalance, DNB rate, local power density, difference in loop T-hot pressure)
EXPLANATION:
FSAR Chapter 14 Transient and accident analysis describes that OTΔT is provided to address a slow control rod withdrawal transient at lower power levels.

QUESTION # 029

Given that Unit 1 has experienced a turbine trip from 65% power without a reactor trip, the following conditions exist:

- The crew entered 1-OHP-4023-E-0, Reactor Trip or Safety Injection and has transitioned to 1-OHP-4023-FR-S-1, Response To Nuclear Power Generation/ATWS.
- SI has not actuated.
- The crew has successfully performed steps 1-4.
- You have been directed to perform step 5 “Initiate Emergency Boration of RCS.”
- You check CCPs – at least one running.
- You start both boric acid transfer pumps in FAST speed, and open 1-QMO-410, emergency boration to CCP suction valve.
- You check emergency boration flow and the reading is 36 GPM on 1-QFI-410.

Which of the following actions is correct?

a. Start a second CCP to raise flow.

b. Initiate SI to establish maximum borated water flow.

c. Align the RWST flow path with maximum charging flow.

d. Announce that Emergency Boration of the RCS has been successfully started.

ANSWER:
c.
Reference:
1-OHP-4023-FR-S-1 “Response To Nuclear Power Generation/ATWS
NEW
HIGHER
K/A: 004K6.17: Chemical and Volume Control: Knowledge of the effect of a loss or malfunction on the following CVCS components: Flow paths for emergency boration.
EXPLANATION:

a. INCORRECT – Emergency Boration flow is read on 1-QFI-410 which is the discharge flow of the boric acid pumps
b. INCORRECT - The procedure directs the operator to establish boric acid flow for shutdown. With all rods out cooldown should be minimized.
c. CORRECT – The RNO column directs that either the RWST (max charging flow) or normal boration (36 gpm) be aligned to increase flow.
d. INCORRECT – Emergency Boration through this flow path is required to be greater than 44 gpm

QUESTION # 030

Given the following plant conditions:

- A plant cooldown from Hot Standby to Cold Shutdown is in progress in accordance with OHP-4021-001-004.
- The RHR System was placed in operation per OHP-4021-017-002.
- Plant cooldown using the West Train of RHR is being controlled via operation of IRV-320, West RHR Hx Outlet Flow Control Valve, and IRV-311, RHR Heat Exchanger Bypass Flow Control Valve.
- CCW flow and temperature are stable.
- RHR flow is approximately 4500 gpm.

Which of the following methods is used to RAISE the cooldown rate as the RCS temperature LOWERS?

a. Throttling open both IRV-320 and IRV-311 to raise total RHR flow.

b. Throttling closed both IRV-320 and IRV-311 to lower total RHR flow.

c. Throttling open IRV-311 while throttling closed IRV-320, and maintaining total RHR flow constant.

d. Throttling open IRV-320 while throttling closed IRV-311, and maintaining total RHR flow constant.

ANSWER:
d.
REFERENCE:
2-OHP-4021-017-002, Placing in Service the Residual Heat Removal System
BANK
HIGHER
K/A Reference: 005A1.01: Residual Heat Removal: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: Heatup/cooldown rates
EXPLANATION:
a. INCORRECT. Action would raise total RHR flow above the 4500 gpm limit. RHR flow will take the path of least resistance (bypass line) rather than through upright tubes in the heat exchanger.
b. INCORRECT. Action would reduce total RHR flow and result in a lowering of the RCS cooldown rate.
c. INCORRECT. Action would result in constant RHR flow, however, more flow is bypassing the RHR heat exchanger, resulting in a lower RCS cooldown rate.
d. CORRECT. To raise the cooldown rate, more flow is required through the RHR heat exchanger. To maintain constant RHR flow, bypass flow must be reduced as flow through the heat exchanger is raised.

QUESTION # 031

The following plant conditions exist:

- Unit 2 is shutdown with the RCS filled and vented
- RCS temperature is 140°F
- RCS pressure is 55 PSIG
- Both RHR pumps are in operation using the East HX
- Pressure is being controlled by 2-QRV-301, Letdown Pressure Control Valve
- Letdown bypass 2-CS-338 is not in service
- LTOP and PORV are operational
- Pressurizer temperature is 303°F

Annunciators on Panel 206: RESIDUAL HEAT REMOVAL; WEST RHR PUMP, COMPT SUMP, LEVEL HIGH, Hi-2, & Hi-3 Alarms are ALL LIT

The operator in the field verifies there is water entering room from a leaking piping and the leakage is less than 150 gpm.

With no operator action, what will happen to the RCS pressure and why?

a. RCS pressure will lower because charging is in manual.

b. RCS pressure will remain the same because the pressurizer is still heating up.

c. RCS pressure will remain the same because charging will compensate for the leakage.

d. RCS pressure will raise because the pressurizer is still heating up and charging will compensate for the leakage.

ANSWER:
a.
REFERENCE:
2-OHP-4021-001-001, Plant Heatup from Cold Shutdown to Hot Standby
2-OHP-4021-002-001, Filling and Venting the Reactor Coolant System
2-OHP-4021-002-015, Filling and Venting the Reactor Coolant System with S/G Tubes Filled
2-OHP-4021-003-001, Letdown, Charging and Seal Water Operation
2-OHP-4021-017-001, Operation of the Residual Heat Removal System
2-OHP-4022-017-001, Loss of RHR Cooling
2-OHP-4024-206; Annunciator #206 Response: RESIDUAL HEAT REMOVAL
UFSAR Chapter 14.4.2.7
NEW
HIGHER
K/A Reference: 005 Residual Heat Removal A2.03, RO - Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Pressure transient protection during cold shutdown (3.5)
EXPLANATION:

a. CORRECT – charging will not change, RCS pressure will decrease
b. INCORRECT – the increase in pressurizer water temperature is not enough to maintain pressure
c. INCORRECT - charging is in manual
d. INCORRECT – the increase in pressurizer water temperature and charging flow are not enough to maintain pressure

QUESTION # 032

Given the following:

- RCS pressure is 1600 psig
- Reactor is tripped
- Turbine is tripped
- SI has initiated

Which valves respond and what is the correct response of the following valves to the SI signal?

	Valve Name	Valve Number	Response
a.	Charging Header Isolation Valves	QMO-200/201	No Response
	RWST Suction Header Valves	IMO-910/911	Opens
	BIT Inlet Valves	IMO 255/256	Opens
	CCP Emergency Leak-off Valves	QMO-225/226	Closes
	SI Pump Suction From RWST	IMO-261	Opens
b.	Charging Header Isolation Valves	QMO-200/201	Opens
	RWST Suction Header Valves	IMO-910/911	No Response
	BIT Inlet Valves	IMO 255/256	Closes
	CCP Emergency Leak-off Valves	QMO-225/226	Closes
	SI Pump Suction From RWST	IMO-261	Opens
c.	Charging Header Isolation Valves	QMO-200/201	Closes
	RWST Suction Header Valves	IMO-910/911	Opens
	BIT Inlet Valves	IMO 255/256	Opens
	CCP Emergency Leak-off Valves	QMO-225/226	Closes
	SI Pump Suction From RWST	IMO-261	No Response
d.	Charging Header Isolation Valves	QMO-200/201	Opens
	RWST Suction Header Valves	IMO-910/911	Opens
	BIT Inlet Valves	IMO 255/256	Opens
	CCP Emergency Leak-off Valves	QMO-225/226	No Response
	SI Pump Suction From RWST	IMO-261	Opens

ANSWER:
c.
REFERENCE:
Lesson Plan: RO-C-00800, Emergency Core Cooling System
NEW
FUNDAMENTAL
K/A # 006A3.08: Emergency Core Cooling: Ability to monitor automatic operation of the ECCS, including: Automatic transfer of ECCS flowpaths
EXPLANATION:
a. Incorrect QMO-200/201 Closes on SI signal, IMO-261 is already open
b. Incorrect IMO-910/911 Open on SI signal, IMO-261 is already open
c. Correct
d. Incorrect QMO-225/226 Close on SI signal

QUESTION # 033

Which of the following describes the procedural actions in response to addressing a leaking Pressurizer (PRZ) PORV?

a. 1. PORV block valves are closed one at a time.
   2. Temperature on the tailpipe is monitored by the operator.
   3. Leakage is determined by a lowering of tailpipe temperature after each PORV block valve is closed.

b. 1. PORV block valves are closed one at a time.
   2. Temperature on the Pressurizer Relief Tank (PRT) is monitored by the operator.
   3. Leakage is determined by a lowering PRT temperature after each PORV block valve is closed.

c. 1. All PORV block valves are initially closed to lower tailpipe temperature.
   2. One PORV block valve is opened at a time.
   3. Leakage is determined by a rise in tailpipe temperature after each PORV block valve is re-opened.

d. 1. All PORV block valves are initially closed to stabilize Pressurizer Relief Tank (PRT) temperature.
   2. One PORV block valve is opened at a time.
   3. Leakage is determined by a rise in PRT temperature after each PORV block valve is re-opened.

ANSWER:
c.
REFERENCE:
OHP-4022-002-009, Leaking Pressurizer Power Operated Relief Valve
BANK
HIGHER
K/A # 007A4.10: Pressurizer Relief/Quench Tank: Ability to manually operate and/or monitoring the control room: Recognition of leaking PORV/code safety
EXPLANATION:
The procedure requires that all PORV Block Valves be initially closed. Once tailpipe temperature is lowering, the block valves are opened 1 at a time to check for a rise in tailpipe temperature.

a. Incorrect - All Block Valves are initially closed.
b. Incorrect - All Block Valves are initially closed. PRT conditions are checked but not used to determine leaky valves.
c. Correct
d. Incorrect - PRT conditions are checked but not used to determine leaky valves.

QUESTION # 034

Given the following:

- Unit 1 has just experienced a spurious safety injection.

Which of the following groups of automatic actions is expected to occur in the CCW system?

1) CCW from the RHR Hx throttles to approximately 3,000 gpm.
2) CCW to CEQ fan motors open.
3) Standby CCW pump auto starts.
4) Letdown Hx CCW return valve 1-CRV-470 closes.
5) CCW supply to/return from Miscellaneous Header valves close

a. 1, 2, 5

b. 1, 3, 4

c. 1, 2, 4

d. 2, 3, 5

ANSWER:
b.
REFERENCE:
RO-C-01600
BANK
HIGHER
KA - 008000K1.02: Component Cooling Water System (CCWS): Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following systems: Loads cooled by CCWS
EXPLANATION:
CCW to CEQ fans valves open on an independent signal of 1.1 psig in containment which is seperate from the SI signal.
a. c. d. - Incorrect - CCW to CEQ fan motors do NOT open.

QUESTION # 035

Given the following:

- Unit 2 was operating at 100% power with the West CCW pump tagged out. The East CCW pump tripped, resulting in the loss of CCW.

The correct Operator response is to immediately trip the Reactor and RCPs and implement …

a. 2-OHP-4023-E-0, “Reactor Trip or Safety Injection.” 2-OHP-4022-016-004, “Loss of CCW,” may be performed concurrently after the immediate actions are complete.

b. 2-OHP-4023-E-0, “Reactor Trip or Safety Injection.” 2-OHP-4022-016-004, “Loss of CCW,” is NOT needed since the EOP network addresses a loss of CCW.

c. 2-OHP-4023-E-0, “Reactor Trip or Safety Injection.” Steps from 2-OHP-4022-016-004, “Loss of CCW,” may NOT be performed until completion of 2-OHP-4023-ES-0.1, “Reactor Trip Response.”

d. 2-OHP-4022-016-004, “Loss of CCW,” until restoration of CCW from any source. Perform 2-OHP-4023-E-0, “Reactor Trip or Safety Injection,” steps as time allows.

ANSWER:
a.
REFERENCE:
OHI-4023, “Abnormal/Emergency Procedure User's Guide.” Step 4.6.9
BANK
HIGHER
K/A: 008 G2.4.4: Component Cooling Water: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.
EXPLANATION:
OHI-4023, Abnormal/Emergency Procedure User's Guide allows Abnormal Procedures to be implemented concurrently with Emergency Procedures.
a. Correct
b. Incorrect - Performance of 2-OHP-4023-E-0 is required upon the reactor trip, but the operators must perform 2-OHP-4022-016-004 to address the loss of CCW.
c. Incorrect - User's Guide allows Abnormal Procedures to be implemented concurrently with Emergency Procedures.
d. Incorrect - The Unit Supervisor should direct action of 2-OHP-4023-E-0.

QUESTION # 036

During a loss of off-site power condition, design features are installed to provide power to the pressurizer heaters.

Which of the following correctly describes this design arrangement?

a. Group A1, A2, and A3 from the 2AB Emergency DG via bus T21B.

b. Group C1, C2, and C3 from the 2CD Emergency DG via bus T21D.

c. Group A1, A2, and A3 from the 21BD bus crosstie.

d. Group C1, C2, and C3 from the 21AC bus crosstie.

ANSWER:
b.
REFERENCE:
SOD-08201-001, Emergency Electrical Distribution
BANK
FUNDAMENTAL
K/A # 010K2.01: Pressurizer Pressure Control: Knowledge of bus power supplies to the following: PZR heaters
EXPLANATION:
Group C heaters are supplied from the 21PHC transformer which is tied to the 2CD EDG via bus T21D.
a. Incorrect - Group A heaters are tied to 2AB EDG via Bus T21A.
b. Correct
c. Incorrect - Group A heaters do not connect to 21BD bus.
d. Incorrect - Group C heaters do not connect to 21AC bus.

QUESTION # 037

Given the following:

- Unit 1 reactor was manually tripped due to multiple dropped rods.
- The main turbine did not trip automatically.
- The operator actuated the manual trip with no success.
- All other systems responded as designed.

What is the NEXT operator action per 1-OHP-4023-E-0, Reactor Trip or Safety Injection?

a. Manually actuate ATWS Turbine Runback.

b. Close the main steam isolation valves.

c. Check power to AC emergency buses.

d. Manually actuate AMSAC.

ANSWER:
d.
REFERENCE:
1-OHP-4023-E-0
NEW
HIGHER
K/A # 012K3.02: Reactor Protection: Knowledge of the effect that a loss or malfunction of the RPS will have on the following: T/G
EXPLANATION:
a. Incorrect: ATWS Turbine Runback is only used in FR-S-1 to manually reduce loads.
b. Incorrect: Closing the Main Steam Stop Valves is only performed if the AMSAC does not work
c. Incorrect: Checking the AC buses is step 3 of the E-0 procedure
d. Correct

QUESTION # 038

Given the following conditions on Unit 2:

- Reactor power is 33%
- Main Feedwater Pumps are in service
- Both Motor Driven Aux. Feedwater (MDAFW) Pumps have been stopped with the control switches in NEUTRAL

Which of the following signals will cause an automatic start of the MDAFW Pumps?

a. AMSAC

b. Blackout Sequence

c. Both Main Feedwater Pumps Trip

d. Steam Generator(SG) Low Level of 25% on 1 of 4 SGs

ANSWER:
b.
REFERENCE:
RO-C-05600, AFW Lesson Plan
MODIFIED
FUNDAMENTAL
K/A # 013K4.04: Engineered Safety Features Actuation: Knowledge of ESFAS design feature(s) and/or inter-lock(s) which provide for the following: Auxiliary feed actuation signal (4.3)
EXPLANATION:
a. INCORRECT: AMSAC Bypassed at <40% power.
b. CORRECT: Blackout will start MDAFWPs in Neutral or AUTO.
c. INCORRECT: MFP Trip - Auto Start only available in AUTO.
d. INCORRECT: Requires 1/4 SG Levels Low-Low (<22%) for AUTO start.

QUESTION # 039

Given the following:

- Unit 1 is in day 18 of 31 of a March outage.
- Fuel is being removed from the core to the spent fuel pool.
- Containment integrity is set.
- RCS temperature is 100^{o}F.
- Annunciator 104 Drop 5, CNTMT CHILLERS SYS TROUBLE is in alarm.
- Local Panel Investigation reveals that Drop 18 CHILLED WATER FLOW B LOW is in ALARM.
- The Unit Supervisor tells you to respond to the annunciator.

If the low flow condition is due to the Unit Outage, which of the following is the appropriate action?

a. Lower flow through the containment vent units IAW 1-OHP-4021-028-001, “Containment Ventilation.”

b. Place the Plate and Frame Heat Exchanger in Service IAW 1-OHP-4021-028-018, “Operation of the Containment Chilled Water System.”

c. Lower chill water temperature IAW 1-OHP-4021-028-018, “Operation of the Containment Chilled Water System,” to minimize cooling flowrate.

d. Cut in flow from NESW to containment to decrease the load on the Containment Chilled Water Evaporators.

ANSWER:
b.
REFERENCE:
RO-C-02001, Containment Chilled Water Lesson Plan
1-OHP-4024-CHW-WS, Annunciator Response #CHW: Containment Chilled Water System
NEW
HIGHER
K/A # 022A104: RO Containment Cooling. - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including: Cooling water flow
EXPLANATION:
a. Incorrect: The system already has low flow, lowering flow through the vent units would decrease flow more.
b. Correct. This would remove one of the chill water pumps and decrease the amount of cooling.
c. Incorrect. Lowering the chill water temperature would cool containment more and cause a further reduction in flow
d. Incorrect. The NESW flow path is only used if there is a loss of chill water and introduces lake water into containment.

QUESTION # 040

Which of the following describes the Technical Specification Temperature Limits and the ESFAS response associated with the UPPER Containment Ventilation fans?

	Upper Containment temperature limits	Fans Trip
a.	>60°F and <120°F	Phase A actuation
b.	>60°F and <120°F	Phase B actuation
c.	>60°F and <100°F	Phase A actuation
d.	>60°F and <100°F	Phase B actuation

ANSWER:
c.
REFERENCE:
RO-C-02800, Containment Ventilation System, Technical Specification 3.6.5
BANK (RO28 AUDIT, 2008NRC-0569, NRC EXAM 2008-53)
HIGHER
K/A # 022A4.05: Containment Cooling: Ability to manually operate and/or monitor in the control room: Containment readings of temperature, pressure, and humidity system
EXPLANATION
a. INCORRECT. These are the temperature limits for lower Containment.
b. INCORRECT. These are the temperature limits for lower Containment and the response of the Lower Containment Fans.
c. CORRECT. Technical Specifications Limits upper Containment to >60°F and < 100°F, the fans trip on a Phase A Actuation.
d. INCORRECT. This is the correct limits but the response of the Lower Containment Fans.

QUESTION # 041

Given the following plant conditions on Unit 1:

- The unit was operating at 100% power when an INADVERTENT Phase A Containment Isolation occurred on Train A.
- The Crew has reset Phase A Containment Isolation and attempted to restore Control Air to Containment.
- The Control Air Containment Isolation Valves could not be opened.

Which of the following describes short-term impact of the loss of air on the restoration efforts of the crew and the required compensatory actions?

a. RCP NESW Motor Air cooling water can NOT be restored. Trip the reactor and stop 3 RCPs. Perform a containment pressure relief.

b. Glycol Cooling to the ice condenser can NOT be restored. Stop all Unit 1 Air Handling Units (AHUs). Monitor ice bed temperatures to ensure they remain acceptable.

c. RCS overpressure protection has been lost (PORVs will NOT open). Begin a reactor shutdown and be in Mode 3 within 6 hours.

d. RCP Seal Injection is available but Seal Return can NOT be restored. Drain the PRT as required to maintain an acceptable level.

ANSWER:
b.
REFERENCE:
RO-C-01000 Ice Condenser, TS 3.6.11, 12-OHP-4024-135 Drop 51
BANK
HIGHER
KA - 025000A2.04: Ice Condenser System: Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Contaminent isolation (3.0)
EXPLANATION:

a. INCORRECT: NESW to RCP Motor Cooling valves are located outside containment and close on a Phase B Isolation. Actions are correct for Loss of NESW.
b. CORRECT: Glycol Cooling inside Containment Isolation valves VCR-11 and VCR-21 will NOT open. The AHUs are stopped if the glycol system is shutdown for more than 30 minutes. Technical Specifications requires that temperatures are maintained < 27°F.
c. INCORRECT: PORVs NRV-152 and NRV-153 have local reservoirs. Technical Specifications require a shutdown if all PORVS are lost.
d. INCORRECT: RCP Seal Injection is not isolated and Seal Return QCM-250 and QCM-350 are motor operated valves. RCP Seal Leakoff valves QRV-10, 20, 30, and 40 are fail open. Seal Return would go to the PRT if the Containment Isolation valves were closed.

QUESTION # 042

Both Units were operating at 100% power with normal lineups and all equipment OPERABLE when Unit 2 experienced a large break LOCA. The BOP operator has identified that the Unit 2 West ESW pump has tripped and can NOT be restarted.

The following plant conditions exist:

- RCS Pressure - 95 psig
- Containment Pressure - 6 psig
- RWST Level - 36%

ESW Flow (GPM)	Train A	Train B
EDG	570	570
CCW HX	5580	5600
CTS HX	0	0

Which of the following describes the actions that should be taken based on these ESW flows and why?

a. Open the crosstie to Unit 1 West ESW since the flow to the CTS heat exchangers is inadequate.

b. Throttle closed on both CCW HXs to reduce flow to 2500 gpm to provide sufficient flow to CTS heat exchangers when they align.

c. Stop the Unit 2 West CCW and CTS pumps and isolate the respective HXs since the flow to the CTS heat exchangers is inadequate.

d. Verify that both Unit 1 ESW pumps are running and that ESW to CTS heat exchanger valves automatically throttle after aligning for Cold Leg recirculation.

ANSWER:
d.
REFERENCE:
RO-C-01900, Essential Service Water System pg. 15-16
SD-01900 Essential Service Water System Description pg. 12, 20, 29, 49, and 57
BANK
HIGHER
K/A # 026A3.02: Containment Spray: Ability to monitor automatic operation of the CSS, including: Verification that cooling water is supplied to the containment spray heat exchanger
EXPLANATION:
a. Incorrect: This crosstie should already be open. CTS flow should NOT be expected in this condition. The Unit 1 West ESW will feed the Unit 2 East Header.
b. Incorrect: Sufficient Flow would be available with 2 unit 1 pumps and 1 unit 2 pump. CCW flow is required to be 5000 gpm.
c. Incorrect: There is no reason to stop the West CCW and CTS pumps. CTS flow is expected to be 0 gpm at this time.
d. Correct

QUESTION # 043

Unit 1 has experienced a Loss of All AC Power. The turbine-driven auxiliary feedwater pump has tripped.

The following conditions exist:

- Annunciator Panel 114 Drop 10, TDAFP TRIP & THROT VLV Unlatched - LIT
- Annunciator Panel 113 Drop 50, TDAFP Overspeed Trip Or ABN - LIT

Drop 50 clears when the Annunciator RESET is pressed.

Which of the following statements describes the operator action required to reset the pump trip?

a. Reset the Trip by re-opening the Main Steam to AFP Turbine MOVs (MCM-221 and 231).

b. Reset the Trip from the Control Room by placing the Trip and Throttle Valve control switch (QT-506) to close.

c. Reset the Trip and Throttle Valve from the Control Room by closing and then re-opening the operator using the TDAFP Governor Speed Controller.

d. Dispatch an AEO to locally reset mechanical overspeed trip and re-latch the TDAFW (Turbine Driven Aux Feed Water) pump Trip and Throttle Valve.

ANSWER:
b.
REFERENCE: 1-OHP-4024-113 & 1-OHP-4024-114
None Provided
BANK
HIGHER
K/A # 039A4.04: Main and Reheat Steam: Ability to manually operate and/or monitor in the control room: Emergency feedwater pump turbines
EXPLANATION:
Since Drop 50 reset, the trip is an electrical overspeed trip. The Trip and Throttle valve control switch (QT-506) must be placed to close and then to open to reset the trip signal.
a. Incorrect: The trip and throttle valve must be relatched. The steam supply will not isolate.
b. Correct
c. Incorrect: The TDAFP Governor Speed Control in the control room is no longer functional.
d. Incorrect: Drop 50 will NOT reset if a mechanical overspeed trip is present.

QUESTION # 044

Which of the following is the correct configuration for Auxiliary Feedwater System?

	East Motor Driven Pump	West Motor Driven Pump	Auxiliary Feedwater Connects
a.	Feeds S/G 1&2	Feeds S/G 3&4	Upstream of MFW Iso. valves
b.	Feeds S/G 2&3	Feeds S/G 1&4	Upstream of MFW Iso. valves
c.	Feeds S/G 1&2	Feeds S/G 1&4	Downstream of MFW Iso. valves
d.	Feeds S/G 2&3	Feeds S/G 1&4	Downstream of MFW Isolation valves

ANSWER:
d.
REFERENCE:
RO-C-05600 Rev. 10 HO-1 Auxiliary Feedwater Drawing
NEW
FUNDAMENTAL
K/A # 059K1.02: Main Feedwater: Knowledge of the physical connections and/or cause-effect relationships between the MFW and the following systems: AFW system
EXPLANATION:
a. Incorrect: East AFW Pump feeds S/G 2&3 downstream of MFW isolation valves.
b. Incorrect: AFW connects to MFW downstream of MFW isolation valves.
c. Incorrect: East AFW feeds S/G 2&3.
d. Correct

QUESTION # 045

1-OHP-4021-001-006, Power Escalation directs starting the second feedwater pump prior to exceeding 60% power (and 626 MW) and 1-OHP-4022-055-001, Loss of One Main FW Pump directs actions if power is greater than 60%.

Which of the following describes the reason for this limitation?

a. When turbine power exceeds 626 MW with ONLY 1 FW pump running, the turbine will automatically initiate a runback.

b. When turbine power exceeds 626 MW with ONLY 1 FW pump running, the turbine will enter a ramp HOLD to prevent power from rising.

c. This limit is an Administrative restriction only since 60% power flow is the maximum flow a Single FW pump can deliver, the turbine will NOT runback unless it is > 730 MW.

d. This limit is an Administrative restriction only since at > 60% power flow rates from a Single FW pump the FW pump turbine vibrations become excessive, the turbine will NOT enter a ramp HOLD unless it is > 730 MW.

ANSWER:
a.
REFERENCE:
1-OHP-4021-001-006, Power Escalation
1-OHP-4022-055-001, Loss of One Main FW Pump
NEW
FUNDAMENTAL
K/A # 059.G.2.4.20: Main Feedwater: Knowledge of the operational implications of EOP warnings, cautions, and notes.
EXPLANATION:
1-OHP-4021-001-006, Power Escalation contains the following Notes:

a. Correct: Exceeding 626MW with only a single Main Feed Pump in service will initiate a Main Turbine Runback. The automatic setpoint of DCS for the loss of one Main Feedpump is 600 Mw/min with a final power level of 625 Mw.
b. Incorrect: The turbine ramp HOLD function is temperature dependent only.
c. Incorrect: The Turbine runback is enabled at 625 MW not 730 MW (70%). Plausible since the FW turbine can deliver slightly more than 60% flow and a FW pump trip at < 70% is minor perturbation.
d. Incorrect: FW Vibration issues have been previously experienced at DC Cook but not due to excessive flows at > 60% and the ramp HOLD is temperature dependent.

QUESTION # 046

Unit 2 is at 100% power.

- Annunciator 215 Drop 48, BATTERY N UNDERVOLTAGE, has just alarmed.
- Investigation revealed that a metal plate has shorted the battery terminals.

Which of the following identifies the effects on the operability and capability of the Auxiliary Feedwater System?

a. The TDAFW Pump will start and FMO-211, 221, 231, & 241, TDAFW to SG Isolation Valves, are failed in the open position.

b. The TDAFW Pump will NOT start and FMO-211, 221, 231, & 241, TDAFW to SG Isolation Valves, are failed in the closed position.

c. The TDAFW Pump will start but MCM-221, SG Steam supply to TDAFW Pump Isolation valve, is failed in the closed position.

d. The TDAFW Pump will NOT start and FMO-211, 221, 231, & 241, TDAFW to SG Isolation Valves, are failed in the open position.

ANSWER:
d.
REFERENCE:
RO-C-05600 Auxiliary Feedwater System pg. 24
TS 3.7.5 AFW
TS 3.8.4 DC-Operating
BANK
HIGHER
K/A: 061K2.01: Auxiliary/Emergency Feedwater: Knowledge of bus power supplies to the following: AFW System MOVs
EXPLANATION:
a. Incorrect: The Train N battery supplies power to the TDAFW pump start circuitry, Trip & Throttle Valve, SG FW Valves and Test Valves.
b. Incorrect: The Train N battery supplies power to the TDAFW pump start circuitry, Trip & Throttle Valve, SG FW Valves and Test Valves. The TDAFW pump valves are normally open and so they will fail in the open position
c. Incorrect: The Train N battery supplies power to the TDAFW pump start circuitry, Trip & Throttle Valve, SG FW Valves and Test Valves. The TDAFW pump valves are normally open and so they will fail in the open position
d. Correct

QUESTION # 047

Unit 1 is in Mode 3. The 4160 VAC distribution system is being supplied by the Reserve Aux. Transformers (RATs). Due to a system disturbance, indicated voltage on the safeguards busses drops.

Given the following plant conditions:

- T11A Voltage Indication is 112 Volts.
- T11B Voltage Indication is 114 Volts.
- T11C Voltage Indication is 113 Volts.
- T11D Voltage Indication is 112 Volts.

Which of the following describes the FINAL plant response if voltage remains at these values for an extended period?

a. ONLY T11A and T11D busses will be energized by their respective EDG.

b. ONLY T11C and T11D bus will be energized by its respective EDG.

c. ONLY T11A, T11C, and T11D busses will be energized by its respective EDG.

d. ALL safeguards busses will be energized by their respective EDG.

ANSWER:
d.
REFERENCE:
Engineered Safety Systems Electrical pg. 30-31, SD-08201 pg. 25-26 and Figure 1; Annunciator #121 Response, Drop 78; RC-C-KNOW
LESSON PLAN/OBJ: RO-C-08201/6
BANK 2008NRC-0638, Vision 39292
FUNDAMENTAL
K/A: 062K3.02: AC Electrical Distribution: Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: ED/G
KA Justification - Requires the knowledge of the effect of a loss of AC (lowering RATS voltage) will have on the EDG supply to the Emergency Bus.
EXPLANATION:

a. Incorrect: Plausible if the operator believes that only A or D T-Busses will energize from the EDG, since they are the only busses that detect voltage for the degraded bus voltage signal.
b. Incorrect: An Undervoltage condition of 113 V will energize 62-1 T11A. After a 111 Second delay it will open T11A9 and T11B1 causing T11A and T11B to lose power. This will cause the EDG to start and energize T11A and T11B. Plausible if candidate assumes that both T11A and T11 B must be < 114V
c. Incorrect: Since T11B is still above the setpoint for degraded bus voltage, this distractor is plausible if the operator believes that each bus has a separate voltage sensor and loads to the EDG individually.
d. Correct: An Undervoltage condition of 113 V will energize 62-1 T11A & T11D After a 111 Second delay it will open ALL the T -bus feeders breakers will open causing them to lose power. This will cause the EDGs to start and energize ALL of the busses from the EDGs.

QUESTION # 048

The following plant conditions exist:

- 100% power.
- No equipment out of service.
- The Unit Auxiliary Transformers are supplying all plant equipment.
- An operator noted that the closed light for 1A7, Normal Feed Breaker to Bus 1A, was NOT lit.
- The light bulb was verified as good.

Which of the following statements describes the condition for this breaker?

a. Breaker 1A7 cannot be remotely opened with the control switch.

b. An overload condition will cause breaker 1A7 to trip open.

c. A Load Shed signal will cause breaker 1A7 to trip open.

d. A generator trip will cause breaker 1A7 to trip open.

ANSWER:
a.
REFERENCE:
RO-C-08200, Balance Of Plant Electrical System pg. 57
BANK
HIGHER
K/A # 063K4.02: DC Electrical Distribution: Knowledge of DC electrical system design feature(s) and/or interlock(s) which provide for the following: Breaker interlocks, permissives, bypasses and cross-ties
EXPLANATION:
a. CORRECT: With the Close Light extinguished a loss of DC control power is indicated. This will prevent breaker operations with the control switch.
b. INCORRECT: Plausible since some of the lower voltage breakers will trip on an overload even without DC control power. This breaker requires DC control to operate the trip solenoid and will not trip from overload.
c. INCORRECT: This breaker requires DC control to operate the trip solenoid and will not trip from a load shed signal.
d. INCORRECT: Plausible if the operator has a misconception with breaker operations. This breaker requires DC control to operate the trip solenoid and will not open even though it receives a trip signal.

QUESTION # 049

Given the following plant conditions:

- Unit 2 was operating at 100% power.
- The Unit 2 North NESW Pump was running.
- The Unit 2 South NESW Pump was stopped and in AUTO.

A large steamline break inside containment occurred.

- Unit 2 offsite power was lost on the trip.
- Both Unit 2 Diesel Generators started and are supplying their respective busses.
- Unit 2 Containment Pressure is 3.2 psig.
- UNIT 1 has remained operating at 100% power throughout the event.

Which of the following describes the response of the NESW pumps and the required actions; if any, to restore Unit 2 NESW?

a. The Unit Header Crossties (1/2-WMO-906) will open and the Safety Injection Sequencer will start both Unit 1 NESW pumps after the appropriate time delay.

b. The Safety Injection Sequencer will start the Unit 1 North NESW Pump after the appropriate time delay. The Unit 1 South NESW Pump will start on Low System Pressure if the North NESW Pump fails to restart.

c. NESW Load Conservation will prevent the start of both Unit 2 NESW pumps. Either pump may be started by placing the control switch directly to RUN after the Containment Spray Pumps have been stopped.

d. NESW Load Conservation will prevent the start of both Unit 2 NESW pumps. Either pump may be started by placing the control switch to Trip/Lockout and then to RUN after at least 75 seconds have elapsed since the time of the Containment Spray Signal.

ANSWER:
d.
REFERENCE:
RO-C-02000 Non-Essential Service Water System, pg. 30
BANK
HIGHER
K/A # 064K4.11: Emergency Diesel Generator: Knowledge of ED/G system design feature(s) and/or inter-lock(s) which provide for the following: Automatic load sequencer: safeguards
EXPLANATION:
a. INCORRECT. The SI Sequencer does not send a signal to Unit 1 NESW pumps. Feasible answer since there is a unit crosstie of the NESW system.
b. INCORRECT. The North NESW Pump would have tripped on a Load Shed and the South NESW will normally start on a Low Pressure signal, but both are locked out since a CTS signal also exists. The Control Switches must be placed in Trip/Lockout prior to run to clear the signal.
c. INCORRECT. NESW Load Conservation has prevented the pumps from starting (Tripped the pumps), but the Control Switches must be placed in Trip/Lockout prior to run to clear the signal.

d. CORRECT. NESW Load Conservation actuates on a CTS with Load Shed (or EDG on Bus). This prevents the NESW pumps from starting for 75 seconds or until the CTS signal is cleared. The Control Switch will need to be placed in Trip/Lockout to clear the signal

QUESTION # 050

Given the following:

- Unit 2 was running at 55% power
- A LOCA occurred with SI actuation
- All systems functioned normally
- 250 VDC power is available

Which of the following will trip an EDG?

a. Generator Phase Differential

b. Generator Phase Overcurrent

c. Generator Neutral Overcurrent

d. Bearing Oil Temperature High 195^{o}F or Higher

ANSWER:
a.
REFERENCE:
RO-C-03200 EDG Rev 8 Page 48
NEW
FUNDAMENTAL
K/A # 064A1.03: Emergency Diesel Generator: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: Operating voltages, currents, and temperatures
EXPLANATION:
a. Correct
b. Incorrect Only trips the EDG under non-emergency conditions
c. Incorrect Only trips the EDG under non-emergency conditions
d. Incorrect Only trips the EDG under non-emergency conditions

QUESTION # 051

The Unit Vent Effluent Rad. Monitor is alarming - RED. Which of the following Channels has an automatic action?

a. VRA-1503, Iodine-131

b. VRA-1501, Particulate

c. VRS-1509, High range noble gas

d. VFR-1510, Unit Vent Effluent Flow Rate

ANSWER:
c.
REFERENCE:
RO-C-01350 Rad Monitoring Power Point Slide 50 Notes
12-OHP-4024-139, Annunciator #139 Response: Radiation Channel 5
NEW
FUNDAMENTAL
K/A 073A4.01: Process Radiation Monitoring: Ability to manually operate and/or monitor in the control room: Effluent release
EXPLANATION:
a. Incorrect Only Provides alarm and indication
b. Incorrect Only Provides alarm and indication
c. Correct
d. Incorrect Only Provides alarm and indication

QUESTION # 052

While operating in Unit 2 control room the following indications are received:

- Annunciator Panel 204 Drop 66, WEST ESW HEADER PRESSURE LOW - LIT
- Auxiliary Building Sump Level - RISING
- Component Cooling Water (CCW) temperatures - RISING
- Essential Service Water (ESW) flows are as follows:

ESW Train Flow Indication	East Discharge 2-WFA-702	East Return 2-WFA-704	West Discharge 2-WFA-706	West Return 2-WFA-708
GPM	6,000	6,000	7,500	6,000

Which of the following describes the expected sequence of actions the operator should take?

Reference Provided

a. Close 2-WMO-706, U2 West ESW crosstie to U1.
Stop 2 West ESW pump.
Place 2 East CCW Heat Exchanger in service.

b. Start 2 East ESW pump.
Place 2 East CCW Heat Exchanger in service.
Close 2-WMO-736, ESW to West CCW Heat Exchanger.

c. Close 2-WMO-708, U2 East ESW crosstie to U1.
Stop 2 West ESW pump.
Place 2 East CCW Heat Exchanger in service.

d. Verify 1 West ESW pump starts.
Remove 2 West CCW Heat Exchanger from service.
Open 2-WMO-706, U2 West ESW crosstie to U1.

ANSWER:
a.
REFERENCE:
2-OHP-4022.019.001, ESW System Loss/Rupture Steps 10-12, SOD-01900-001
2-OHP 4022.019.001, Steps 10-12, SOD-01900-001
Reference Provided - 2-OHP-4022.019.001, ESW System Loss/Rupture
BANK - NRCAUDIT07-0454 Vision #39757
HIGHER
OBJECTIVE: RO-C-AOP0590412-E3
Original Question # - RO28 AUDIT-52, RO23 AUDIT-082-3, NRCAUDIT07-0454
Original Question KA - SYS 076 K1.01, 000062 2.2.44
K/A 076A2.01: Service Water: Ability to (a) predict the impacts of the following mal-functions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS
KA Justification - This meets the K/A because the candidate must use the indications to determine the required configuration and actions for the given plant conditions.
EXPLANATION:

a. CORRECT: The West Discharge flow is too high, the Unit crosstie needs to be isolated, the pump stopped, and the other CCW HX placed in service.
b. INCORRECT: The East Header is being supplied with an adequate flow, so the pump does not need to be started. Isolating the West CCW HX will not isolate the 2 West Hdr the opposite unit.
c. INCORRECT: The West Discharge flow is too high, the Unit crosstie needs to be isolated, the pump stopped, and the other CCW HX placed in service. Plausible because the U2 East ESW crossties to the Unit 1 West ESW.
d. INCORRECT: The Unit 1 West ESW would feed the Unit 2 East ESW header. Isolating the West CCW HX will not isolate the Unit 2 West Hdr from the opposite unit. The Crosstie must be closed.

QUESTION # 053

The Plant and Control Air Systems are aligned as follows:

- Unit 1 Plant Air Compressor (PAC) is running loaded.
- Unit 2 PAC is in standby (Auto) alignment.
- Both Control Air Compressors (CACs) are in standby (Auto) alignment.

The following events occur:

- Unit 1 PAC trips.
- Unit 1 "PAC OVERLOAD TRIP" alarm annunciates.

If air header pressure drops continuously, in what order will the following automatic actions occur?

1) Plant Air Header Crosstie Valves CLOSE
2) Control Air Compressors (CACs) START
3) U-2 Plant Air Compressor (PAC) STARTS

a. 1, 2, 3

b. 1, 3, 2

c. 3, 2, 1

d. 3, 1, 2

ANSWER:
c.
REFERENCE:
SOD-06401-002, Plant Air System Drawing
BANK
FUNDAMENTAL
K/A 078A3.01: Instrument Air: Ability to monitor automatic operation of the IAS, including: Air Pressure
EXPLANATION:
a. INCORRECT. It would be plausible for the air header to isolate any potential leakage paths prior to starting the compressors.
b. INCORRECT. It would be plausible for the air header to isolate any potential leakage paths prior to starting the compressors.
c. CORRECT. The PAC will start first and attempt to restore pressure, if it fails the CAC will start, if that also fails the air header will isolate to section off the leak.
d. INCORRECT. It would be plausible for the PAC to start and then attempt to isolate leakage paths prior to starting the CAC.

QUESTION # 054

Which of the following components is NOT tripped when a Containment Phase A \ Containment Ventilation Isolation signal is generated?

a. Upper Containment Ventilation Fans

b. Containment Purge Supply Fans

c. Lower Containment Ventilation Fan

d. Containment Pressure Relief Fans

ANSWER:
c.
REFERENCE:
RO-C-02800 Containment Ventilation Rev 6 HO-1, Page 69
NEW
FUNDAMENTAL
K/A 103K1.02: Containment: Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: Containment isolation/containment integrity
EXPLANATION:
a. Incorrect Trips on Phase A
b. Incorrect Trips on Phase A
c. Correct Trips on Phase B
d. Incorrect Trips on Containment Vent Isolation from a Phase A

QUESTION # 055

Given the following plant conditions on Unit 2:

- The unit is operating at 100% power.
- A small instrument air leak inside Containment causes a slow rise in Containment pressure.
- Containment pressure is currently +0.19 psig.

In order to ensure that adequate margin to Containment Technical Specification pressure limits is maintained, which of the following indicates the appropriate action to reduce containment pressure?

a. Maximize cooling to the Containment Ventilation (CUV/CLV) Units.

b. Vent containment using the Containment Pressure Relief (CPR) system.

c. Lower pressure in containment using the Containment Purge (CPS) system.

d. Verify all Upper/Lower Containment Ventilation (CUV/CLV) Fans are running.

ANSWER:
b.
REFERENCE:
RO-C-03400, Containment System, Objective RO-C-03400-E9, Rev. 7, Slide 62 and 63
OHP-4030-227-037
OBJECTIVE: RO-C-02800-E2
BANK - NRCAUDIT07-0126 Vision #39429
FUNDAMENTAL
K/A 103K3.02: Containment: Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under normal operations
EXPLANATION:
a. INCORRECT: Increasing cooling (lowering temperature) may cause a slight pressure reduction but with continued IA leakage, a pressure release will have to be performed.
b. CORRECT: With the Containment Pressure rising due to IA leakage, the only way to reduce pressure is to purge air from Containment. This is accomplished with the Containment Pressure Relief system.
c. INCORRECT: The Containment Purge system is used only for shutdown conditions.
d. INCORRECT: Increasing cooling (lowering temperature) may cause a slight pressure reduction but with continued IA leakage, a pressure release (vent) will have to be performed.
LESSON PLAN/OBJ: RO-C-ADM13/ADM13.3.0
KA Justification - Question asks for operator to predict which system of control will reduce Containment Pressure to help prevent exceeding the design pressure (and loss of integrity).
Original Question # - RO28 AUDIT, 2008NRC-0581, NRCAUDIT07-0126, NRC Exam 2004-062-3, 21601-KEWAUNNE02, NRC Exam 2008-44
Original Question KA - 103000A101

QUESTION # 056

Which of the following Rod Stops stops rod motion ONLY in AUTO?

a. C1: Intermediate Range Rod Stop

b. C2: Power Range Rod Stop

c. C4: OPΔT Rod Stop

d. C5: Turbine Low Power Interlock

ANSWER:
d.
REFERENCE:
RO-C-01200 Rod Control and Rod Position Indicating System Rev 6, Page 49 - 55
NEW
FUNDAMENTAL
K/A 001K4.23: Control Rod Drive: Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: Rod motion inhibit
EXPLANATION:
a. Incorrect Rods stop in Auto and Manual
b. Incorrect Rods stop in Auto and Manual
c. Incorrect Rods stop in Auto and Manual
d. Correct

QUESTION # 057

Which of the following describes the power supply for the Unit 2 East CCP during normal plant operation?

Bus _____

a. T21A

b. T21B

c. T21C

d. T21D

ANSWER:
d.
REFERENCE:
RO-C-00300 Chemical Volume Control System Rev 11, Page 27
MODIFIED
FUNDAMENTAL
K/A # 011 Pressurizer Level Control.K2.01: RO - Knowledge of bus power supplies to the following: Charging pumps (3.1)
EXPLANATION:
a. INCORRECT The West CCP is a Train B pump which is supplied by the T11A Bus.
b. INCORRECT This is a Train B bus but it does NOT supply the pumps.
c. INCORRECT This is a Train A bus and it does NOT supply the pumps.
d. CORRECT The East CCP and Train A pumps are supplied from T21D.

QUESTION # 058

A Unit 2 reactor startup is in progress with source range counts at 2000 cps.

A reactor operator identifies that Source Range Channel N32 level indicates off-scale HIGH.

Based on these indications, what is the status of the reactor core with no operator actions?

a. All Rod bottom lights should be lit.

b. No Rod position change should occur.

c. Control Bank Rod bottom lights only should be lit.

d. Shutdown bank Rod bottom lights only should be lit.

ANSWER:
a.
REFERENCE:
2-OHP-4024-210 Drop 3, RO-C-01300, Rev 8, Excore Nuclear Instrumentation System, Page 16
MODIFIED
HIGHER
K/A # 015K6.04: Nuclear Instrumentation: Knowledge of the effect of a loss or malfunction on the following will have on the NIS: Bistables and logic circuits
EXPLANATION:
a. Correct
b. Incorrect Because the reactor is less than P-6 trip logic is 1 out of 2 on Source Range Instruments Trip
c. Incorrect Because the reactor is less than P-6 trip logic is 1 out of 2 on Source Range Instruments Trip
d. Incorrect Because the reactor is less than P-6 trip logic is 1 out of 2 on Source Range Instruments Trip

t
QUESTION # 059

Control room operators are performing 1-OHP-4023-FR-C.1, Inadequate Core Cooling. They are NOT able to establish high head ECCS flow.

Given the following plant conditions:

- SG depressurization proved to be ineffective.
- SG NR levels are stable at 30%.
- All core exit TCs are 1250°F and slowly rising.

The operators were attempting to establish conditions for RCP restart, but are unable to establish RCP seal injection or 200 psid across the #1 seal.

Which of the following describes the current status of the fuel and the required actions?

a. The fuel is NOT significantly damaged. The crew is required start one RCP at a time until core exit TCs are less than 1200°F.

b. The fuel is significantly damaged so the crew should NOT start the RCPs. They are required to open all PRZ PORVs and block valves.

c. The fuel is significantly damaged. The crew is required start all RCPs simultaneously to reduce core exit TCs to less than 1200°F.

d. The fuel is NOT significantly damaged so the crew should NOT start the RCPs. They are required to continue attempts to establish high head injection.

ANSWER:
a.
REFERENCE:
RO-C-EOP10,01-OHP-4023-FR-C.1, Step 22
BANK
HIGHER
K/A # 017A1.01: In-core Temperature Monitor: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ITM system controls including: Core exit temperature
EXPLANATION:
a. CORRECT: The 1200°F value was chosen because it was significantly below the point at which the fuel was damaged, but high enough that extreme measures are required to recover cooling. Since adequate SG levels for heat sink exist, the RCPs are started in an attempt to circulate coolant/steam through the SG tubes in an attempt to cool the RCS. Adequate support condition for the RCPs are desired but NOT required since Core Cooling is severely challenged.
b. INCORRECT: The fuel is not yet damaged. These actions are plausible since they are the RNO for step 22 if RCP or SG level is not available.
c. INCORRECT: The fuel is not yet damaged. Starting RCPs without all support conditions and at this temperature may damage RCPs so only 1 is started at a time. This is plausible since the loss of cooling is a severe challenge to the core and starting all RCPs may provide more cooling.
d. INCORRECT: This is plausible since the fuel is not damaged and the RCPs do not have all support conditions available (& opening the PRZ PORVs is a drastic step).

QUESTION # 060

Given the following conditions on Unit 1:

- Containment Purge System is operating in the VENTILATION MODE.
- An unplanned HIGH alarm on VRS-1505, Auxiliary Building Ventilation Noble Gas Activity Monitor, occurs.

Which of the following describes the required operator response for the Containment Ventilation System to the High alarm?

a. Stop the Containment Purge and consult with Radiation Protection prior to restarting the system.

b. Continue the Purge as long as VRS-1101, Containment Normal Range Area Radiation Monitor, is still indicating as expected.

c. Verify the following:
   - Containment ventilation isolation valves VCR-101 through VCR-106 close,
   - HV-CPS-1/2, Containment Purge Supply Fans 1 and 2, trip,
   - HV-CPX-1/2, Containment Purge Exhaust Fans 1 and 2, trip,
   - HV-CPR-1, Containment Pressure Relief Fan, trips,
   - HV-CIPS-1, Containment Instrument Room Purge Supply Fan, trips.

d. Verify the following:
   - Containment ventilation isolation valves VCR-201 through VCR-206 close,
   - HV-CPS-1/2, Containment Purge Supply Fans 1 and 2, trip,
   - HV-CPX-1/2, Containment Purge Exhaust Fans 1 and 2, trip,
   - HV-CPR-1, Containment Pressure Relief Fan, trips,
   - HV-CIPX-1, Containment Instrument Room Purge Exhaust Fan, trips.

ANSWER:
a.
REFERENCE: 1-OHP-4021-028-005, Attachment 2
Proposed References to be provided to applicants during examination: None
BANK (#2140 - NRC EXAM 2012)
HIGHER
K/A # 029A3.01: Containment Purge: Ability to monitor automatic operation of the Containment Purge System including: CPS isolation
EXPLANATION:

a. CORRECT: When the Containment Purge system is operating in the Ventilation Mode, the automatic isolation signals are blocked. The procedure requires the Purge to be stopped and radiation protection concurrence prior to restarting the system.
b. INCORRECT: The procedure requires the Purge to be stopped and radiation protection notified. Plausible as the Containment radiation monitor is still operable monitoring for any release.
c. INCORRECT: When the Containment Purge system is operating in the Ventilation Mode, the automatic isolation signals are blocked. Plausible as these are functions from containment isolation signal actuation.
d. INCORRECT: When the Containment Purge system is operating in the Ventilation Mode, the automatic isolation signals are blocked. Plausible as these are functions from containment isolation signal actuation.

QUESTION # 061

Given the following:

- A tube rupture has occurred in the #23 Steam Generator (SG).
- A Manual Reactor Trip and Safety Injection were performed.
- On the reactor trip, the #21 and #22 SG Pressure channels failed low resulting in an automatic Steam Line Isolation.
- RCS Pressure is currently 2035 psig.
- RCS Tavg is 549°F.
- The #23 SG is being isolated in accordance with procedure 2-OHP-4023-E-3, Steam Generator Tube Rupture.
- You notice that both MSIV dump valves for the #23 SG are open allowing an unmonitored radioactive release to the atmosphere.

Which of the following action should be taken to close the MSIV dump valves?

a. Select BLOCK on both Steamline Isolation Block/Reset Switches.

b. Place both MSIV dump valve control switches to LOCKOUT.

c. Select RESET on both Steamline Isolation Block/Reset Switches.

d. Place both MSIV dump valve control switches to TRIP/RESET.

ANSWER:
b.
REFERENCE:
RO-C-05103, Page 16
Proposed References to be provided to applicants during examination: None
BANK (#2481)
HIGHER
K/A # 035A4.06: Steam Generator: Ability to manually operate and/or monitor in the control room: S/G isolation on steam leak or tube rupture/leak.
EXPLANATION:
a. Incorrect - The Steam Line Isolation signal can not be blocked until Tavg is < P-12 (541°F). The Block/Reset switch does NOT lockout Steamline Isolation signal to the dump valves.
b. Correct - Placing the MSIV switches to the LOCKOUT position will close the dump valves.
c. Incorrect - The Block/Reset switch does NOT lockout Steamline Isolation signal to the dump valves.
d. Incorrect - Placing the switches to Trip/Reset will cause the valves to stay open.

QUESTION # 062

Unit 2 is being shut down due to a main turbine stop valve being stuck OPEN. Power has been reduced and ALL main turbine control valves are closed.

Based upon current plant conditions and following tripping of the turbine, the generator…

a. will automatically trip 30 seconds after the turbine is tripped.

b. will trip immediately when the turbine is tripped.

c. must be tripped using the Emergency Unit Trip pushbutton.

d. output breakers are to be opened using their control switches.

ANSWER
c.
REFERENCE
2-OHP 4022.001.003
Print OP 98021
LESSON PLAN/OBJ: RQ-R-1703/#1: RQ-C-2434/#1; RO-C-AOP/#2.27; RQ-C-2834/AOP2.26
MODIFIED
HIGHER
K/A #: SF4.045.K4.37: Knowledge of MT/G system design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) Automatic functions associated with turbine trip: reactor trip, station power switched to offsite source, air to extraction steam non-return valves removed
EXPLANATION
a. INCORRECT: This is the Normal response of the generator, but with a stop valve open the generator will not receive a trip signal.
b. INCORRECT: The generator won't trip immediately, a 30 second delay is normally provided to help prevent overspeed of the turbine.
c. CORRECT: The Emergency UNIT Trip button is used to open the generator output breakers.
d. INCORRECT: The breaker control switches are disabled from opening after syncing.

QUESTION # 063

Unit 1 Containment Purge System is aligned for full flow purge operation.

Following an external failure alarm on ERS-1300, Lower Containment Radiation Monitor, the containment ventilation system would respond by closing…

a. VCR-101 through 107 and tripping HV-CIPS-1

b. VCR-201 through 207 and tripping HV-CIPS-1

c. VCR-201 through 207 and tripping HV-CPS-1/2, HV-CPX-1/2, HV-CPR-1 & HV-CIPX-1

d. VCR-101 through 107 and tripping HV-CIPS-1, HV-CPS-1/2, HV-CPX-1/2, & HV-CPR-1

ANSWER:
a.
REFERENCE: 12-OHP-4024-139 Drop 3
Proposed References to be provided to applicants during examination: None
BANK (# 2985)
HIGHER
K/A # 072K3.01: Area Radiation Monitoring: Knowledge of the effect that a loss or malfunction of the ARM system will have on the following: Containment ventilation isolation.
EXPLANATION:
a. Correct - These are the automatic actions from the ERS-1300 monitor.
b. Incorrect - The Outside containment isolation valves (200 series) will NOT close.
c. Incorrect - The Outside containment isolation valves (200 series) will NOT close and the Purge supply and exhaust fans will NOT trip.
d. Incorrect - The Purge supply and exhaust fans will NOT trip.

QUESTION # 064

Given the following plant conditions:

- Unit 2 Plant Air Compressor (PAC) is running.
- Unit 1 PAC is out of service for maintenance.
- Both Units' Control Air Compressors (CACs) are stopped and in AUTO.
- A large leak occurs on the piping connecting the Unit 1 Plant Air Receiver to the Unit 1 side of the plant air header.
- Plant Air Header pressure is slowly lowering.

Which of the following statements describes the method for isolating the leak and the Control Air Supply System status following isolation? (Note: Assume that the leak isolation will be completed prior reaching 98 psig Plant Air Header Pressure.)

a. 1) Close PRV-10 AND PRV-11, Plant Air Header Crosstie Valves to Unit 2.
   2) Control Air for both units will be supplied from the Unit 2 PAC.

b. 1) Close PRV-10 OR PRV-11, Plant Air Header Crosstie Valves to Unit 2.
   2) Control Air for both units will be supplied from the Unit 2 PAC.

c. 1) Close PRV-10 AND PRV-11, Plant Air Header Crosstie Valves to Unit 2.
   2) Unit 1 Control Air will be automatically supplied by the Backup Plant Air Compressor AND Unit 2 Control Air remains supplied from the Unit 2 PAC.

d. 1) Close PRV-10 OR PRV-11, Plant Air Header Crosstie Valves to Unit 2.
   2) Unit 1 Control Air will be supplied by the Unit 1 CAC AND Unit 2 Control Air will be supplied from the Unit 2 CAC.

ANSWER:
a.
REFERENCE:
SOD-06401-002, Plant Air System.
Proposed References to be provided to applicants during examination: None
BANK (#2274)
HIGHER
K/A # 079K1.01: Station Air: Knowledge of the physical connections and/or cause-effect relationships between the SAS and the following systems: IAS.
EXPLANATION:
a. CORRECT. Both PRV-10 AND PRV-11 must be closed to isolate the Unit 1 header. Both control air supplies come downstream of the header crosstie valves, so U2 PAC will continue to supply both units' control air headers.
b. INCORRECT. Both PRV-10 AND PRV-11 must be closed to isolate the Unit 1 header.
c. INCORRECT. Both control air supplies come downstream of the header crosstie valves, so U2 PAC will continue to supply both units' control air headers. Plausible since BU Air Connects to U1 Header on CAC Side of Valves.
d. INCORRECT. Both PRV-10 AND PRV-11 must be closed to isolate the Unit 1 header. Both control air supplies come downstream of the header crosstie valves, so U2 PAC will continue to supply both units' control air headers.

QUESTION # 065

An electrical fire started in the Unit 2 Control Room cable vault. The fire was promptly extinguished by the automatic actuation of the Fire Protection system for this area (assume that no backup systems have actuated).

As a result of the actuation, which of the following protective equipment or precautions are required, if any, for hazards that exist for personnel re-entering the area, and why?

a. SCBA is required due to a potential hazard of a high Halon concentration

b. SCBA is required due to the displaced oxygen due to a CO_2 discharge.

c. Evacuation must be possible within one minute due to a potential hazard of a high Halon concentration

d. No protective equipment or precautions are required. The cable vault ventilation system will clear the vault of dangerous gasses.

ANSWER:
a.
REFERENCE:
Lesson Plan RO-C-AS19, Halon Fire Protection.
Proposed References to be provided to applicants during examination: None
NEW
HIGHER
K/A # 086K5.04: Fire Protection: Knowledge of the operational implication of the following concepts as they apply to the Fire Protection System: Hazards to personnel as a result of fire type and methods of protection.
EXPLANATION:
a. CORRECT. SCBA is needed for Halon concentrations above 15 percent.
b. INCORRECT. A CO_2 discharge did not occur but is a backup system.
c. INCORRECT. SCBA is needed for this concentration.
d. INCORRECT. Precautions must be taken because of the Halon in the vault.

Unit Difference

QUESTION # 066

Which of the following conditions, as a minimum, MUST be true for a task to be considered skill of the trade?

a. The Operations Director has evaluated the task AND the task must NOT involve any obvious safety, radiological, or fire hazards.

b. The watchstation card for the task being performed is complete AND task must NOT involve any obvious safety, radiological, or fire hazards.

c. No specific procedural guidance is available for the task AND the watchstation card for the task being performed is complete.

d. The Operations Director has evaluated the task AND no specific procedural guidance is available for the task.

ANSWER:
c.
REFERENCE:
Procedure OHI-4000, Attachment 23, Skill of the Trade.
Proposed References to be provided to applicants during examination: None
MODIFIED
FUNDAMENTAL
K/A: 2.1.1: Knowledge of conduct of operations requirements.
EXPLANATION:
a. INCORRECT. Traininig Department must evaluate with Operations and hazards not specifically included (from OHI-4000 Att. 18 watchstanding)
b. INCORRECT. Hazards not specifically included (from OHI-4000 Att. 18 watchstanding)
c. CORRECT. Need both of these conditions.
d. INCORRECT. Traininig Department must evaluate with Operations

QUESTION # 067

Given the following conditions:

- Power Range Lower Detector Flux Deviation Alarm - LIT
- Power Range Channel Deviation Alarm - LIT
- NIS Tilt Computer Alarm - LIT
- Power Range NIS:
    - N41: 89%
    - N42: 89%
    - N43: 88%
    - N44: 85%
- T_{avg}: Rapidly lowering

Which of the following failures is the probable cause?

a. Dropped or Misaligned Control Rod

b. Power Range NI Channel failed high

c. PPC Rod Position monitoring failure

d. Power Range Lower Detector failed low

ANSWER:
a.
REFERENCE:
AOP-D8
BANK #3291
HIGHER
K/A # 2.1.19: Ability to use plant computers to evaluate system or component status.
EXPLANATION:
a. CORRECT The indications of power tilt and lowering tave indicate a dropped rod
b. INCORRECT One Channel reads lower than others and Tave would not lower.
c. INCORRECT Tave and NI reading would not be impacted.
d. INCORRECT Tave would not be lowering.

QUESTION # 068

Unit 1 is cooling down to Mode 5 for a refueling outage.

The following conditions exist:

- Steam dumps in Steam Pressure Mode
- Steam Dump Pressure Controller in Manual
- 15 minutes after the cooldown began from 547°F, the steam dumps closed.

Which of the following conditions describes the reason the steam dumps closed?

a. C-7A not reset.

b. Cooled down to P-12.

c. T_{avg} and T_{ref} deviation is less than 5 degrees.

d. The setpoint is set too high on Steam Dump Controller.

ANSWER:
b.
REFERENCE:
SOD-05200-001 Steam Dump System.
Proposed References to be provided to applicants during examination: None
BANK (#2646)
HIGHER
K/A # 2.2.2: Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.
EXPLANATION:
a. Incorrect – C-7A is a condition required to arm steam dumps when in T_{avg} mode.
b. Correct - 2/4 Tavg < 541°F auto blocks operation of all steam dumps.
c. Incorrect - On a load rejection must have greater than 3 degrees for banks to start modulating.
d. Incorrect - Setpoint has no effect in manual steam dump control.

QUESTION # 069

A Unit 1 Ice Condenser inlet door must be kept open for work to be done in the area, causing TS 3.6.12, Condition B, to be in effect. Per the action statement, the ice bed temperatures must be monitored every 4 hours.

- At 1230 today, the temperature was measured with satisfactory results.
- At 1600 today, unrelated plant events occurred making it extremely unattractive to perform the 4-hour surveillance on the ice bed.

Which of the following is the LATEST time that the temperature can be monitored per the action statement?

a. 1630 today

b. 1730 today

c. 2000 tomorrow

d. 1630 tomorrow

ANSWER:
b.
REFERENCE:
Lesson Plan RO-C-ADM04, Testing and Surveillances, page 62
Technical Specification Section 3.0 Surveillance Requirements.
Proposed References to be provided to applicants during examination: None
NEW
HIGHER
K/A: 2.2.12: Knowledge of surveillance procedures.
EXPLANATION:
a. Incorrect – This is the actual time the surveillance is due without any allowance.
b. Correct – SR 3.0.2 allows 1.25 the 4 hour surveillance time and still is considered met.
c. Incorrect – Misapplication of the 24 hour time allowed for a missed surveillance (SR 3.03) to the 1600 “time of discovery.”
d. Incorrect – Misapplication of the 24 hour time allowed for a missed surveillance (SR 3.03) to the actual time the surveillance is due.

QUESTION # 070

The Unit 1 containment penetrations were found in the following status during movement of irradiated fuel assemblies within containment:

- The equipment hatch was found closed and held in place by three bolts
- One door in each air lock was found capable of being closed
- A penetration flow path providing direct access from containment atmosphere to the outside atmosphere via the auxiliary building vent was found unisolated under administrative controls
- All other containment penetrations were found closed by a manual or automatic isolation valve, blind flange, or equivalent.

Which of the following describes the Technical Specifications 3.9.3 Containment Penetrations LCO status?

a. All required conditions are MET.

b. All required conditions are NOT MET due to air lock status.

c. All required conditions are NOT MET due to the equipment hatch status.

d. All required conditions are NOT MET due to the penetration flow path status.

ANSWER:
c.
REFERENCE:
Technical Specifications 3.9.3.
Proposed References to be provided to applicants during examination: None
NEW
HIGHER
K/A # 2.2.22: RO - Knowledge of limiting conditions for operations and safety limits.
EXPLANATION:
a. Incorrect – The equipment hatch must be closed and held in place by four bolts.
b. Incorrect – The air lock status IS met per LCO requirements.
c. Correct – The equipment hatch must be closed and held in place by four bolts.
d. Incorrect – The penetration flow path status IS met per LCO requirements and the note.

QUESTION # 071

An event at the plant results in an acute exposure of 30 Rem to a worker.

Which of the following describes the expected biological effects due to this overexposure?

a. No somatic effects are expected, but the risk of cancer rises.

b. No somatic effects AND no added risk of cancer are expected.

c. Detectable somatic effects are expected, but no added risk of cancer.

d. Detectable somatic effects are expected, AND the risk of cancer rises.

ANSWER:
b.
REFERENCE:
Lesson Plan RO-C-RP01, Biological Effects and Radiation Dose
Proposed References to be provided to applicants during examination: None
NEW
FUNDAMENTAL
K/A: 2.3.4: Knowledge of radiation exposure limits under normal or emergency conditions.
EXPLANATION:
a. Correct – Both statements are assumed to be true in the bases of radiation exposure limits for an exposure of this magnitude.
b. Incorrect – Cancer risk increases - each Rem of occupational exposure adds 0.03%.
c. Incorrect – Up to 100 Rem, no somatic effects are expected and cancer risk increases - each Rem of occupational exposure adds 0.03%.
d. Incorrect – Up to 100 Rem, no somatic effects are expected.

QUESTION # 072

Given that Unit 1 was operating at full power when R-19, SG Blowdown Sample Radiation Monitor, failed HIGH, which of the following describes the automatic response of the Blowdown System to this failure?

a. Blowdown discharge isolation (DRV 350) trips CLOSED.
   Containment Isolation valves (DCR 310 - 340) trip CLOSED.
   Blowdown Sample Isolation valves (DCR 301 - 304) trip CLOSED.

b. Blowdown discharge isolation (DRV 350) trips CLOSED.
   Containment Isolation valves (DCR 310 - 340) trip CLOSED.
   Blowdown Sample Isolation valves (DCR 301 - 304) remain OPEN.

c. Blowdown treatment pump trips.
   Containment Isolation valves (DCR 310 - 340) remain OPEN.
   Blowdown Sample Isolation valves (DCR 301 - 304) trip CLOSED.

d. Blowdown treatment pump trips.
   Containment Isolation valves (DCR 310 - 340) trip CLOSED.
   Blowdown Sample Isolation valves (DCR 301 - 304) remain OPEN.

ANSWER:
a.
REFERENCE:
ARP 1-OHP-4024-138, Drop 15
Proposed References to be provided to applicants during examination: None
BANK (#2992)
FUNDAMENTAL
K/A: 2.3.5: Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.
EXPLANATION:
a. CORRECT. High alarm on R-19 closes DRV 350, Containment Isolation valves, DCR 310-340, as well as Blowdown Sample valves DCR 301- 304.
b. INCORRECT. Blowdown Sample Isolation valves DCR 301-304 do NOT remain open.
c. INCORRECT. Blowdown treatment pump does NOT trip from R-19. Containment Isolation valves DCR 310-340 do NOT remain open.
d. INCORRECT. Blowdown treatment pump does NOT trip from R-19. Containment Isolation valves DCR 310-340, and Blowdown Sample valves DCR 301-304 do NOT remain open.

QUESTION # 073

When changing the configuration of the Aux Building Ventilation System, _____ should be notified to ensure _____

a. the Shift Manager
   management personnel are aware of current configuration in the event of an accident.

b. Radiation Protection
   radiological conditions in the Aux Building are appropriately monitored.

c. Maintenance
   the fans are checked for proper operation prior to running for prolonged periods of time.

d. Work Control
   surveillance requirements are up-to-date and remain current.

ANSWER:
b.
REFERENCE:
12-OHP-4021-028-011, Attachment 1, Step 2.1
MODIFIED
FUNDAMENTAL
K/A # 2.3.12: Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.
EXPLANATION:
a. INCORRECT. Wrong person notified. Incorrect reason for notification.
b. CORRECT. In accordance with the Normal Operating Procedure, RP is to be notified whenever the ventilation alignment in the Aux Building has been altered to ensure proper monitoring of radiation levels.
c. INCORRECT. Wrong person notified. Incorrect reason for notification.
d. INCORRECT. Wrong person notified. Incorrect reason for notification.

QUESTION # 074

The following conditions exist:

Pressurizer Level Channel NLP-151 is at 28% level
Pressurizer Level Channel NLP-152 associated bistables are in the tripped condition due to surveillance testing

- PR NI

N41	N42	N43	N44
8%	10%	9%	9%

- Turbine Impulse pressure

MPC-253	MPC-254
11%	9%

Pressurizer Level Channel NLP-153 fails high and no automatic reactor trip occurs.

Which of the following describes the required operator response?

a. Immediately enter FR-S.1 (Response Nuclear Power Generation/ATWS).

b. Initiate manual reactor Trip and enter E-0 (Reactor Trip or Safety Injection).

c. Do not trip the reactor because the Pressurizer Level Trip is blocked under these conditions.

d. Do not trip the reactor because the Pressurizer Level Trip Coincidence was changed to 2 of 2 channels (requires NLP-151 AND NLP-153) when NLP-152 was placed in test..

ANSWER
b.
REFERENCE:
1100-1, RPS/ESFAS Signals
BANK (CM-39776)
HIGHER
K/A: 2.4.1: Knowledge of EOP entry conditions and immediate action steps.
EXPLANATION:
a. Incorrect: FR-S.1 is not entered directly.
b. Incorrect: MPC-253 is >10% so P-13 and P-7
c. Correct: Trip the reactor because a trip signal should have been generated. OHI-4013 Section 3.6.3, Manually initiates if automatic fails to operate. Even if Reactor didn't trip - plant transient would be minor from this power level.
d. Incorrect: Logic becomes 1/2 when NLP-152 is placed in test/trip

QUESTION # 075

The Unit 2 reactor failed to automatically trip when the Reactor Coolant Pumps tripped.

During implementation 2-OHP-4023-FR-S.1, Response to Nuclear Power Generation/ ATWS, a MANUAL Turbine Trip was attempted per step 3 RNO but was unsuccessful.

Which of the following is the NEXT action the operator must take?

a. Manually actuate AMSAC.

b. Actuate ATWS Turbine Runback.

c. Shut the Main Steam Stop Valves.

d. Verify SG stop valve dump valves are closed.

Answer:
b.
REFERENCE:
2-OHP-4023-FR-S.1, Response to Nuclear Power Generation/ ATWS immediate action steps.
Proposed References to be provided to applicants during examination: None
NEW
FUNDAMENTAL
K/A # 2.4.49: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
EXPLANATION:
a. INCORRECT. Step 2 of 2-OHP-4023-FR-S.1 actuates AMSAC.
b. CORRECT. This is the action required immediately after the turbine fails to trip.
c. INCORRECT. Closing the Main Steam Stop valves is only performed IF a manual load reduction does not work.
d. INCORRECT. Verifying the SG stop valve dump valves are closed is only performed IF a manual load reduction does not work after closing the Main Steam Stop valves.

QUESTION # 076

Given the following plant conditions:

- Unit 2 was initially at 50% power when a cold leg leak developed.
- Pressurizer pressure is lowering at a constant depressurization rate of 100 PSI per minute.

Assuming normal initial conditions and no operator actions, the reactor will trip in __(1)__ minutes. The tech spec basis for the trip setpoint: to prevent __(2)__.

	(1)	(2)
a.	4.6	loss of primary system integrity
b.	3.6	exceeding departure from nucleate boiling ratio
c.	2.85	exceeding departure from nucleate boiling ratio
d.	1.35	loss of primary system integrity

ANSWER:
c.
REFERENCE:
Technical Specification Bases pg. B3.3.1-16
Proposed References to be provided to applicants during examination: None
BANK
HIGHER
K/A # 009EA2.25: Small Break LOCA: Ability to determine or interpret the following as they apply to a small break LOCA: Reactor trip setpoints.
EXPLANATION:
a. INCORRECT. 4.6 based on the Low Pressure SI setpoint at 1775 PSIG. Basis for the High Pressure trip is incorrect also.
b. INCORRECT. 3.6 based on the Low Pressurizer Pressure trip setpoint of 1875 PSIG.
c. CORRECT. (Normal pressure 2235 PSIG - Low Pressurizer Pressure trip setpoint of 1950 PSI) = 285 PSI. (2.85 PSI/100PSI per minute) = 2.85 minutes. The low pressure trip guards against DNB. SRO-only criteria: 10CFR 55.43.2 – TS Bases.
d. INCORRECT. 1.35 based on the Unit 1 Pressurizer NOP of 2085. Basis for the High Pressure trip is incorrect also.

QUESTION # 077

Given the following plant conditions:

- Unit 2 was initially at full power when charging flow was temporarily lost.
- The seal injection filters, which were becoming clogged, were replaced.
- Charging Flow was then restored.
- Stable pressurizer pressure was established at 2235 psig one hour ago.

Which of the following statements is true due to these events?

a. Seal injection flow resistance must be increased by throttling the RCP Seal Water Injection Throttling Valves within 3 hours to ensure that ECCS analysis assumptions are met.

b. Seal injection flow resistance must be decreased by throttling the RCP Seal Water Injection Throttling Valves within 3 hours to ensure RCP Seal Integrity analysis assumptions are met.

c. Seal injection flow must be measured within 3 hours per 2-OHP-4030-203-052L, Controlled Leakage Verification Test, to ensure RCP Seal Integrity analysis assumptions are met.

d. Seal injection flow resistance must be measured within 3 hours per 2-OHP-4030-203-052L, Controlled Leakage Verification Test, to ensure that ECCS analysis assumptions are met.

ANSWER:
d.
REFERENCE:
Lesson Plan RO-C-00201, Reactor Coolant Pump System
Technical Specification 3.5.5, Seal Injection Flow, and Technical Specification Bases pages B3.5.5-1 through B3.5.5-4.
Proposed References to be provided to applicants during examination: - None
NEW
HIGHER
K/A: 022.2.1.7: Loss of Rx Coolant Makeup: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
EXPLANATION:
a. INCORRECT. It has not been established that seal injection flow resistance is not within its limit. The surveillance must be performed when stable conditions are established.
b. INCORRECT. It has not been established that seal injection flow resistance is not within its limit. The surveillance must be performed when stable conditions are established.
c. INCORRECT. The surveillance is required to test flow resistance, not flow.
d. CORRECT. Per the SR 3.5.5.1 note, the surveillance is not required to be performed until 4 hours after pressurizer pressure stabilizes. SRO-only criteria: 10CFR 55.43.2; This question tests “below the line” TS and TS bases knowledge. When filters are changed at NOP, the surveillance must be performed to verify seal injection flow resistance.

QUESTION # 078

Considering the following list of accidents:

1) Inadvertent opening of a steam generator (SG) relief or safety valve
2) Steam Line Break (SLB)
3) Loss of Coolant Accident (LOCA)
4) SG Tube Rupture (SGTR)

Which of these does the basis for Technical Specification 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, state that the Safety Injection - Pressurizer Pressure Low signal provides protection against?

a. 1, 2, 3, and 4.

b. ONLY 2, 3, and 4.

c. ONLY 1, 3, and 4.

d. ONLY 1 and 2.

ANSWER:
a.
REFERENCE:
Technical Specification Bases B 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, page B 3.3.2-9.
Proposed References to be provided to applicants during examination: None
NEW
FUNDAMENTAL
K/A: 027.A2.04: Pressurizer Pressure Control System Malfunction: Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Tech-Spec limits for RCS pressure.
EXPLANATION:
a. CORRECT. SRO-only per 55.43.2, Facility operating limitations in TS and their bases.
b. INCORRECT. Accident 1) should also be included for the Safety Injection - Pressurizer Pressure Low signal.
c. INCORRECT. Accident 2) should also be included for the Safety Injection - Pressurizer Pressure Low signal.
d. INCORRECT. Accidents 3) and 4) should also be included for the Safety Injection - Pressurizer Pressure Low signal. This is true for Safety Injection - Steam Line Pressure Low signal.

QUESTION # 079

Unit 2 had been operating at full power for two weeks when a reactor trip with a safety injection occurred due to a steam line break. You have transitioned from 2-OHP-4023-E-2, "Faulted Steam Generator Isolation," to 2-OHP-4023-E-1, "Loss of Reactor or Secondary Coolant (E-1)."

You are now at E-1, Step 9, Check RCS and SG Pressures. Which of the following explains the consequence(s) of continuing to step 10 of E-1 (and failing to transition back to step 1, as appropriate)?

a. Continued operation with a faulted steam generator would unnecessarily challenge the AFW pumps due to the loss of makeup water.

b. The crew would transition to 2-OHP-4023-ES-1.2, Post-LOCA Cooldown and Depressurization, and encounter more restrictive SI termination criteria than necessary.

c. The crew would transition to 2-OHP-4023-ES-1.1, SI Termination and terminate the Safety Injection prematurely.

d. The crew would transition to 2-OHP-4023-ECA-1.1, Loss of Emergency Coolant Recirculation unnecessarily.

ANSWER:
b.
REFERENCE:
2-OHP-4023-E-1, Loss of Reactor or Secondary Coolant; Step 9, pg. 11
12-OHP-4023-E-1, EOP Basis for step 9, pg. 26.
Proposed References to be provided to applicants during examination: None
MODIFIED
HIGHER
K/A # 040.AK3.04: Steam Line Rupture Excessive Heat Transfer: Actions contained in EOPs for steam line rupture. This is an SRO-only question per 55.43.5, assessment of facility conditions and selection of appropriate procedures.
EXPLANATION:
a. Incorrect - AFW flow has already been isolated to the faulted SG. The other SG AFW flow will be throttled.
b. Correct - Step 9 provides a second check to see if a faulted SG has completed its depressurization. The procedure would then direct the crew back to Step 1, to recheck the initial steps of the procedure and then transition to 2-OHP-4023-ES-1.1, SI Termination. If the operator continues past this step they will be directed to 2-OHP-4023-ES-1.2, Post-LOCA Cooldown & Depressurization and encounter more restrictive SI termination criteria than necessary.
c. Incorrect - Continuing past step 9 will NOT lead to a transition to 2-OHP-4023-ES-1.1, SI Termination.
d. Incorrect - The crew would NOT reach the point where Emergency Recirculation was required.

QUESTION # 080

Unit 2 is at 90% power. The following occurred on August 2nd:

- At 0130, CRID II is declared INOPERABLE.
- At 1200, CRID III is declared INOPERABLE.
- At 1230, CRID II is declared OPERABLE.

What time must CRID III be restored to OPERABLE to meet the Technical Specifications (TS) completion time?

Reference Provided

a. 0130 on August 3

b. 1200 on August 3

c. 0130 on August 4

d. 1200 on August 4

ANSWER:
b.
REFERENCE:
TS 3.8.7 and TS 1.3 Completion Time extensions
Proposed References to be provided to applicants during examination: TS 3.8.7 & TS 1.3 Completion Time extensions
MODIFIED
HIGHER
K/A: 057.2.2.40: Loss of Vital AC Inst. Bus: Ability to apply Technical Specifications for a system.
This is an SRO-only question per 55.43.2, Facility operations limitations in the Technical Specifications.
EXPLANATION:
a. Incorrect – This would be true for Inverter 2 CRID II if Inverter 2 CRID III were declared operable at 1230.
b. Correct – Per TS 1.3.b; the stated Completion Time as measured from the discovery of the second inoperability.
c. Incorrect – Must be the more restrictive of c. or b. where c. applies 24 hours to the initial failure.
d. Incorrect – Misapplied additional 24 hours from c. to the subsequent failure

QUESTION # 081

Given the following plant conditions on Unit 2:

- The Unit is cooling down on RHR.
- RCS Temperature is 340°F.
- RCS pressure is 300 psig lowering.
- Pressurizer level is 22% lowering.
- Containment pressure is 0.1 psig and stable.
- VRS-2505, U2 Vent Noble Gas is in Alarm.
- VRS-2503, U2 Vent Iodine Monitor radiation levels are trending higher.
- SG levels stable at ~ 42%.

Which of the following identifies the problem and the associated action?

a. A LOCA has occurred on the suction of the RHR pump. Enter 2-OHP-4022-002-015, Mode 4 LOCA.

b. LTOP (Low Temperature Over Pressure) actuated and one PORV is stuck open. Enter 2-OHP-4022-002-015, Mode 4 LOCA.

c. Letdown line pressure relief valve has failed open. Enter 2-OHP-4022-002-020, Excessive Reactor Coolant Leakage

d. A LOCA has occurred in the area of the Regenerative Heat Exchanger. Enter 2-OHP-4022-002-020, Excessive Reactor Coolant Leakage

ANSWER:
a.
REFERENCE:
2-OHP-4022-002-015, Mode 4 LOCA, RO-C-AOP-D16
BANK
HIGHER
K/A: W/E04 2.1.30: LOCA Outside Containment: Ability to locate and operate components, including local controls.
EXPLANATION:
a. CORRECT. During any LOCA, RCS pressure and inventory will fall. Rising indication on the Aux Bldg. Radiation monitors is indicative of the LOCA outside containment (RHR pump suction).
b. INCORRECT. When LTOPs operation results in a PORV opening, RCS pressure will drop, but PZR level should rise due to voiding in the reactor vessel head. Initial conditions do NOT support LTOP auto operation.
c. INCORRECT. Failure of IRV-300 open results in increased diversion of RHR flow (RCS inventory) to letdown but the flow is contained and would not lead to rising Aux Bldg. RMS indications.
d. INCORRECT. This leak is outside containment.

QUESTION # 082

Given the following plant conditions:

- Unit 1 has just reached 90% power after a linear power ascension from 50% over the last four hours.
- AFD is on the edge of the target band
- Control Bank D continued to withdraw several steps after motion demand stopped.

Which of the following describes the initial Nuclear Instrumentation System/OTΔT trends for the unit and what is the Technical Specification requirement to restore the AFD within the target band if the AFD is not within the target band?

a. Axial Flux Difference goes more positive AND OTΔTsetpoint raises, 30 minutes to restore within the band.

b. Axial Flux Difference goes less positive AND OTΔT setpoint lowers, 30 minutes to restore within the band.

c. Axial Flux Difference goes more positive AND OTΔT setpoint lowers, 15 minutes to restore within the band.

d. Axial Flux Difference goes less positive AND OTΔT setpoint raises, 15 minutes to restore within the band.

ANSWER:
c.
REFERENCE:
1-OHP-4022-012-003; Continuous Control Bank Movement
Lesson Plan: (TRANS2C)
MODIFIED
HIGHER
Used in 2008 NRC Exam
K/A: 000001A2.04: Continuous Rod Withdrawal: Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Reactor power and its trend
EXPLANATION:
a. INCORRECT: AFD response is correct; OT delta T setpoint response is incorrect; OT and OP delta T setpoints will lower as power and temperature rise. 30 minutes is the time to reduce Thermal Power
b. INCORRECT: AFD response is incorrect; Control Rod withdrawal results in higher neutron population toward the top of the core. This will shift to more power production at the top of the core and thus lead AFD to be more positive. OT delta T setpoint response is correct; OT and OP delta T setpoints will lower as power and temperature rise. 30 minutes is the time to reduce Thermal Power
c. CORRECT: AFD response is correct; Control Rod withdrawal results in higher neutron population toward the top of the core. This will shift to more power production at the top of the core and thus lead AFD to be more positive. OT delta T setpoint response is correct; OT and OP delta T setpoints will lower as power and temperature rise. 15 minutes is the time to restore AFD to target band.
d. INCORRECT: AFD response is incorrect; Control Rod withdrawal results in higher neutron population toward the top of the core. This will shift to more power production at the top of the core and thus lead AFD to be more positive. OT delta T setpoint response is incorrect; OT and

OPΔT setpoints will lower as power and temperature rise. 15 minutes is the time to restore AFD to target band.

QUESTION # 083

Given the following:

- Unit 2 is in Mode 6 with fuel movement in process in the Auxiliary Building.
- Containment and Auxiliary Building boundaries are set.
- Fuel Handling Area Exhaust Ventilation (FHAEV) is in service with 1 AFX train in operation the other tagged for maintenance.
- 12-VRS-5000 “SPENT FUEL PIT AREA/AIRBORNE” is in ALARM
- Investigation reveals that Channel 12-VFR-5010, SFP Exhaust Rate Transmitter 12-VFR-5010 Flow Channel is alarming WHITE.
- Annunciator #103 Response: Ventilation, Drop 22, Fuel Handling Exhaust Fans Failure is lit.

How long do you have to stop fuel movement per Technical Specification 3.7.13, Fuel Handling Area Exhaust Ventilation (FHAEV) System and what is the bases for this action?

a. Immediately, because a total system failure could result in the atmospheric release from the auxiliary building exceeding the 10 CFR 100 limits in the event of a fuel handling accident.

b. Immediately, because a total system failure could result in the atmospheric release from the auxiliary building exceeding the 10 CFR 20 limits in the event of a fuel handling accident.

c. One hour to restore flow to allow for the system to be restarted, because a total system failure could result in the atmospheric release from the auxiliary building exceeding the 10 CFR 100 limits in the event of a fuel handling accident.

d. One hour to restore flow to allow for the system to be restarted, because only a total system failure could result in the atmospheric release from the auxiliary building exceeding the 10 CFR 20 limits in the event of a fuel handling accident.

ANSWER:
a.
REFERENCE:
ITSA-U2-Bases, Unit-2 Technical Specification Amendment Bases, B 3.7.13 LCO
NEW
HIGHER
K/A # 000036.2.2.25 (BW/A08): Fuel Handling Accident: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits
EXPLANATION:
a. Correct
b. Incorrect. Immediate is correct but the limit is bases on 10CFR 100.
c. Incorrect. The annunciator response Operator Action first step is to try and restart the fan but the TS states immediately.
d. Incorrect. The annunciator response Operator Action first step is to try and restart the fan but the TS states immediately

QUESTION # 084

Given the following conditions on Unit 1:

- The unit is operating at 100% power.
- A Containment Pressure Relief is in progress.
- VRS-1201 Upper Containment Normal Range Monitor failed due to a power supply failure.
- The Containment Pressure Relief is stopped.

Which of the following describes the restrictions placed on Containment Purge/Pressure Relief Operations?

REFERENCE PROVIDED

a. Containment Purge/Pressure Relief operations may NOT be performed until VRS-1201 is restored to operable status.

b. Containment Purge/Pressure Relief operations may continue under administrative controls provided that VRS-1201 is restored to operable status prior to entering Mode 4 following the next refueling outage.

c. Containment Purge/Pressure Relief operations may continue under administrative controls for up to 7 days, provided that area surveys of upper containment are performed at least once every 24 hours.

d. Containment Purge/Pressure Relief operations may continue for up to 48 hours before VRS-1201 is required to be restored to operable status.

ANSWER:
b.
REFERENCE: Unit 1 TS 3.3.6, TRM 8.3.8, and the associated Bases
Reference Provided - Unit 1 TS 3.3.6, TRM 8.3.8, and the associated Bases are attached.
OBJECTIVE: RO-C-01350-E9
BANK 2008NRC-605 Vision #39271
HIGHER
K/A # 000069 A2.02 (W/E14): Loss of CTMT Integrity: Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: Verification of automatic and manual means of restoring integrity
EXPLANATION:
a. INCORRECT: Condition A of TS 3.3.6 allows Purge Operations if 2/3 channels per train are operable.
b. CORRECT: Condition A of TS 3.3.6 allows Purge Operations if 2/3 channels per train are operable. The failed channel must be fixed during the next refueling outage.
c. INCORRECT: Sampling every 24 hours is required per TRM 8.3.8 if BOTH VRS-1101 & 1201 are inoperable. Other Channels within TRM 8.3.8 have a 7 day limit.
d. INCORRECT: Purge operations are not limited. These requirements are from the Technical Specification 3.3.6 Condition C.

QUESTION # 085

Given the following plant conditions:

- The plant is in Mode 3 performing a cooldown in preparation for a refueling outage.
- A malfunction of the Steam Generator Power Operated Relief Valves causes the cooldown rate to exceed Technical Specification limits.

Which of the following actions is required per TECHNICAL SPECIFICATIONS and why?

a. Restore cooldown rate limits within 1 hour to provide adequate margin from ductile failure of the reactor vessel.

b. Immediately stop any further cooldown. Maintain temperature for 6 hours to allow temperature stabilization throughout the reactor vessel wall.

c. Stop cooldown within 15 minutes. Maintain temperature for 12 hours to allow temperature stabilization throughout the reactor vessel wall.

d. Restore cooldown rate limits within 30 minutes to provide adequate margin from brittle failure of the reactor vessel.

ANSWER:
d.
REFERENCE:
Technical Specification 3.4.3 Pressure/Temperature Limits & Basis B3.4.3; RO-C-GF23 Brittle Fracture and Vessel Thermal Stress
LESSON PLAN/OBJ: RO-C-GF23/#14
BANK 2008NRC-0298Vision #39222
FUNDAMENTAL
K/A: W/E08.2.2.38: RCS Overcooling – PTS: Knowledge of conditions and limitations in the facility license
EXPLANATION:
a. INCORRECT: Time to restore is 30 minutes. Concern is brittle failure.
b. INCORRECT: Time to restore is 30 minutes. Plausible since soak time would aid the situation, this is NOT a required action and the time is excessive.
c. INCORRECT: Time to restore is 30 minutes. Plausible since soak time would aid the situation, this is NOT a required action and the time is excessive.
d. D. CORRECT: Technical Specification 3.4.3 requires the RCS temperature to be restored to within Limits in 30 minutes. The concern of excessive cooldown rates to brittle failure caused by the tensile stresses on the inner wall.

QUESTION # 086

Given the following:

- Unit 1 is at 100% power
- Maintenance has just completed work on 1-QCR-301, Normal Letdown Train 'A' Containment Isolation Valve (air solenoid)
- Testing has been completed and the valve returned to service
- The control room crew has restored letdown and all associated Technical Specifications have been cleared
- All other systems are operating normally

Three hours later the air solenoid fails and air pressure to valve 1-QCR-301 bleeds to 0 psig. What is the position of the valve and can this be repaired as Tool Pouch Maintenance?

a. Valve fails OPEN, Yes because the valve was just repaired and the documentation is still open.

b. Valve fails CLOSED, No the valve repair requires documentation.

c. Valve fails CLOSED, No because the valve is inside containment.

d. Valve fails AS-IS until air is applied, Yes because minor repairs do not require documentation.

ANSWER:
b.
REFERENCE:
SOD-00300-001, Charging and Letdown System
PMP-2291-MM-001, Minor/Tool Pouch Maintenance
1-OHP-4022-064-002, Loss of Control Air Recovery, Attachment B
NEW
HIGHER
K/A # 004A2.12: Chemical and Volume Control: Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: CIAS, SIAS
EXPLANATION:
a. Incorrect: Valve fails closed, maintenance on safety related valves requires documentation.
b. Correct.
c. Incorrect: Tool pouch does not specify inside or outside containment
d. Incorrect. Valve fails closed, maintenance on safety related valves requires documentation.

QUESTION # 087

Given the following:

- A plant heatup in progress
- The RCS is at 300°F and 350 psig.
- The South SI pump has failed its surveillance and has been declared inoperable.
- ALL remaining TS related equipment is OPERABLE.

A RISK ASSESSMENT has not been completed.
Reference Provided

Which of the following correctly states the impact on ECCS operability and the plant heatup?

a. ECCS is INOPERABLE for the current MODE. Technical Specification 3.5.3 Condition B must be entered. The plant heatup may continue to MODE 3.

b. ECCS is currently OPERABLE. Heatup to MODE 3 is allowed but Technical Specification 3.5.2 Condition A must be entered when MODE 3 is entered.

c. ECCS is INOPERABLE for the current MODE. Technical Specification 3.0.3 must be entered and a cooldown to MODE 5 initiated.

d. ECCS is currently OPERABLE. Heatup to MODE 3 is not allowed.

ANSWER:
d.
REFERENCE:
Technical Specification 3.5.2, 3.0.4
TS01-3: TS01-3, Technical Specifications/TRM – Application
Reference Provided Technical Specification 3.5.2 & 3.5.3
OBJ: RO-C-TS01-E11-U1
BANK CM-7811 Vision#38468
FUNDAMENTAL
K/A # 006.2.1.32: Emergency Core Cooling: Ability to explain and apply system limits and precautions.
EXPLANATION:
a. Incorrect. Only 1 Train is required in Mode 4
b. Incorrect. Mode Change is Not Allowed
c. Incorrect. Only 1 Train is required in Mode 4
d. Correct. Only 1 Train Required for Mode 4 and Mode Change is Not Allowed

QUESTION # 088

Which of the following is a CORRECT statement concerning OPERABILITY of the Engineered Safety Functions Actuation System (ESFAS) channel in regard to the Bistable Setpoint and Allowable Value?

The channel is OPERABLE…

a. ONLY if the setpoint meets BOTH the As-Found Setpoint and ALLOWABLE Value.

b. if it meets ALLOWABLE Value and the As-Left Setpoint is within the tolerance band even if the As-found setpoint was NOT acceptable.

c. if the As-Found Setpoint is within range even if the ALLOWABLE Value setpoint was NOT acceptable as long as the As-Left Setpoint is within the tolerance band.

d. As long as the As-Left Setpoint is within the tolerance band even if the As-found and ALLOWABLE Value setpoints were NOT acceptable.

ANSWER:
b.
REFERENCE:
ITSA-U1-Bases – Unit 1 Technical Specification Amendment Bases (TS B 3.3.2 page 1)
NEW
FUNDAMENTAL
K/A # 013 Engineered Safety Features Actuation G.2.1.32: SRO - Ability to explain and apply system limits and precautions..
EXPLANATION:
a. Incorrect. The As-Found may outside of tolerance
b. Correct. Channel is operable as long as it meets Allowable and As-Left is with spec.
c. Incorrect. The Allowable Value is a limit for channel OPERABLILITY
d. Incorrect. The Allowable Value is a limit for channel OPERABLILITY

QUESTION # 089

Given the following:

- Unit 2 is at 100% power
- Battery Charger 2AB2 is out of service for maintenance and cannot be restored this shift
- Battery AB is charging on Battery Charger 2AB1
- Annunciator #219: Station Auxiliary AB Drop 19, Battery Charger 2AB1 Abnormal, LIT an hour ago
- An operator was dispatched and reported that the “Fan Failure” lamp was LIT
- Maintenance has determined that both fans have failed and the charger could be out for several hours.
- A work week manager has been contacted and shift management has been notified

What is the CURRENT Operability status of the AB Battery Charger System and what procedure will be required once the fan is restored?

a. OPERABLE, restoration will be IAW 2-OHP-4021-082-006, Operation of the 2AB & 2CD Battery Chargers

b. INOPERABLE, restoration will be IAW 2-OHP-4021-082-006, Operation of the 2AB & 2CD Battery Chargers

c. OPERABLE, restoration will be IAW 2-OHP-4022-082-002AB, Loss of Power to 250 VDC Bus 2AB

d. INOPERABLE, restoration will be IAW 2-OHP-4022-082-002AB, Loss of Power to 250 VDC Bus 2AB

ANSWER:
b.
REFERENCE:
2-OHP-4021-082-006, Operation of the 2AB & 2CD Battery Chargers
PMP-7030-OPR-001, OPERABILITY DETERMINATION
ITSA-U2, Unit 2 Technical Specification Amendments
NEW
HIGHER
K/A # 063A2.02: DC Electrical Distribution: Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of ventilation during battery charging
EXPLANATION:
a. Incorrect: The battery chargers are INOPERABLE.
b. Correct.
c. Incorrect. 250VDC is still functioning as long as the battery has sufficient charge, the correct procedure is 2-OHP-4021-082-006.
d. Incorrect. 250VDC is still functioning as long as the battery has sufficient charge, the correct procedure is 2-OHP-4021-082-006.

QUESTION # 090

Unit 2 was operating at 95% power, when an operator identified that one of the Ice Condenser Intermediate Deck Doors was slightly open and incapable of being fully closed due to Ice Buildup.

Which of the following describes:

1) The impact of the open door, and
2) The Tech Spec actions, if any, required to continue operations at power?

a. 1) Containment temperature LOCA Analysis assumptions may be violated.
   2) Monitor the ice bed temperature less than or equal to 27°F every 12 hours for a maximum of 2 days.

b. 1) Containment pressure LOCA Analysis assumptions may be violated.
   2) Monitor the ice bed temperature less than or equal to 27°F every 4 hours for a maximum of 14 days.

c. 1) Ice condenser temperature will rise but be maintained less than 27°F by the glycol system with only one door open.
   2) No action is required since the Ice Condenser Inlet Doors are all OPERABLE.

d. 1) Containment pressure LOCA Analysis assumptions may be violated.
   2) Restore the Door to Operable status within 1 hour or be in Mode 3 within 6 hours and Mode 5 within 36 hours.

ANSWER:
b.
REFERENCE:
ITS 3.6.12 pg. 3.6.12-1, 2,&3
2-OHP-4030-214-030 Rev 25
BANK
HIGHER
K/A: 103.2.2.22: Containment: Knowledge of limiting conditions for operations and safety limits.
EXPLANATION:
a. Incorrect. The Ice Condenser is part of the Containment Pressure analysis.
b. Correct.
c. Incorrect. The Ice Condenser is part of the Containment Pressure analysis
d. Incorrect. This is a 4 hour TS. The door not opening is a 1 hour TS.

QUESTION # 091

The first charging pump is shutdown during safety injection termination per 02-OHP-4023-ES-1.1, Safety Injection Termination, following a LOCA. The following parameter trends are noted:

- Subcooling is +44ºF and lowering
- Pressurizer level is 25% and lowering
- RCS pressure is 1680 psig and lowering

Which of the following describes parameter(s) that were affected by the charging pump shutdown and what procedure will be used to complete the safety injection termination?

Lower injection flow is causing…

a. pressure to lower. Continue in 02-OHP-4023-ES-1.1, SI Termination.

b. temperature to rise. Continue in 02-OHP-4023-ES-1.1, SI Termination.

c. temperature to rise. Go to 02-OHP-4023-ES-1.2, Post LOCA Cooldown and Depressurization.

d. pressure to lower. Go to 02-OHP-4023-ES-1.2, Post LOCA Cooldown and Depressurization.

ANSWER
d.
REFERENCE:
12-OHP-4023-ES-1.1 Background Step 5
Lesson Plan\Obj: RO-C-EOP09\#36 & 42, RO-C-EOP05\#16 & 17
BANK NRCAUDIT07-0993 Vision #40294
HIGHER
K/A: 2.4.6: Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.
EXPLANATION:
a. Incorrect: A transition is made to ES-1.2 since RCS Pressure is lowering.
b. Incorrect: A transition is made to ES-1.2 since RCS Pressure is lowering.
c. Incorrect: The primary concern is lowering pressure and level. The transition is made based on pressure.
d. Correct: The criterion for terminating SI was met prior to entry into ES-1.1. After the first CCP is stopped, RCS pressure is checked to determine if 1 CCP will be sufficient to maintain control with the lower flow. If the leak is large enough to cause RCS pressure to lower, then a transition is made to ES-1.2 to address the leak.

QUESTION # 092

Given:

- Unit 1 is in MODE 1 performing physics testing following a refueling outage
- Security has informed the control room that the facility has been breached and the perpetrator is contained in the Fuel Handling building.
- The following alarms occur:
    - Annunciator #134 Response: Spent Fuel Pit, Drop 2, SFP Water Level Low
    - Annunciator #134 Response: Spent Fuel Pit, Drop 3, SFP Water Temperature High
    - Annunciator #134 Response: Spent Fuel Pit, Drop 6, North SFP Pump Failure
    - Annunciator #105 Response: Containment Spray, Drop 28, Spent Fuel Pit Temp High
    - Annunciator #105 Response: Containment Spray, Drop 26, Spent Fuel Pit Subpanel Alarm
- Spent fuel pit temperature is rising
- Spent fuel pit level is 623' and lowering
- R-5, Spent Fuel Pit Area radiation monitor is reading 50 mR and rising rapidly
- All other plant systems are indicating normal

Using PMP-2080-EPP-101, Initiating Conditions Table, what is the correct classification of the event?

a. General Emergency

b. Site Area Emergency

c. Alert

d. Unusual Event

ANSWER:
a.
REFERENCE:
PMP-2080-EPP-101 Rev 18, Page 15, Classification H.2 (Security)
Proposed References to be provided to applicants during examination: PMP-2080-EPP-101 Pages 12 – 14 – Reference Provided
NEW
HIGHER
K/A: 033.2.4.41: Spent Fuel Pool Cooling: Knowledge of the emergency action level thresholds and classifications.
EXPLANATION:
a. Correct
b. Incorrect There is no Site Area Emergency for spent fuel
c. Incorrect R-3 Loss of Level < 632' 4" is an Alert
d. Incorrect R-3 Loss of Level <643' 4" is an Unusual Event

QUESTION # 093

Given:

- A dual unit trip occurred 5 days ago due to electrical grid problems.
- A liquid radwaste discharge is in progress following a startup of Unit 1.
- The liquid radwaste monitoring tanks are full and space is needed for a Unit 2 restart planned within the next 24 hours.
- RRS-1000 Radioactive Liquid Effluent monitor is in alarm - RED.
- The operators verify that the alarm is Channel ID: RRS-1001 (Channel 1 Monitor) High Radiation Channel Failure.
- The operator verifying automatic actions reports that the WECT Pump and Monitor Tank pumps did NOT trip and RRV-285 has NOT CLOSED.
- Maintenance says that the circuit board for RRS-1000 is damaged and a replacement board is on order.

1) What is required by the “Precautions and Limitations” section of procedure 12-OHP-4021-006-004, “Transferring Distillate from Monitor Tanks”, Attachment 3, “FAST Release of a Monitor Tank To The Circ Water System?
2) What procedure/document would you use to verify the requirements to continue / restart the liquid radwaste discharge?

a. 1) Terminate the discharge
   2) Technical Specifications 5.5.3 Radioactive Effluent Controls Program

b. 1) Continue the discharge
   2) Technical Specifications 5.5.1 Offsite Dose Calculation Manual (ODCM)

c. 1) Terminate the discharge
   2) PMP-6010-OSD-001, Off-Site Dose Calculation Manual Attachment 3.2 Radiological Effluent Monitoring Instruments

d. 1) Continue the discharge
   2) PMP-6010-OSD-001, Off-Site Dose Calculation Manual Attachment 3.1, Dose Factors for Various Pathways

ANSWER:
c.
REFERENCE:
PMP-6010-OSD-001, Off-Site Dose Calculation Manual Attachment 3.2 Radiological Effluent Monitoring Instruments
12-OHP-4024-139, Annunciator #139 Response: Radiation, Drop 18
Lesson Plan Objective RO-C-ADM10-E1
NEW
HIGHER
K/A: 068A2.04: Liquid Radwaste: Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of automatic isolation
EXPLANATION:
a. Incorrect Tech Specs only discussed the need for a program

b. Incorrect Tech Specs only discussed the need for a program
c. Correct
d. Incorrect ODCM Section 3.1 is a list of dose factors

QUESTION # 094

A licensed individual is planning to undergo some medical evaluations and a test using radioisotopes. It has been determined that this test will not affect judgment or fitness for duty in any way.

Which of the following describes the procedural requirements for these conditions?

The licensed individual...

a. does not need to report this condition as a potentially disqualifying condition since it is not a fitness for duty issue.

b. must report this situation to the fitness-for-duty liaison for independent verification that it is not a fitness for duty issue, prior to assuming license duties.

c. must notify the Plant Manager who will evaluate the condition, prior to assuming license duties.

d. must notify the Operations Training Manager of a potential disqualifying medical condition.

ANSWER:
d.
REFERENCE:
OHI-2071, Reporting Reassignment, Termination, and Conditions Potentially Affecting Performance of Licensed Duties, Step 4.1, Page 7
BANK (Used in 2010 NRC Exam)
FUNDAMENTAL
K/A: 2.1.4: Conduct of Operations: Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, “no-solo” operation, maintenance of active license status, 10CFR55, etc.
EXPLANATION:
a. INCORRECT This condition could affect a person's ability to perform required tasks in the Aux Building.
b. INCORRECT No independent review by the fitness-for-duty liaison is required.
c. INCORRECT The Plant Manager is not responsible for this item. Reporting needs to be made to the Ops Training Manager.
d. CORRECT The described condition does not affect judgment nor is it a fitness for duty issue. Since a medical test that utilizes radioisotopes would impact an individual’s ability to enter and exit the auxiliary building, it limits the individual’s ability to perform licensed duties. It is therefore reportable to the Ops Training Manager using Data Sheet 1.

QUESTION # 095

Which of the following is NOT a duty of the Reactivity Manager during a Reactor Startup and Shutdown?

a. Ensure the reactor is placed in a safe condition if unexpected indications or conditions are encountered

b. Approve recommendations provided by reactor engineering personnel before any reactivity manipulation is performed

c. Provide peer checks of all calculations and manipulations for the start-up

d. Monitor all reactivity manipulations and the complete reactivity feedback from the reactor using diverse indications.

ANSWER:
c.
REFERENCE:
OHI-4000 Conduct of Operations: Standards, Attachment 14, Reactivity Control, Rev. 85, Page 95
NEW
FUNDAMENTAL
K/A: 2.1.5: Conduct of Operations: Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
EXPLANATION:
a. Incorrect In the procedure as Reactivity Manager Duty
b. Incorrect In the procedure as Reactivity Manager Duty
c. Correct The procedure states: 'Ensure peer checks of all calculations and manipulations are performed (Reactivity Manager does not provide peer checks).'
d. Incorrect In the procedure as Reactivity Manager Duty

QUESTION # 096

The plant is in MODE 4. The date is June 2. Conditions are:

- Personnel airlock interlock mechanism is declared inoperable at 0200.
- Personnel airlock outer door is closed and locked at 0245.

Which of the following describes the TS requirements necessary to permit access to perform repairs on the inoperable interlock mechanism?

a. Place the plant in cold shutdown conditions prior to entry.

b. Lock the inner door and post a dedicated individual to perform the interlock function prior to entry.

c. Lock the inner door and prohibit any entry until after repairs are made.

d. Declare Containment inoperable and enter Technical Specification 3.6.1, Containment Conditions and Required Actions.

ANSWER:
b.
REFERENCE:
TS 3.6.2 ACTIONS Table Note 1
BANK
HIGHER
K/A: 2.2.36: Equipment Control: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.
EXPLANATION:
a. Incorrect Not required unless the air locks are both inoperable or the at least one of the doors cannot be locked within 24 hours
b. Correct
c. Incorrect Note 1 to TS 3.6.2 ACTIONS does not prohibit opening of the inner door. The Bases of TS 3.6.2 acknowledges that the containment boundary may not be intact for a short time.
d. Incorrect The air locks have their own TS for inoperability.

QUESTION # 097

Given the following plant conditions:

- Both Units are in MODE 1.
- Engineering has determined that a relay has failed that will prevent the SI auto-start of the U1 East Essential Service Water (ESW) pump.
- All of the other Unit 1 East ESW Pump start signals will function as designed.
- The Unit 1 East ESW discharge crosstie valve is de-energized in the open position while maintenance replaces the motor on the valve.
- The Unit 2 West ESW discharge crosstie valve is in its normal open position.

Which of the following describes the operability and Technical Specification (TS) applicability associated with these conditions?

a. All ESW related trains are still OPERABLE because Unit 1 East ESW pump can still be manually started, and a service water TS LCO action statement would NOT be entered.

b. Only Unit 1 East ESW Train is INOPERABLE and a service water TS LCO action statement would be entered because the auto start is required to be operable.

c. All ESW related trains are still OPERABLE because the Unit 1 East ESW pump will start automatically if the discharge pressure falls below 40 psig and a service water TS LCO action statement would NOT be entered.

d. Both Unit 1 East and Unit 2 West ESW Trains are INOPERABLE and the ESW TS LCO action statements for both units must be entered because the crossties are open.

ANSWER:
d.
REFERENCE:
Technical Specification 3.7.8 Essential Service Water Systems, SR 3.7.8.3
BANK
HIGHER
K/A: 2.2.40: Equipment Control: Ability to apply Technical Specifications for a system.
EXPLANATION:
a. INCORRECT. Auto start is required for operability.
b. INCORRECT. Technical Specification 3.7.8 Essential Service Water Systems, SR 3.7.8.3 requires the auto start function of the ESW pump for operability. However, with the crossties open, this required Unit 2 LCO entry as well.
c. INCORRECT. While the pump may start at 40 psig the SI auto start would also be required for operability.
d. CORRECT. If the crossties are open then the LCO action statement also applies to Unit 2.

QUESTION # 098

While preparing a release permit for a waste monitor tank, it is determined that RFS-1010 (Liquid Waste Effluent Sample Flow) switch failed HIGH.

Repairs will take at least 3 days.

Which of the following actions is required by PMP-6010-OSD-001, Off-site Dose Calculation Manual, regarding the liquid waste release?

Reference Provided

The release …

a. may NOT be approved until the flow channel is restored to OPERABLE.

b. may be approved since the effluent channel (RRS-1001) is OPERABLE.

c. may be approved for up to 30 days provided the flow rate is estimated at least once per 4 hours during the actual release.

d. may be approved after at least two independent samples are analyzed and at least two qualified persons independently verify the discharge valve lineup.

ANSWER:
d.
REFERENCE:
PMP-6010.OSD.001 Attachment 3.2; 12-OHP- 4021.006.004 Attachment 3
Proposed References to be provided to applicants during examination: PMP-6010-OSD-001 Attachment 3.2 Pages 52 - 54
BANK
FUNDAMENTAL
K/A: 2.3.6: Radiation Control: Ability to approve release permits.
EXPLANATION:
a. INCORRECT. A release may continue if 2 samples are taken and the flowpath is dual verified.
b. INCORRECT. RFS-1010 is required for Operability of RRS-1001.
c. INCORRECT. These are the required steps for Action 4.
d. CORRECT. A release may continue if 2 samples are taken and the flowpath is dual verified.

QUESTION # 099

Given:

- Unit 1 is operating at 100% power
- Rod Bottom Light power supply has failed and is being replaced and is expected back in about 30 minutes
- A reactor trip occurs
- Wide range log power is 5.7%.
- The following rods indications are not at zero:
    - B8 – 9 steps
    - G2 – 7 steps
    - K14 – 9 steps
    - N11 – 5 steps
    - H8 – 11 steps

After entry into E-0, do you stay in E-0 or transition to FR-S-1 and what is the Justification?

a. Transfer to FR-S-1 — Wide range log power must be less than 5% to diagnose whether or not the subcriticality safety function is satisfied.

b. Stay in E-0 — As long as Neutron Flux is lowering and Reactor trip breakers are open, the reactor is shutdown.

c. Transfer to FR-S-1 — Without rod bottom lights you cannot meet the criteria for reactor trip and must transition to FR-S-1.

d. Stay in E-0 — As long as you perform procedure 1-OHP-4022-012-005, Dropped Or Misaligned Rod concurrently with E-0.

ANSWER
a.
REFERENCE:
12-OHP-4023-E-0, Reactor Trip Or Safety Injection Rev. 31, Page 11, D.2
NEW
HIGHER
K/A # 014A2.05: Rod Position Indication: Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Reactor Trip
EXPLANATION:
a. Correct
b. Incorrect Safety Evaluation tracking number 1999-0791-00
c. Incorrect See explanation
d. Incorrect See explanation

QUESTION # 100

Which of the following identifies the limitations, if any, on the delegation of the Site Emergency Coordinator responsibilities in accordance with the Emergency Plan Implementing Procedures?

	Escalation of the Emergency Classification Level	Approval of Protective Action Recommendations
a.	CANNOT be delegated	Can be delegated
b.	CANNOT be delegated	CANNOT be delegated
c.	Can be delegated	Can be delegated
d.	Can be delegated	CANNOT be delegated

ANSWER:
b.
REFERENCE:
PMP-2080-EPP-100, Emergency Response, Section 3.1.3
BANK
FUNDAMENTAL
LESSON PLAN/OBJ: ST-C-EP03/#4
K/A # 2.4.38 Emergency Procedures/Plan: Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.
EXPLANATION
a. INCORRECT: Plausible because the classification level not being delegated is correct and the performance of Dose Assessment may be performed by others.
b. CORRECT: The classification level cannot be delegated and the PAR could not be delegated by the SEC.
c. INCORRECT: Plausible because the SEC can delegate other responsibilities .
d. INCORRECT: Plausible because the SEC can delegate other responsibilities and the PAR could not be delegated by the SEC.