1 ☑ RO ☑ SRO Question ID: 1000026 Origin New ☐ Memory? (Check=Yes)

A reactor startup is in progress. The Primary Plant Operator (PPO) has just started withdrawing regulating group CEAs in Manual-Sequential mode, when the "Withdraw-Insert" switch fails in the WITHDRAW mode (indicative of holding the switch in the withdraw position). The PPO releases the control switch and notes that regulating group CEAs are continuing to withdraw.

The PPO then attempts to trip the reactor by pressing ALL four (4) TCB trip buttons and receives the following indication:

* All four (4) "K-relays" on RPS have deenergized.
* TCB #1 and TCB #2 green lights lit, red light out.
* TCB #3, #4, #5, #6, #7, #8 and #9 red lights lit, green lights out.

All other indications are normal for a reactor startup.

Which one of the following describes the result of the above TCB status?

A The action taken will trip the main turbine, which will then deenergize the CEA busses stopping the rod withdrawal. ☐

B The present TCB configuration will immediately trip all CEAs stopping the rod withdrawal. ☐

C Both of the MG Set feeder breakers must be opened from C04 to stop rod withdrawal. ☑

D The main turbine Trip pushbutton on C05 must be pushed to stop rod withdrawal. ☐

Justification A; Wrong - the indication given has only TCBs #1 & #2 open and the rest closed. These TCBs are in series and will NOT deenergize either CEA bus if they are the only TCBs open. Therefore the undervoltage trip of the turbine will not occur.
B; Wrong - only one of the two lines to one of the two CEA busses has been opened. As each CEA bus has two supply lines, both busses are still powered.
C; Correct - EOP-2525 states that the MG set breakers are to be opened on C04 if the TCBs don't open when the trip buttons are pushed.
D; Wrong - Tripping the main turbine will NOT do anything different than pushing the four trip buttons on C04, it operates the same circuit.

Reference MP2 LOUT CED-01-C MB-2250

NRC K/A System/E/A NRC K/A Generic

System 001 Continuous Rod Withdrawal

Number AA2.01

Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Reactor tripped breaker indicator

Importance RO/SRO 4.2 4.2

10CFR Link (CFR: 43.5 / 45.13)

2 ☑ RO ☑ SRO Question ID: 1000027 Origin New ☐ Memory? (Check=Yes)

The following plant conditions exist:

* 100% power, 892 MWe output, steady state
* All CEAs fully withdrawn
* One (1) Charging Pump in operation, letdown balanced

Then, a regulating group CEA drops to the fully inserted position, with all other CEAs remaining fully withdrawn.
The Secondary Plant Operator (SPO) immediately lowers turbine load, dropping generator output by fifty (50) MWe to 842 MWe.

Which one of the following is an expected AUTOMATIC plant response to the dropped CEA and the SPO's actions?

A Letdown flow will become greater than charging flow. ☑

B One or two of the backup charging pump(s) will start. ☐

C The letdown heat exchanger RBCCW flow will lower. ☐

D The in-service back pressure control valve will be more closed. ☐

Justification A; Correct - 50 MWe is approx. 5.6% power, which is far greater than the worth of one regulating CEA. Therefore, the SPO's actions, even with the dropped CEA, will cause the RCS to heat up and insurge to the PZR, resulting in the level control system raising letdown flow.
B; Wrong - not with the amount of load rejected by the SPO's actions. The RCS will definitely heat up and insurge.
C; Wrong - only if letdown flow were to lower, which it does not.
D; Wrong - this would occur if letdown flow were to lower.

Reference MP2 LOUT, CVCS, PLC-01-C, MB-2328

NRC K/A System/E/A NRC K/A Generic

System 003 Dropped Control Rod

Number AK1.05

Knowledge of the operational implications of the following concepts as they apply to Dropped Control Rod: CVCS response to dropped rod

Importance RO/SRO 2.3 2.6

10CFR Link (CFR 41.8 / 41.10 / 45.3)

 # 3 ☑ RO ☑ SRO Question ID: 0153945 Origin Modified ☐ Memory? (Check=Yes)

The plant is operating at 100% power, end-of-life, with Regulating Group #7 (RG-7) inserted to 165 steps per a Reactor Engineering recommendation. All CEAs in RG-7 correctly indicate 165 steps on all position displays.

Then, the PPO withdraws RG-7 five steps, to 170 steps withdrawn. However, an existing failure in the CEDM (mag-jack) for CEA #1 causes it to seize, preventing CEA #1 from moving.

Which one of the following combinations of CEAPDS and Plant Process Computer (PPC) position indications matches those that would be displayed on C04 for the stuck CEA (#1)?

A CEAPDS indicates 165 steps PPC indicates 165 steps ☐

B CEAPDS indicates 165 steps PPC indicates 170 steps ☑

C CEAPDS indicates 170 steps PPC indicates 165 steps ☐

D CEAPDS indicates 170 steps PPC indicates 170 steps ☐

Justification A; Wrong - PPC will not "see" that the rod is stuck and has not actually moved.
B; Correct - CEAPDS will display the actual CEA position (stuck at 165 steps) because it monitors the reed switches for the individual CEA. However, the PPC will display a change in CEA position (to 170 steps) because the CEDM was actually "pulsed" to move the CEA.
C; Wrong - this choice has the indications system responses reversed.
D; Wrong - this choice has neither system indicating true rod position via the reed switches.

Reference MP2 LOUT, CED-01-C, MB-2267

NRC K/A System/E/A NRC K/A Generic

System 005 Inoperable/Stuck Control Rod

Number AK2.03

Knowledge of the interrelations between the Inoperable / Stuck Control Rod and the following: Metroscope

Importance RO/SRO 3.1 3.3

10CFR Link (CFR 41.7 / 45.7)

4 ☐ RO ☑ SRO Question ID: 0156347 Origin Modified ☐ Memory? (Check=Yes)

Given the following:

* Plant power is 100%
* The PPO is attempting to insert Group 7 CEAs from 180 steps to 170 steps.
* Manual Sequential has been selected for CEA control.
* CEA #1 is stuck in the fully withdrawn position.

Then, the PPO does not notice the stuck CEA and continues to insert Group 7 until a system interlock stops all rod motion, with the remaining CEAs in Group 7 at 172 steps withdrawn.

The PPO then requests permission to continue driving CEAs using the Group 7 and System bypasses. The US denies the request, stating the bases for the interlock just encountered.

Which one of the following statements describes the basis for the interlock and the reason permission was denied?

A Limit uneven radial power distribution to acceptable limits while inserting CEAs. ☑

B Maintain Minimum shutdown margin worth for the group while inserting CEAs. ☐

C Limit potential damage to the CEDM by attempting to move a physically stuck CEA. ☐

D Limit potential effects of an ejected rod (total CEDM failure) to acceptable values. ☐

Justification A; Correct - The group deviation CMI is the interlock that is applicable to this situation and it is designed to prevent unacceptable radial power distribution due to uneven rod height within a group.
B; Wrong - this is the bases for the PDIL interlock.
C; Wrong - nice idea but not the real reason.
D; Wrong - another PDIL bases.
This is a Tech. Spec. basis question, SRO ONLY.

Reference MP2 LOUT, 2556, A56-01-C, MB-5817, CFR55.43.b.6

	NRC K/A System/E/A	NRC K/A Generic
System	005 Inoperable/Stuck Control Rod	2.1 Conduct of Operations
Number	GA	2.1.7
	SEE GENERIC K/A	"Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation."
Importance RO/SRO		3.7 4.4
10CFR Link		(CFR: 43.5 / 45.12 / 45.13)

5 ☑ RO ☑ SRO Question ID: 0153296 Origin Modified ☑ Memory? (Check=Yes)

Two hours after a large break Loss Of Coolant Accident (LOCA) from 100% power, plant conditions are as follows:

* RCS pressure is 40 psia
* CETs are currently reading 267 °F.
* CTMT pressure peaked at 45 psig, but is now 7.7 psig and slowly lowering.
* RWST level is now 9.0% and stable.
* RVLMS is reading 29%

Which of the following indicates that the Emergency Core Cooling System equipment is correctly aligned and operating properly to provide long term core cooling?

A The "A" & "B" LPSI pumps and "A" & "C" HPSI pumps are all injecting at full flow. ☐

B "C" HPSI pump is injecting at full flow and the "A" HPSI pump has been throttled to maintain RVLMS level constant. ☐

C "C" HPSI pump is aligned for boron precipitation control and the "A" HPSI pump is injecting at full flow. ☐

D The "A" & "C" HPSI pumps are both injecting to the loops at full flow and both LPSI pumps are off. ☑

Justification A; Wrong - due to the tripping of LPSI Pumps on SRAS at 9.5% RWST level (level is stated as stable, indicating no flow from RWST).
B; Wrong - HPSI termination/throttling criteria are not met.
C; Wrong - "C" HPSI pump cannot be aligned for boron precipitation control and boron precipitation actions are not suppose to be initiated for 8 - 10 hours into the event
D; Correct - HPSI termination/throttling criteria are not met and LPSI pumps have tripped due to SRAS. flow of approximately 570 gpm at 40 psia pressurizer pressure.

Reference MP2 LOUT, E32-01-C, MB-4732, CFR55.43.b.5

NRC K/A System/E/A

NRC K/A Generic

System 011 Large Break LOCA

Number EA2.10

Ability to determine or interpret the following as they apply to a Large Break LOCA: Verification of adequate core cooling

Importance RO/SRO 4.5 4.7

10CFR Link (CFR 43.5 / 45.13)

6 ☑ RO ☑ SRO Question ID: 0053793 Origin Bank ☑ Memory? (Check=Yes)

Given the following conditions:

* A Loss of Coolant Accident has occurred.
* RCS Pressure is 1500 psia.
* Two (2) Reactor Coolant Pumps (RCPs) have been secured.

Which one of the following describes why the RCPs are secured under these conditions?

A Lower the amount of water mass inventory lost through the break, therefore enhancing efforts to keep the core covered. ☑

B Raise the flow of steam (instead of two-phase mixture) from the break, therefore enhancing heat removal from the core. ☐

C Lower the cold leg pressure head, therefore, enhancing safety injection system performance at higher flow rates. ☐

D Lower the amount of heat being added to the RCS that must then be removed by safety injection. ☐

Justification A; Correct - RCPs are secured to ensure water is NOT 'pumped' out the break (worst case is bottom of hot leg), therefore limiting the amount of inventory lost during a LOCA.
B; Wrong - more energy would be removed in a two-phase mixture.
C; Wrong - injection flow sees "RCS-to-RWST Head" delta-p, not loop delta-p generated by operating RCPs.
D; Wrong - correct reason for normal plant cooldown operations.

Reference MP2 LOUT E32-01-C, MB-5941

NRC K/A System/E/A

System 011 Large Break LOCA

Number EK3.11

Knowledge of the reasons for the following responses as the apply to the Large Break LOCA: NC and PC

Importance RO/SRO 3.3 3.4

10CFR Link (CFR 41.5 / 41.10 / 45.6 / 45.13)

NRC K/A Generic

7 ☑ RO ☑ SRO Question ID: 1000028 Origin New ☑ Memory? (Check=Yes)

The plant is operating at 100% power, steady state, when RPS Channel "B" Low RCS Flow processes a trip.
All other parameters on Channel "B" and all other channels of RPS are functioning normally.

Which one of the following conditions (taken by themselves) describe the possible cause of Channel "B" RCS Low Flow trip?

A Channel "B" Steam Generator D/P is reading half the value of the other three channels. ☑

B The "B" RCP motor-impeller coupling has failed, but the motor is still operating. ☐

C Channel "B" Core D/P is reading zero while the other three channels are reading normal. ☐

D The "B" RCP amps are reading zero and its breaker has the green and amber lights energized. ☐

Justification A; Correct - the displayed SG D/P is an average of the D/P across the SGs in each loop. This is the D/P used by RPS to determine proper RCS flow.
B; Wrong - this would cause a "low flow" trip on all four channels of RPS as all four channels would see the lower D/P.
C; Wrong - core D/P is for indication only, it has no input to RPS.
D; Wrong - this would cause a "low flow" trip on all four channels of RPS as all four channels would see the lower D/P.

Reference MP2 LOUT, RPS, -01-C, MB-3146

NRC K/A System/E/A

System 015 Reactor Coolant Pump Malfunctions

Number AA1.12

Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Reactor coolant loop flow meters

Importance RO/SRO 2.8 3.1

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

8 ☐ RO ☑ SRO Question ID: 0154128 Origin Modified ☑ Memory? (Check=Yes)

What is the operational concern underlying the Technical Specification requirement for two (2) banks of Pressurizer heaters with a capacity of at least 130 kW and capable of being powered from an emergency power supply?

A Maintain the ability to provide minimum NPSH for RCP operation following a loss of VR-21, which deenergizes the backup heaters. ☐

B Maintain the ability to prevent void formation in the reactor head during a natural circulation cooldown with a loss of the backup heaters. ☐

C Maintain the ability to ensure continued natural circulation in the RCS, while in hot standby, following a total loss of off-site power. ☑

D Maintain the ability to prevent the formation of a hard bubble in the pressurizer following a loss of vital 4160 VAC busses. ☐

Justification A; Wrong - the loss of VR-21 will deenergize the backup heaters, but their loss, in an of itself, will not challenge the ability to maintain RCP NPSH.
B; Wrong - in a cooldown utilizing NC flow, there is no cooling to the vessel upper head, therefore a head bubble is unavoidable.
C; Correct - 3/4.4.4 BASIS: Technical Specifications Basis 3/4.4.4 states, "The requirement that 130 kW of pressurizer heaters and their associated controls be capable of being supplied electrical power from an emergency bus provides assurance that these heaters can be energized during a loss of off-site power condition to maintain natural circulation at HOT STANDBY."
D; Wrong - a hard bubble is prevented by continuous venting of the PZR steam space, through the steam space sample line, during normal operation.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR55.43.b.6

NRC K/A System/E/A NRC K/A Generic

System A13 Natural Circulation Operations

Number AK1.1

Knowledge of the operational implications of components, capacity and function of emergency systems as they apply to the Natural Circulation Operations.

Importance RO/SRO 3.0 3.5

10CFR Link (CFR: 41.8 / 41.10 / 45.3)

9 ☑ RO ☑ SRO Question ID: 0156228 Origin Modified ☑ Memory? (Check=Yes)

The plant has tripped and Emergency Boration is required. 2-CH-514, boric acid isolation valve, will NOT open.

Which one of the following is a control board indication necessary for emergency boration under the above conditions?

A Boric Acid Pump Recirc Valves (2-CH-511 and 512) indicate closed. ☐

B 2-CH 500, letdown divert valve, indicates aligned to the RWS flow path. ☐

C Volume Control Tank Outlet Valve (2-CH-501) indicates closed. ☑

D Boric Acid Pumps running with discharge pressure indicating >90 psig. ☐

Justification A; Wrong - recirc valves are only important if BA pumps are used.
B; Wrong - this indicates letdown is aligned to the Rad. Waste system, which is irrelevant to the boration flow path.
C; Correct - 2-CH-514 isolates flow from the BA pumps, therefore gravity feed is required. Closing the Volume Control Tank Outlet Valve (2-CH-501) ensures gravity feed will NOT be over come by the static head of the VCT.
D; Wrong - the BA pumps are isolated with CH-514 closed.

Reference MP2 LOUT, A58-01-C, MB-5409

NRC K/A System/E/A

NRC K/A Generic

System 024 Emergency Boration

Number AA1.25

Ability to operate and / or monitor the following as they apply to the Emergency Boration: Boration valve indicators

Importance RO/SRO 3.4 3.3

10CFR Link (CFR 41.7 / 45.5 / 45.6)

10 ☑ RO ☑ SRO Question ID: 1000029 Origin New ☑ Memory? (Check=Yes)

The following plant conditions exist:

* The plant is operating at 100% power.
* The Instrument Air (IA) supply line to all three RBCCW Heat Exchanger Temperature Control Valves (TCVs) ruptures. (ONLY valves effected).
* The rupture is isolated by closing 2-IA-255, isolating IA to all RBCCW TCVs, ONLY.
* To control temperature, the RBCCW heat exchanger outlet valves (2-SW-9A,B,C) have been manually throttled.
* "B" RBCCW Pump is available with 24E aligned to 24C.

Which one of the following describes the impact that the above system alignments will have on the RBCCW System while repairs are being completed on the IA rupture?

A Performing a plant downpower will now require further throttling (closing) of the RBCCW outlet valves. ☐

B A loss of the "A" RBCCW Pump will require an immediate plant trip due to the inability to align the "B" RBCCW Pump. ☐

C On a large-break LOCA, containment spray will NOT be effective until the RWST empties. ☐

D On an excess steam demand inside containment, the CAR fans will have minimal heat sink capability. ☑

Justification A; Wrong - plant power level has little effect on the RBCCW heat load.
B; Wrong - "B" pump is available for facility one and can be aligned as the IA loss is stated as not effecting any other RBCCW valves.
C; Wrong - CTMT spray does not utilize RBCCW until the RWST empties (SRAS). Until then it is quite effective due to the relatively cold water in the RWST.
D; Correct - the CARs will have minimal effectiveness because the RBCCW system heat exchangers cannot align for accident heat loads.

Reference MP2 LOUT A65-01-C MB-5048

NRC K/A System/E/A

System 026 Loss of Component Cooling Water (CCW)

Number AK3.01

Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the CCWS coolers

Importance RO/SRO 3.2 3.5

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

NRC K/A Generic

 # 11 ☑ RO ☑ SRO Question ID: 1000049 Origin New ☑ Memory? (Check=Yes)

The plant is operating at 100% power when the "C" RCP breaker trips and the following then occurs:

* ALL rods remain fully withdrawn.
* All actions to trip the CEAs at C04 have been taken without success.
* The Secondary Plant Operator is about to trip the Main Turbine per the applicable EOP step.

Which one of the following describes a consequence or requirement of tripping the Main Turbine under the existing conditions?

A The MSIVs will have to be closed immediately after tripping the main turbine. ☐

B The Steam dump availability must be verified before this action is taken. ☐

C The PORVs, and possibly pressurizer Safety Valves, will lift on high RCS pressure. ☑

D The action will add the necessary reactivity to shut down the reactor. ☐

Justification A; Wrong - closing the MSIVs would only isolate the condenser steam dumps, requiring the MSSVs to remove even more RCS heat.
B; Wrong - the steam dumps do not have the capacity for 100% load reject. There availability will not shutdown the reactor.
C; Correct - the power produced by the reactor will back up into the RCS, raising temp. and pressure until the relieved somewhere.
D; Wrong - RCS heatup will lower reactor power, but no where near enough to shutdown the reactor from 100% power.

Reference MP2 LOUT, JPM-069, MB-2587

NRC K/A System/E/A

System 029 Anticipated Transient Without Scram (ATWS)

Number EA1.13

Ability to operate and monitor the following as they apply to a ATWS: Manual trip of main turbine

Importance RO/SRO 4.1 3.9

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

 # 12 ☑ RO ☑ SRO Question ID: 0154212 Origin Modified ☐ Memory? (Check=Yes)

The plant is stable at 98% power following the loss of VA-10 (deenergized).
Plant personnel are trouble-shooting the deenergized bus when the following occurs:

* "A" main steam header breaks in containment (CTMT) and the plant is tripped.
* On the trip, 24C and 24D fail to transfer to the RSST due to a failure of the RSST-to-24G Feeder breaker.
* ALL other equipment operates as appropriate for the above conditions.
* 2-FW-44 (Aux. Feed Header X-tie) has been closed.
* Aux. Feed is aligned to #2 steam generator (SG) using the Turbine Driven Aux. Feed Pump.
* Both electric Aux. Feed Pumps are secured.
* #1 SG pressure is 600 psia and dropping rapidly.
* CTMT is 28 psig and rising rapidly.

Which of the following actions must the Unit Supervisor direct to prevent containment from exceeding its design based temperature and pressure?

A Manually actuate Facility 1 SIAS, CIAS, EBFAS and MSI from C01. ☐

B Ensure all running Condensate Pumps are secured. ☑

C Manually isolate the #1 Main Feed Regulating Valves locally. ☐

D Cross-tie and reenergize #1 SG feedwater isolation valves and close them. ☐

Justification The loss of VA-10 locks up the #1 Main Feed Reg. Valve (FRV) in the 100% power position. On the trip, the loss of the RSST to 24C will deenergize 24A and therefore 22A&22C. These 480 load centers power the motor operated valves that are normally used to isolate the locked up #1 FRV. As power to these valves was lost BEFORE any signal could close them, they are all fully open.
A; Wrong - As power is still lost to the isolation valves, no ESAS signal can effect them.
B; Correct - As soon as the #1 SG depressurizes to ~ 500 psia, any running condensate will start feeding it and accelerate the depressurization. This will cause mass and energy to be transferred to CTMT faster and faster, eventually overcoming the CTMT protective systems.
C; Wrong - This depressurization (and subsequent feeding) will occur long before the main feed valve is locally isolated.
D; Wrong - This depressurization (and subsequent feeding) will occur long before any lost bus can be reenergized.

Reference MP2 LOUT, AEP-02-SE, MB-4751, 2536, CFR 55.43.b.5

NRC K/A System/E/A

NRC K/A Generic

System E05 Excess Steam Demand

Number EA2.2

Ability to determine and interpret adherence to appropriate procedures and operation within the limitations in the facility's license and amendments as they apply to the Excess Steam Demand.

Importance RO/SRO 3.4 4.2

10CFR Link (CFR: 43.5 / 45.13)

13 ☑ RO ☑ SRO Question ID: 0053721 Origin Bank ☑ Memory? (Check=Yes)

Following the blowdown of the S/G in an Excess Steam Demand event, plant procedures direct that the unaffected S/G's atmospheric dump valve be opened.

Which one of the following is the reason for this action?

A To minimize RCS heatup once blowdown is complete thus minimizing RCS repressurization. ☑

B To limit the pressure differential between the RCS and the unaffected S/G. ☐

C To assure maximum AFW flow to the unaffected S/G is maintained thus preventing thermal shock and water hammer effects. ☐

D To ensure balanced thermodynamic stresses on both sides of the reactor vessel. ☐

Justification A; Correct - EOP 2536, Excess Steam Demand and EOP 2525 directs the operator to stabilize RCS Temperature by using the ADV on the operable S/G. This will prevent RCS heatup and repressurization.
B; Wrong - an RCS heatup could raise RCS pressure, but it would also raise SG pressure and have little effect on the pressure differential.
C; Wrong - Although AFW flow will be effected by SG pressure, the AFW pumps can easily overcome any SG pressure providing the required flow.
D; Wrong - opening of the ADV will have no effect on the excessive cooldown that already occurred due to the ESD event. Also, the ADV is not supposed to be opened enough to continue the cooldown to the point that any temperature inequalities are corrected.

Reference MP2 LOUT, E36-01-C, MB-5847

NRC K/A System/E/A

NRC K/A Generic

System A11 RCS Overcooling

Number AK3.3

Knowledge of the reasons for manipulation of controls required to obtain desired operating results during abnormal and emergency situations as they apply to the RCS Overcooling.

Importance RO/SRO 3.1 3.5

10CFR Link (CFR: 41.5 / 41.10, 45.6, 45.13)

 # 14 ☑ RO ☑ SRO Question ID: 0156781 Origin Modified ☑ Memory? (Check=Yes)

Which one of the following plant conditions would require an immediate MANUAL trip of the reactor?

A 100% plant power, condenser backwashing in progress, and condenser backpressure is 4.5 inches of mercury absolute and stable. ☐

B 40% plant power, 2 circulating water pumps are lost in the same condenser and backpressure is 4 inches of mercury absolute and stable. ☑

C 50% plant power, mussel cooking in progress, and condenser differential temperature is 30 °F and stable. ☐

D 60% plant power with the repair of a condenser air leak in progress and condenser backpressure is 2.5 inches of mercury absolute and slowly getting worse. ☐

Justification A; Wrong - this evolution involves one circ. Pump being secured and the flow of another sent backwards through that condenser, therefore, this slight rise in backpressure is expected.
B; Correct - The loss of two circ pumps in a single condenser requires a plant trip per the circ procedure.
C; Wrong - this evolution involves one circ. Pump being secured and the flow of another sent backwards through that condenser, therefore, this slight rise in backpressure is expected.
D; Wrong - Plant procedures do NOT require a plant trip until backpressure reaches >6.0" Hg.

Reference MP2 LOUT, A74-01-C, MB-5566

NRC K/A System/E/A

NRC K/A Generic

System 051 Loss of Condenser Vacuum

Number AA2.02

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: Conditions requiring reactor and/or turbine trip

Importance RO/SRO 3.9 4.1

10CFR Link (CFR: 43.5 / 45.13)

 # 15 ☑ RO ☑ SRO Question ID: 0271928 Origin Bank ☐ Memory? (Check=Yes)

The plant has been in a Station Blackout for the past three hours and the Instrument Air system has been completely depleted.

Based on the failed position of air operated valves and components, manual control of plant equipment will be required to preserve which one of the following Safety Functions?

A Containment Integrity ☐

B RCS Inventory Control ☐

C RCS Pressure Control ☐

D RCS Heat Removal ☑

Justification A; Wrong - all air-operated CTMT isolation valves fail in their required position on a loss of air.
B; Wrong - all air-operated RCS boundary valves fail in their required position on a loss of air.
C; Wrong - all air-operated RCS boundary valves, (including spray isolation valves), fail in their required position on a loss of air.
D; Correct - maintaining RCS heat removal requires starting the TDAFP and manually operating FRVs and ADVs.

Reference MP2 LOUT, AEP-02-SE, MB-4748, CFR55.43.b.5

NRC K/A System/E/A

System 055 Loss of Offsite and Onsite Power (Station Blackout)

Number EA2.01

Ability to determine or interpret the following as they apply to a Station Blackout: Existing valve positioning on a loss of instrument air system

Importance RO/SRO 3.4 3.7

10CFR Link (CFR 43.5 / 45.13)

NRC K/A Generic

16 ☑ RO ☑ SRO Question ID: 1000057 Origin New ☑ Memory? (Check=Yes)

The plant has tripped from 100% power with the following conditions:

* A Station Blackout has occurred on the plant trip.
* No other plant failures have occurred, except those caused by the loss of AC power.

Which one of the following plant conditions CANNOT be verified DIRECTLY, using control board indications?

A Pressurizer level is about 23% and slowly lowering. ☐

B All CEAs have fully inserted into the core on the trip. ☑

C Aux. Feed flow to both steam generators is 150 gpm. ☐

D The atmospheric dump valves are NOT fully closed. ☐

Justification A; Wrong - PZR level is now powered by VA-10 & VA-20, which should still be powered even with a Station Blackout.
B; Correct - CEA reed position is powered by VR-11 or VR-21, both of which are deenergized. The PPC needs reed position to "see" that the CEAs are on the bottom and rezero the pulse counts.
C; Wrong - AFW flow indication is powered by VA-10 & VA-20, which means it is still functioning and can be utilized to monitor flow from the Steam Driven Aux. Feed pump.
D; Wrong - the ADV control power comes from VA-10 & VA-20, which means they will open to control SG pressure. Also, the "red" open indication is powered by DC, which means the light will energize when the valves come off their fully closed position.

Reference MP2 LOUT, AFW-01-C, LVD-01-C, MB-4873

NRC K/A System/E/A

System 057 Loss of Vital AC Electrical Instrument Bus

Number AA1.05

Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: Backup instrument indications

Importance RO/SRO 3.2 3.4

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

17 ☑ RO ☑ SRO Question ID: 0055866 Origin Bank ☐ Memory? (Check=Yes)

A Radwaste Discharge has been started with the permit requiring three (3) Circulating Water Pumps and two (2) Service Water Pumps. At the time the discharge was started, four (4) Circulating Water Pumps and two (2) Service Water Pumps were operating.

Which of the following situations would REQUIRE this Radwaste Discharge to be secured per administrative guidelines?

A One Circulating Water Pump trips when its breaker fails. ☐

B One Circulating Water Pump is secured for Mussel Cooking operation. ☑

C The plant trips due to the loss of a main feedwater pump. ☐

D The "B" Service Water Pump is started and then the "C" Service Water Pump is secured. ☐

Justification A; Wrong - the permit allows for three circ. Pumps, so the discharge is not required to be secured.
B; Correct - the discharge must be secured not because a pump was secured, but because mussel cooking operation divert an additional pumps dilution flow back to Niantic bay (lowering effective dilution flow to two pumps, below permit requirements).
C; Wrong - no effect on any system applicable to a liquid rad. waste discharge.
D; Wrong - dilution flow is not lowered by the swapping of SW pumps in this fashion.

Reference MP2 LOUT, ADM-02-J, MB-4826, CFR 55.43.b.5

	NRC K/A System/E/A	NRC K/A Generic
System	059 Accidental Liquid Radwaste Release	2.1 Conduct of Operations
Number	GA	2.1.7
	SEE GENERIC K/A	"Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation."
Importance RO/SRO		3.7 4.4
10CFR Link		(CFR: 43.5 / 45.12 / 45.13)

 # 18 ☑ RO ☑ SRO Question ID: 0253415 Origin Modified ☑ Memory? (Check=Yes)

The plant is operating normally at 100% power when an inadvertent SIAS occurs on both facilities. All applicable equipment responded as designed to the inadvertent ESAS signal.

Which of the following plant components is now in danger of overheating due to the above signal?

A RCPs seals. ☐

B CVCS Ion exchangers. ☐

C Main Generator stator. ☑

D Emergency Diesel Generators. ☐

Justification A; Wrong - RBCCW cooling to the RCP seals is not lost.
B; Wrong - letdown is isolated on a SIAS.
C; Correct - Stator Water Cooling via TBCCW has been lost because Service Water is isolated to the TBCCW coolers.
D; Wrong - Service Water is automatically aligned to the EDGs upon any start.

Reference MP2 LOUT, A71-01-C, MB-5764

NRC K/A System/E/A

System 062 Loss of Nuclear Service Water

Number AK3.02

Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS

Importance RO/SRO 3.6 3.9

10CFR Link (CFR 41.4, 41.8 / 45.7)

NRC K/A Generic

19 ☑ RO ☑ SRO Question ID: 0171770 Origin Bank ☐ Memory? (Check=Yes)

During a fire in the 25'6" cable spreading room the following has occurred:

* The automatic fire suppression system has fully actuated.
* The Fire Brigade has entered the room to fight the fire with two 1-1/2" hoses.
* The doors at the east end of the 25'6" cable spreading room and the outside exit door 212W have been blocked open.

If fire fighting strategies allow, when can the doors be re-closed, per AOP-2559, Fire?

A As soon as the smoke has been purged from the room. ☐

B As soon as the fire has been completely extinguished ☐

C As soon as the water flow into the cable vault is terminated. ☑

D As soon as all fire hoses and vent fans are clear of the doors. ☐

Justification A; Wrong - smoke purge is not enough for door closure.
B; Wrong - though required to exit the AOP, the doors cannot be closed as soon as the fire is out.
C; Correct - per AOP 2559 Precaution 3.2, the floor drains cannot handle the flow of water from the fire suppression systems and the water will overflow and flood the battery rooms below.
D; Wrong - the fire suppression system must still be secured.

Reference MP2*LOUT, 2559, MB-5666

NRC K/A System/E/A NRC K/A Generic

System 067 Plant fire on site

Number AK3.04

Knowledge of the reasons for the following responses as they apply to the Plant Fire on Site: Actions contained in EOP for plant fire on site

Importance RO/SRO 3.3 4.1

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

 # 20 ☑ RO ☑ SRO Question ID: 0253964 Origin Bank ☐ Memory? (Check=Yes)

The crew is in the process of performing the operability run on the 'C' charging pump. The 'B' charging pump is aligned to Facility Two (2).

A major fire occurs in the control room requiring immediate evacuation. The control switch for the 'C' charging pump on C02 is left in the 'Pull-to-lock' (SIAS start only) position, when control is shifted to C10.

How many charging pumps can be manually controlled from C10 at this time? (Assume no other operator action.)

A None ☐

B One ☐

C Two ☑

D Three ☐

Justification A; Wrong - both Facility Two pumps can be manually controlled from C10.
B; Wrong - both Facility Two pumps can be manually controlled from C10.
C; Correct - Only Facility Two pumps ("C" and possibly "B") can be controlled from C10. Since "B" is presently aligned to Fac. 2, it is available from C10 at this time. When control is shifted to C-10, this bypasses all other switches in the circuit. Therefore, "C" is available even though it's switch is in PTL on C02.
D; Wrong - Only the Facility Two pumps can be manually controlled from C10. Even though the "A" charging pump is available, it cannot be controlled from C10.

Reference MP2 LOUT, A51-01-C, MB-5676

NRC K/A System/E/A

System 068 Control Room Evacuation

Number AK2.03

Knowledge of the interrelations between the Control Room Evacuation and the following: Controllers and positioners

Importance RO/SRO 2.9 3.1

10CFR Link (CFR 41.7 / 45.7)

NRC K/A Generic

 # 21 ☐ RO ☑ SRO Question ID: 0256991 Origin Modified ☐ Memory? (Check=Yes)

Tech. Spec. 3.6.2.1 allows for various losses of containment (CTMT) cooling trains and CTMT spray facilities. However, if both trains of CTMT spray are lost, the Tech. Spec. requires an immediate entry into T.S. 3.0.3, even if all four CTMT cooling trains are available.

Which of the following describes the reason for the more restrictive criteria on the containment spray trains, based on the Technical Specification Basis?

A Prevent thermal stratification in the CTMT dome region, during a large break LOCA or excess steam demand event. ☐

B Limit the heat load that the design basis accident places on the RBCCW system to within design requirements. ☐

C Limit the loss of boric acid from solution due to boric acid plating out on various equipment in CTMT during a LOCA. ☐

D Minimize the time requirement to de-superheat the steam released to CTMT in a large excess steam demand event. ☑

Justification A; Wrong - PIR fans provide for this function, when available.
B; Wrong - the heat load would not change as spray does not remove heat from CTMT.
C; Wrong - any BA plate-out on equipment is already accounted for, regardless of the spray action.
D; Correct - CARs are available and more than adequate to meet design cooling limits of a LB-LOCA or ESD in CTMT. However, CTMT spray is much more effective in limiting the CTMT temperature and pressure rise post-ESD due to the superheated steam that will be present.

Reference MP2 LOUT CSS-01-C MB-2311 2309, SD-12, CFR55.43.b.2

	NRC K/A System/E/A	NRC K/A Generic
System	069 Loss of Containment Integrity	2.2 Equipment Control
Number	GA	2.2.25
	SEE GENERIC K/A	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.
Importance RO/SRO		2.5 3.7
10CFR Link		(CFR: 43.2)

 # 22 ☑ RO ☑ SRO Question ID: 0053762 Origin Bank ☑ Memory? (Check=Yes)

Which one of the following RCS conditions could render the Reactor Vessel Level Monitoring System inaccurate, as described in various EOP cautions?

A Forced circulation. ☑

B Reflux boiling. ☐

C Two phase natural circulation. ☐

D Stalled natural circulation. ☐

Justification A; Correct - Due to the delta-p developed by the fuel alignment plate.
B; Wrong - system is designed to measure level in a two-phase environment.
C; Wrong - (same as above)
D; Wrong - Natural Circulation, in any form, has no effect on the RVLMS.

Reference MP2 LOUT, ICC-01-C, MB-2594

NRC K/A System/E/A

System 074 Inadequate Core Cooling

Number EA1.01

Ability to operate and monitor the following as they apply to a Inadequate Core Cooling: RCS water inventory

Importance RO/SRO 4.2 4.4

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

 # 23 ☐ RO ☑ SRO Question ID: 0154178 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress with power presently at 3%. Chemistry reports the specific Dose Equivalent I-131 activity of the primary coolant is 65 uCi/gm.

Which one of the following is the minimum required action?

A Hold reactor power at <5% until activity levels are reduced. Sampling frequency must be increased to every 4 hours. ☐

B Operation up to 78% power may continue for 48 hours. Sampling frequency must be increased to every 4 hours. ☑

C Commence a plant shutdown within 1 hour, to be in HOT STANDBY within the next 6 hours, and ensure the RCS is sampled every 2 to 6 hours after each 15% power change. ☐

D Commence a plant shutdown to be in HOT STANDBY with Tavg less than 515 °F within 48 hours. Sampling frequency must be increased to every 4 hours. ☐

Justification A; Wrong - T.S. 3.4.8, Action a. applies and it states T.S. 3.0.4 does NOT apply, which is the T.S. that precludes a mode change while in a TSAS.
B; Correct - Technical Specification 3.4.8, Action a. states that with the specific activity of the primary coolant greater than 1.0 microcuries per gram Dose Equivalent I-131, but within the allowable limit of the curve, operation may continue for 48 hours. Technical Specification 3.4.8d states that the sampling must be completed once per 4 hours. To be within the limits of the curve, power must be less than </= 78%.
C; Wrong - this is requirement if activity LCO Action Statement could not be met (TS 3.0.3), and implies a sample frequency for a 15% power change in one hour.
D; Wrong - this is requirement if activity is above the curve, which it is not.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.2

NRC K/A System/E/A NRC K/A Generic

System 076 High Reactor Coolant Activity

Number AK1.01

Knowledge of the operational implications of the following concepts as they apply to High Reactor Coolant Activity: Radioactivity units

Importance RO/SRO 2.1 2.5

10CFR Link (CFR 41.8 / 41.10 / 45.3)

 # 24 ☑ RO ☑ SRO Question ID: 0056634 Origin Bank ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power, when the "Letdown Line Rad Hi/Failure" alarm actuates. Both recorder pens on the "Letdown Failed Fuel/Gross Activity Recorder"(RR-202, panel C-02) increase significantly.

Which one of the following conditions would cause this response?

A Increased N-16 due to higher letdown flow. ☐

B Failed fuel. ☑

C RCS crud burst. ☐

D Temperature increase in letdown. ☐

Justification A; Wrong - this would NOT cause both pens to respond, only gross activity pen would go up.
B; Correct - Any increased activity will cause the gross activity reading to increase. The failed fuel monitor only responds to a narrow energy window associated with Rb-85, which is indicative of failed fuel.
C; Wrong - this would NOT cause both pens to respond, only gross activity pen would go up.
D; Wrong - this would have little or no effect on this recorder.

Reference MP2 LOUT, CVC-01-C, MB-0133

NRC K/A System/E/A

NRC K/A Generic

System 076 High Reactor Coolant Activity

Number AK2.01

Knowledge of the interrelations between the High Reactor Coolant Activity and the following: Process radiation monitors

Importance RO/SRO 2.6 3.0

10CFR Link (CFR 41.7 / 45.7)

25 ☑ RO ☑ SRO Question ID: 1000034 Origin New ☐ Memory? (Check=Yes)

The plant has tripped from 100% power due to degrading condenser vacuum. EOP-2525 has been completed and the crew has just transitioned to EOP-2526 with the following conditions:

* On the trip, 24C did not transfer to the RSST.
* Group Deviation Backup alarm, one CEA at 160 steps all others fully inserted.
* Low Condenser Vacuum alarms, vacuum is 15" Hg and degrading.
* Both steam generator levels recovering on Aux. Feedwater.

Which one of the following Operator actions is required at this time?

A Transition to AOP-2558 and initiate emergency boration. ☐

B Exit the EOPs, go to an approved plant procedure. ☐

C Transition to EOP-2528 and attempt recovery of 24C. ☐

D Close Both MSIVs and open the Vacuum Breaker. ☑

Justification A; Wrong - NOT required for only one stuck CEA.
B; Wrong - cannot exit EOPs until all actions required in EOP-2526 are implemented.
C; Wrong - NOT required because one full facility transferred to the RSST.
D; Correct - both EOP-2525 and EOP-2526 have steps which require the MSIVs be closed on a loss a vacuum, once vacuum degrades to 15" Hg.

Reference MP2 LOUT, 2525/2526, E26-01-C, MB-5482

NRC K/A System/E/A NRC K/A Generic

System E02 Reactor Trip Recovery

Number EK1.3

Knowledge of the operational implications of annunciators and conditions indicating signals and remedial actions associated with the Reactor Trip Recovery as they apply to the Reactor Trip Recovery.

Importance RO/SRO 3.0 3.4

10CFR Link (CFR: 41.8 / 41.10, 45.3)

 # 26 ☑ RO ☑ SRO Question ID: 1000032 Origin New ☑ Memory? (Check=Yes)

The plant is at 100% power when it trips on high pressurizer pressure. The following conditions occur on the trip:

* High pressurizer pressure caused the PORVs to lift.
* 25A and 25B are lost (did NOT auto transfer to RSST).
* VA-10 is lost (deenergized).
* Acoustic Valve Monitoring System is deenergized (no VA-10).
* All other systems and equipment responded as designed per the above conditions.

Which one of the following is a definite indication that one or both PORVs failed to close as pressurizer pressure dropped below the reset setpoint?

A Pressurizer pressure and RCS temperature slowly lower together. ☐

B Quench tank pressure slowly rises to about 100 psig then suddenly drops to 0 psig. ☑

C PORV tail pipe temperature is slightly above normal containment ambient temperature. ☐

D Pressurizer level is above the expected level for a normal (uncomplicated) trip. ☐

Justification A; Wrong - PORVs would not cause RCS temperature to lower until the RCS reaches saturation.
B; Correct - Quench tank rupture disk breaks at ~100 psig, giving the stated indication.
C; Wrong - Any lifting of the PORVs will cause this indication to approach Tsat for the backpressure of the quench tank (i.e.; >100 °F above amb.). This indication will take a substantial amount of time to return to normal.
D; Wrong - with 25A & 25B unavailable, the RCS is in NC flow. While establishing NC, the RCS will heat up approximately 24 °F above normal (uncomplicated) trip values.

Reference MP2 LOUT, RCS-01-C, MB-3036

NRC K/A System/E/A

System 008 Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

Number AK2.02

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Sensors and detectors

Importance RO/SRO 2.7 2.7

10CFR Link (CFR 41.7 / 45.7)

NRC K/A Generic

27 ☑ RO ☑ SRO Question ID: 1000056 Origin New ☑ Memory? (Check=Yes)

A Small-Break LOCA has occurred approximately 45 minutes ago and the crew has entered the appropriate EOP.
The following plant conditions now exist:

* RCS Pressure = 1650 psia and slowly rising.
* RCS Tavg = 532 °F and stable.
* Pressurizer Level = 66% and slowly rising.
* Containment pressure is 3.1 psig and slowly rising.
* Reactor Vessel Level = 100%.
* Three (3) CEAs are stuck fully withdrawn.
* ALL ESAS equipment responded as designed.

Which one of the following describes some of the actions required to lower pressurizer level?

A Override open the letdown isolation valves and override off one or two charging pumps. ☑

B Block and reset SIAS and CIAS on ESAS and restore normal CVCS operation. ☐

C Override off all charging pumps and let the forthcoming plant cooldown lower level. ☐

D Override off both HPSI pumps and override the letdown controller to match charging flow. ☐

Justification A; Correct - restore control of charging and letdown by overriding components as necessary.
B; Wrong - With CTMT pressure >3 psig, blocking ESAS is not allowed by procedure.
C; Wrong - Emergency Boration is still required with three stuck rods.
D; Wrong - HPSI is not injecting at this pressure and the letdown controller will not open CIAS valves.

Reference MP2 LOUT, CVC-01-C, MB-2360

NRC K/A System/E/A NRC K/A Generic

System 009 Small Break LOCA

Number EA1.08

Ability to operate and monitor the following as they apply to a small break LOCA: Containment isolation system

Importance RO/SRO 4.0 4.1

10CFR Link (CFR 41.7 / 45.5 / 45.6)

28 ☑ RO ☑ SRO Question ID: 0154054 Origin Modified ☑ Memory? (Check=Yes)

While performing EOP-2525, Standard Post Trip Actions, the Secondary Plant Operator (SPO) discovers that VR-11 has deenergized on the trip.

Which of the following actions must the SPO take?

A Ensure the Primary Plant Operator fully understands the impact of the loss of VR-11 before continuing with EOP-2525. ☐

B Continue implementing EOP-2525 actions and inform the US and PPO of the situation when queried or time permits. ☑

C Immediately send a PEO to investigate the loss of VR-11 and report the panel status before continuing in EOP-2525. ☐

D Interrupt the SM/US and inform them of the need to reference the Loss Of VR-11 AOP before continuing in EOP-2525. ☐

Justification A; Wrong - although this will cause the loss of letdown flow, a concern for the PPO, the loss of VR-11 does NOT directly impact a Safety Function and, therefore, does not warrant interruption of EOP-2525 actions.
B; Correct - The loss is important, but not critical. Inform the US/PPO when time permits.
C; Wrong - PEO investigation is important, but should NOT interrupt EOP-2525 completion.
D; Wrong - As a S.F. is not being directly impacted, the US/SM should not be interrupted in their actions.

Reference MP2 LOUT, E25-01-C, MB-5425

NRC K/A System/E/A

System 022 Loss of Reactor Coolant Makeup

Number GA

SEE GENERIC K/A

Importance RO/SRO

10CFR Link

NRC K/A Generic

2.4 Emergency Procedures /Plan

2.4.15

Knowledge of communications procedures associated with EOP implementation.

3.0 3.5

(CFR: 41.10 / 45.13)

 # 29 ☑ RO ☑ SRO **Question ID: 1000052** **Origin New** ☐ Memory? (Check=Yes)

Which one of the following describes the reason for the UPPER limit of RCS pressure when cross-tying the SDC system to the RCS?

A Ensure the combined flow of two (2) operating SDC pumps and two (2) operating RCPs will not cause the lifting of the SDC relief valves. ☐

B Ensures that 2-SI-652 (SDC isolation) can be closed based on the maximum differential pressure the valve operator is designed to operate against. ☐

C Ensures that SDC pump differential pressure added to RCS pressure (LPSI suction) will not exceed the SDC system maximum design pressure. ☑

D Ensures that 2-SI-651 and 2-SI-652 (SDC isolation) will not automatically close and isolate the SDC system before it can be properly secured. ☐

Justification A; Wrong - system concerns are not based on excessive flow, which this is not.
B; Wrong - SI-652 is a globe valve, which should not be adversely effected by flow while closing.
C; Correct - maximum pressure for piping is ~ 600 psi. This can be exceeded if SDC pump design differential of ~ 300 psid is added to an RCS suction pressure of ~ 300 psia.
D; Wrong - this interlock was removed in a previous outage.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.5

NRC K/A System/E/A

System 025 Loss of Residual Heat Removal System (RHRS)

Number AK3.02

Knowledge of the reasons for the following responses as they apply to the Loss of Residual Heat Removal System: Isolation of RHR low-pressure piping prior to pressure increase above specified level

Importance RO/SRO 3.3 3.7

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

NRC K/A Generic

30 ☑ RO ☑ SRO Question ID: 0156303 Origin Modified ☑ Memory? (Check=Yes)

The following plant conditions exist:

* Steady state operation at 100% power.
* Pressurizer pressure control is in automatic, maintaining RCS pressure at 2250psia.
* The pressurizer pressure selected controller, automatic SETPOINT fails to 2360 psia (step change).

Which one of the following will be the IMMEDIATE response of the system?

A Spray valves CLOSE if previously open, backup heaters all turn on and proportional heaters go to maximum. ☐

B Power operated relief valves RC-402 and RC-404 OPEN and spray valves OPEN if previously closed. ☐

C Spray valves CLOSE if previously open and proportional heaters go to maximum. ☑

D Spray valves OPEN if previously closed and proportional heaters go to minimum. ☐

Justification A; Wrong - backup heaters are not controlled by pressure controllers.
B; Wrong - PORVs will not open for quite a while as the prop. htrs. will raise pressure slowly. Also, the spray valves would go closed if open.
C; Correct - Auto setpoint going up would cause controller output to lower as if RCS pressure was going down. The system would respond accordingly.
D; Wrong - Spray valves would not open with setpoint ABOVE actual pressure.

Reference MP2 LOUT, PLC-01-C, MB-2982

NRC K/A System/E/A NRC K/A Generic

System 027 Pressurizer Pressure Control System (PZR PCS) Malfunction

Number AK2.03

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

Importance RO/SRO 2.6 2.8

10CFR Link (CFR 41.7 / 45.7)

 # 31 ☑ RO ☑ SRO Question ID: 1000037 Origin New ☐ Memory? (Check=Yes)

The plant is at 12% power with a plant startup in progress.

Then, VA-30 deenergizes due to a failed supply breaker. Plant personnel have diagnosed and repaired the problem and are about to reenergize VA-30.

Which one of the following is an expected condition resulting from the restoration of power to VA-30?

A The "CEA Dropped NIS" annunciator will alarm. ☐

B The PDIL interlock on CEDS will no longer be bypassed. ☐

C The "Turbine and Local Power Density Trip Bypassed" annunciator will alarm. ☐

D The NIS Hi and HI-HI Deviation alarms on Channels "A", "B" and "D" of RPS will clear. ☑

Justification A; Wrong - alarms when power DROPS >/=8% in one second. Power, in this case, went up.
B; Wrong - PDIL interlock is removed when ANY wide range NI channel is >/= 10-4% power.
C; Wrong - setpoint is ~ 14.5% power. Plant is at 12% in stem.
D; Correct - deviation alarms were in when channel "C" NI deenergized on loss of power (VA-30). With power restored alarms should clear.

Reference MP2 LOUT, RPS-01-C, MB-3144

NRC K/A System/E/A

System 032 Loss of Source Range Nuclear Instrumentation

Number AA1.01

Ability to operate and / or monitor the following as they apply to the Loss of Source Range Nuclear Instrumentation: Manual restoration of power

Importance RO/SRO 3.1 3.4

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

 # 32 ☐ RO ☑ SRO Question ID: 0054138 Origin Bank ☑ Memory? (Check=Yes)

The following plant conditions exist:

* Reactor startup in progress.
* Shutdown banks have just been fully withdrawn.
* The regulating CEAs are still inserted.

Which one of the following is the MINIMUM number of wide range logarithmic channels required to be OPERABLE in this condition?

A 4 ☐

B 3 ☐

C 2 ☑

D 1 ☐

Justification A; Wrong - all four channels are NEVER required.
B; Wrong - T.S. action describes "one less than total REQUIRED..." not one less than total AVAILABLE.
C; Correct - Table 3.3-1 for Technical Specification LCO 3.3.1.1 states that TWO wide range logarithmic channels are required in Modes 3, 4 & 5.
D; Wrong - this is the minimum number required to meet the Action Statement, not the LCO.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.2

NRC K/A System/E/A

NRC K/A Generic

System 033 Loss of Intermediate Range Nuclear Instrumentation

Number AK3.01

Knowledge of the reasons for the following responses as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Termination of startup following loss of intermediate- range instrumentation

Importance RO/SRO 3.2 3.6

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

33 ☑ RO ☑ SRO Question ID: 1000038 Origin New ☐ Memory? (Check=Yes)

The plant is in a normal 100% power lineup, when a steam generator tube leak develops. Present plant conditions are as follows:

* Letdown has lowered to ~32 gpm and stabilized.
* No backup charging pumps are running at this time.
* Pressurizer level is stable at ~64%.

The crew then takes the applicable actions to begin a plant downpower.

Which one of the following conditions would indicate that the SG tube leak rate is rising?

A After starting the second charging pump, the PPO adjusts letdown flow to 84 gpm. Pressurizer level then lowers to ~63.5% and letdown flow lowers to ~76 gpm before both stabilize. ☐

B After starting the second charging pump and adjusting letdown flow to 84 gpm, the PPO inserts Group 7 CEAs 10 steps. Pressurizer level then lowers to ~63% and letdown flow lowers to ~73 gpm before pressurizer level begins to slowly rise. ☐

C After starting the second charging pump, the PPO adjusts letdown flow until pressurizer level stabilizes at ~65%. Letdown flow is now ~70 gpm and stable. ☑

D Two charging pumps are running, letdown is stable at ~76 gpm and pressurizer level is stable at ~64%. The PPO is making preparations for a blended makeup when the VCT low level annunciator alarms. ☐

Justification A; Wrong - the system had stabilized with a charging/letdown mismatch equivalent to an 8 gpm leak. Manually raising letdown flow to match the new charging flow will force the auto level control system to "readjust" letdown flow to account for the 8 gpm leak, again.
B; Wrong - the same problem as choice "A", but complicated with the start of the downpower, which causes an RCS cooldown and subsequent PZR level shrink.
C; Correct - with PZR level stable at the new charging flow, stable letdown flow is now greater than 8 gpm below the expected charging flow for two pumps.
D; Wrong - the RCS is losing 8 gpm, per the charging/letdown mismatch given. This will eventually cause VCT level to drop down to the low level setpoint.

Reference MP2 LOUT, CVC-01-C, MB-2360

NRC K/A System/E/A

System 037 Steam Generator (S/G) Tube Leak

Number AK3.03

Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Leak: Comparison of makeup flow and letdown flow for various modes of operation

Importance RO/SRO 3.1 3.3

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

NRC K/A Generic

34 ☑ RO ☑ SRO Question ID: 0053965 Origin Bank ☐ Memory? (Check=Yes)

A SGTR has occurred in the #1 Steam Generator (SG), all RCPs have been secured and a natural circulation cooldown is being performed with the following plant conditions:

* #1 SG has been isolated per the event specific procedure.
* Maintaining an RCS cooldown rate of 55 °F/hr. by steaming the #2 SG
* RCS Pressure = 800 psia
* Loop 1 Th = 509 °F
* Loop 2 Th = 485 °F
* Loop 1 Tc = 507 °F
* Loop 2 Tc = 453 °F

The SPO has noticed over the last 20 minutes that the difference between the two hot leg temperatures has steadily gone up.

Which one of the following actions is required per EOP-2534, Steam Generator Tube Rupture?

A Lower safety injection flow to loop #2 to even out the heat removal rates of the two loops. ☐

B Commence steaming #1 SG until the loop #1 and loop #2 Thot are equalized, then re-isolate the #1 SG. ☐

C Lower the steaming rate of #2 SG to lower the cooldown rate and get better natural circulation in the isolated S/G. ☑

D Raise RCS pressure to collapse any voids in the isolated S/G tubes, then raise cooldown rate to maintain voids collapsed. ☐

Justification A; Wrong - SI throttling criteria is not met with subcooling below 30°F.
B; Wrong - Unisolation of the effected SG is not allowed for this reason. Only allowed if SG level cannot be maintained within guidelines.
C; Correct - EOP 2534 note that increasing difference in the hot leg temperatures indicate an uncouple of S/Gs. This is caused by an overly aggressive cooldown rate.
D; Wrong - raising RCS pressure will aggravate the primary-to-secondary leakage and the given indication does not imply voids are the problem.

Reference MP2 LOUT, AEP-02-SE, MB-4750, CFR 55.43.b.5

NRC K/A System/E/A NRC K/A Generic

System 038 Steam Generator Tube Rupture (SGTR)

Number EA1.34

Ability to operate and monitor the following as they apply to a SGTR: Obtaining shutdown with natural circulation

Importance RO/SRO 4.2 4.3

10CFR Link (CFR 41.7 / 45.5 / 45.6)

 # 35 ☑ RO ☑ SRO Question ID: **0160901** **Origin Modified** ☑ Memory? (Check=Yes)

The Auxiliary Feedwater cavitating venturis were installed to protect the plant against which one of the following design accidents?

A To prevent a challenge to Containment (CTMT) if a Main Steam line break were to occur inside CTMT during low power operation (Mode 2). ☑

B Ensure acceptable Reactivity Control if a Main Steam line break were to occur during low power operation (Mode 2). ☐

C To prevent an adverse cooldown if, in the event of a Main Steam line rupture, Aux. Feed flow to the effected steam generator is not isolated until directed by the event specific or functional recovery EOP. ☐

D Minimizes the reactor "restart" caused by an Excess Steam Demand event occurring simultaneously with a loss of DC control power to the Aux. Feedwater Reg. valves (allows time to take local-manual control). ☐

Justification Containment Integrity is affected due to the continued release of energy to Containment with an ESD at a time when AFW is already being utilized to feed the SGs.

Reference MP2 LOUT, AFW-01-C, MB-2187.c, CFR 55.43.b.1

NRC K/A System/E/A

NRC K/A Generic

System 069 Loss of Containment Integrity

Number AA2.01

Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: Loss of containment integrity

Importance RO/SRO 3.7 4.3

10CFR Link (CFR: 43.5 / 45.13)

36 ☐ RO ☑ SRO Question ID: 1000040 Origin New ☑ Memory? (Check=Yes)

Which one of the following describes the basis for the Turbine Battery Technical Specification?

A If the loss of a Vital DC bus were to occur in combination with a steam line rupture in containment, the associated Main Feedwater Regulating Valve would still isolate on the subsequent MSI. ☑

B If the loss of a Vital DC bus were to occur in combination with a design base LOCA and fuel damage, both facilities of Containment Spray would actuate to ensure the containment barrier is preserved. ☐

C If the plant were in Mode 5 or 6 with the Vital DC busses cross-tied, a major fault on a vital DC bus will not make both facilities of ESAS unavailable to mitigate any subsequent accident. ☐

D If the loss of a Vital DC bus were to occur in combination with a steam line rupture in containment while using Auxiliary Feedwater, the feedwater to the effected steam generator could still be secured. ☐

Justification A; Correct - a loss of Vital DC, accompanied with a plant trip, would cause a loss of the control power to one of the Main Feedwater Regulating Valves. If this were to occur in combination with an ESD on the effected side, the ESAS would not be able to isolate feedwater to that SG.
B; Wrong - only one facility of CTMT spray is necessary to ensure CTMT does not exceed design pressure/temperature in the design base accident.
C; Wrong - ESAS is effectively OOS in Modes 5 or 6. Operator actions would be required to mitigate any casualty complicated by a loss of DC.
D; Wrong - the presence of the turbine will allow control of AFW for a limited time, but the battery is not credited for a long life. Therefore, manual action would still eventually be required to isolate AFW from the effected SG.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.2

NRC K/A System/E/A

System 058 Loss of DC Power

Number AA1.02

Ability to operate and / or monitor the following as they apply to the Loss of DC Power: Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector

Importance RO/SRO 3.1 3.1

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

 # 37 ☑ RO ☑ SRO Question ID: 0055144 Origin Bank ☑ Memory? (Check=Yes)

After isolating a leaking Waste Gas Decay Tank, your Digidose indicates that you received 150 mrem. In addition, you have been assigned 2 DAC-hours of internal dose for the job by HP.

Which one of the following is the TEDE that you received?

A 148 mrem ☐

B 152 mrem ☐

C 155 mrem ☑

D 300 mrem ☐

Justification A; Wrong - incorrectly subtracts the DAC-hours "directly" from the dose indicated on the digidose.
B; Wrong - incorrectly adds the DAC-hours "directly" to the dose indicated on the digidose.
C; Correct - a DAC-hour is equivalent to 2.5 mrem, thus 2 DAC-hours = 5 mrem, plus 150 mrem =155 mrem TEDE.
D; Wrong - incorrectly multiplies the dose indicated on the digidose by the number of DAC-hours.

Reference Radiation Worker Training Manual (Respiratory Protection Equipment for Radiological Work)

	NRC K/A System/E/A	NRC K/A Generic
System	060 Accidental Gaseous Radwaste Release	2.3 Radiation Control
Number	GA	2.3.5
	SEE GENERIC K/A	Knowledge of use and function of personnel monitoring equipment.
Importance RO/SRO		2.3 2.5
10CFR Link		(CFR: 41.11 / 45.9)

38 ☐ RO ☑ SRO Question ID: 0054230 Origin Bank ☐ Memory? (Check=Yes)

The plant has just tripped from 50% power with the following conditions:

* RSST is deenergized.
* Both Diesel Generators fail to start automatically or manually.
* All other systems respond as expected.
* The crew has transitioned to EOP-2530, Station Blackout.
* The SM has classified the event and the radio pager has gone out to all applicable SERO members.

Twenty-five minutes later, and PRIOR to the manning of the EOF, both 24C & 24D are reenergized by their respective Diesel Generators.

Which one of the following describes an action the SM is authorized to take per Emergency Plan guidance?

A Assume the duties of the MCRO and TERMINATE the event. ☐

B Turn over to the site Duty Officer and have him TERMINATE the event. ☐

C Wait for the EOF DSEO and allow him to DOWN GRADE the event. ☑

D Assume the duties of the ADTS and DOWN GRADE the event. ☐

Justification A; Wrong - the event cannot be terminated by the SM once an Alert or above is declared.
B; Wrong - the site Duty Officer is not authorized to terminate any event, only the station Duty Officer, who becomes the ADTS.
C; Correct - Escalation of the event is the only option until the SERO has had time to evaluate initiating and other degrading conditions. The EOF DSEO is the only person who can request concurrence for de-escalation, recovery, or termination of the event.
D; Wrong - the SM is not authorized to assume the duties of the ADTS simply due to the timing of the event. He is the acting DSEO until relieved by the EOF DSEO.

Reference MP2*LOUT, MB-5918, 10CFR55.41.10

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G SEE GENERIC K/A	2.1.2 Knowledge of operator responsibilities during all modes of plant operation.
Importance RO/SRO		3.0 4.0
10CFR Link		(CFR: 41.10 / 45.13)

39 ☑ RO ☑ SRO Question ID: 1000041 Origin New ☑ Memory? (Check=Yes)

The Instrument Air (IA) supply to the #1 MSIV has ruptured causing the #1 MSIV's air system to totally vent in seconds.

Which one of the following describes the expected response of the Reactor Protection System (RPS) to this event?

A All four channels of RPS would immediately process a High Power Pretrip and Trip. ☐

B All four channels of RPS would immediately process Pretrips and Trips on Steam Generator parameters. ☑

C RPS Channels "A" and "C" ONLY would immediately process a Pressurizer High Pressure Pretrip and Trip. ☐

D RPS Channels "A" and "C" ONLY would immediately process a Thermal Margin/Low Pressure Pretrip and Trip. ☐

Justification A; Wrong - closing an MSIV would suddenly drop steam demand. This would result in the reactor sensing a drop in power, not a rise.
B; Correct - high SG pressure (due to the backup of energy) should cause a sudden shrink in #1 SG, resulting in a Low SG Level Trip, or the sudden dump of 100 % power demand on the #2 SG should cause a large drop in pressure, resulting in a Low SG Pressure Trip. One and/or the other will occur immediately.
C; Wrong - High RCS pressure is certainly possible, but it should happen on all four (4) channels, not ONLY "A" and "C" (Fac. 1)
D; Wrong - Same logic as above, except in this case the setpoint for the trip will lower, while the actual sensed value will rise up to meet it. Again, all four channels will see the effect, not just Fac. 1.

Reference MP2 LOUT, PAR-01-C, MB-2731

NRC K/A System/E/A

System 065 Loss of Instrument Air

Number AA1.05

Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air: RPS

Importance RO/SRO 3.3 3.3

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

 # 40 ☑ RO ☑ SRO Question ID: 0053999 Origin Bank ☑ Memory? (Check=Yes)

EOP 2540 has been entered following a loss of all feedwater event in conjunction with a steam line break inside containment.
The following conditions presently exist:

* RCS Pressure is 1300 psia and dropping slowly.
* #1 SG level 240" Wide Range and dropping.
* #2 SG level 40% Narrow Range and dropping.
* NO AFW or Main Feedwater is available at this time.

Which one of the following describes when Once-Through-Cooling is required to be initiated?

A IMMEDIATELY upon entry into EOP 2540, Functional Recovery Procedures. ☐

B ONLY after the #2 S/G level drops below 70" on Wide Range indication. ☐

C As soon as EITHER S/G level drops below 70" on Wide Range indication. ☑

D ONLY after RCS pressure is low enough to allow adequate HPSI injection. ☐

Justification A; Wrong - initiation of OTC must not wait until entry into 2540, it is contingent on SG level. Entry into 2540 does not, in and of itself, require initiation of OTC.
B; Wrong - OTC is required when the lowest SG drops to 70" level, regardless of the level of the second SG.
C; Correct - Entry conditions for Once Through Cooling (EOP 2537, EOP 2540 HR-1 and HR-2). Even with a faulted S/G and substantial inventory in the unfaulted S/G, OTC must be initiated when the first S/G reaches </= 70" WR during a loss of normal feedwater (MFW and AFW).
D; Wrong - once OTC is initiated, procedural actions will direct the lowering of RCS pressure to accommodate maximum SI flow.

Reference MP2 LOUT, E37-01-C, AEP-02-SE, MB-4752, CFR 55.43.b.5

NRC K/A System/E/A NRC K/A Generic

System E09 Functional Recovery

Number EA1.2

Ability to operate and/or monitor operating behavior characteristics of the facility as they apply to the Functional Recovery.

Importance RO/SRO 3.6 3.9

10CFR Link (CFR: 41.7 / 45.5 / 45.6)

41 ☑ RO ☑ SRO Question ID: 0053363 Origin Bank ☐ Memory? (Check=Yes)

The plant is at 90% power and has just experienced a minor feedwater transient. The following parameter values and trends are observed on the main control board:

* Reactor Coolant System average temperature is peaking about 4°F above normal.
* Pressurizer level has peaked at approximately 69%.
* Pressurizer pressure has peaked at approximately 2310 psia.
* Backup heaters are ON.

Based on this information, which of the following actions must be taken to ensure proper pressurizer pressure and level control?

A Maintain pressurizer controls in automatic and continue to monitor the system for proper automatic operation. ☑

B Place all backup heater control switches in the PULL-TO-LOCK position and ensure pressure returns to setpoint. ☐

C Adjust letdown controller bias and pressure controller setpoint to return pressurizer level and pressure to normal ☐

D Shift to local setpoint control on the level controller and adjust the setpoint to 61% to return system operation to normal. ☐

Justification A; Correct - The RCS temp. rise caused a level rise (~1%/1°F rise). The control system is responding normally to this event and all of the distracters would only compound the problem when PZR level is returned to normal or if another transient occurred.
B; Wrong - this will cause an unusually low pressure drop when the level control system lowers level to 65%.
C; Wrong - adjusting letdown bias will "detune" the PZR level control system, causing level to stabilize below the desired level of 65%. Lowering the setpoint will result in pressure stabilizing at the new setpoint, below the desired value.
D; Wrong - Local setpoint on the level controller would have no impact on the backup heaters (bistable controlled) and lowering the setpoint would cause PZR level to stabilize at that setpoint.

Reference MP2 LOUT, PLC-01-C, MB-2328

NRC K/A System/E/A NRC K/A Generic

System 028 Pressurizer (PZR) Level Control Malfunction

Number AK2.03

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

Importance RO/SRO 2.6 2.9

10CFR Link (CFR 41.7 / 45.7)

42 ☐ RO ☑ SRO Question ID: 1000042 Origin New ☑ Memory? (Check=Yes)

Which one of the following describes the Technical Specification bases for the blocking devices currently installed in Region B and Region C of the Spent Fuel Pool?

A Ensures that the decay heat load from fuel storage will not exceed the cooling capability of the Spent Fuel Pool Cooling System. ☐

B Ensures sufficient water volume surrounding leaking fuel stored in these racks so >/= 90% of escaping gases will be absorbed. ☐

C Ensures the structural loading of the smaller and denser fuel racks is not exceeded if the racks are filled with bundles containing CEAs. ☐

D Ensures that the reactivity conditions of the Region B and C storage racks and spent fuel pool Keff will remain less than or equal to 0.95. ☑

Justification A; Wrong - intentional violation of all storage pool TS could potentially cause a criticality that would exceed the design capacity of the cooling system, but this is not a credible event covered in the design bases for the storage pool or cooling system.
B; Wrong - this is a function of water height above the fuel, not space surrounding the fuel.
C; Wrong - there are no structural loading restrictions on any of the fuel storage racks as far as fuel or CEAs is concerned.
D; Correct - this is effectively the wording of the TS Bases for 3.9.19.

Reference MP2 LOUT, A78-01-C, MB-5643, CFR 55.43.b.7

NRC K/A System/E/A NRC K/A Generic

System 036 Fuel Handling Incidents

Number AK1.03

Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents : Indications of approaching criticality

Importance RO/SRO 4.0 4.3

10CFR Link CFR 41.8 / 41.10 / 45.3)

43 ☑ RO ☑ SRO Question ID: 0156811 Origin Modified ☐ Memory? (Check=Yes)

The plant tripped and bus 24D did NOT transfer to the RSST. The following conditions exist:

* All other automatic systems and components responded as designed.
* RCS pressure is at 2050 psia and going up slowly.

Which one of the following actions are required to ensure proper operation of the pressurizer heaters?

A Place Proportional Group 2 hand switch in Normal-After-Close. ☐
Reenergize Backup Groups 2 and 4 by cross-tying nonvital 480 VAC busses.
Ensure Red lights lit on all six (6) groups of pressurizer heaters.

B Place Proportional Group 1 and 2 hand switches in Normal-After-Close. ☐
Place All four (4) Backup Groups of pressurizer heaters in Pull-To-Lock.

C Place Proportional Group 2 hand switch in Normal-After-Close. ☑
Ensure Red lights lit on both Proportional Groups.
Ensure Red lights lit on Backup Groups 1 and 3.

D Place Proportional Group 2 hand switch in Normal-After-Close. ☐
Ensure Red lights lit on both Proportional Groups.
All four (4) Backup Groups are without a power source.

Justification A; Wrong - Backup Groups 2 and 4 are unavailable due to the loss of Bus 24B which powers Buses 22B and 22D. These busses can NOT be xtied to supply B/U heaters.
B; Wrong - Backup Groups 1 and 3 are still available and should not be manually overridden off.
C; Correct - Proportional Group 2 is deenergized due to the loss of Bus 24D and must be reenergized by manually reclosing its breaker after an LNP. All four (4) Backup Groups 1 and 3 should auto energize as needed by the control system.
D; Wrong - Backup Groups 1 and 3 have power available and should be utilized.

Reference MP2 LOUT, PLC-01-C, MB-2985

NRC K/A System/E/A NRC K/A Generic

System 056 Loss of Offsite Power

Number AA1.31

Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power: PZR heater group control switches

Importance RO/SRO 3.3 3.3

10CFR Link (CFR 41.7 / 45.5 / 45.6)

44 ☑ RO ☑ SRO Question ID: 0054004 Origin Bank ☑ Memory? (Check=Yes)

Unit 2 is at 90% power with Group 7 CEAs at ~ 160 steps for ASI control. The ASI which is displayed on RPS Channel "D" indicates 0.00.
AOP-2575 is then entered and a rapid downpower at ~ 30% per hour is commenced.

Which one of the following describes how ASI will respond and what must be done to maintain it at 0.00 during the downpower?

A ASI will become more negative, CEA insertion will be required to maintain ASI. ☑

B ASI will become more positive, CEA withdrawal will be required to maintain ASI. ☐

C ASI will become more positive, CEA insertion will be required to maintain ASI. ☐

D ASI will become more negative, CEA withdrawal will be required to maintain ASI. ☐

Justification A; Correct - AOP 2575; Power reduction means ASI becomes more negative (less positive) and moves to the top of the core. therefore CEA insertion is required to maintain ASI at 0.00.
B; Wrong - ASI moves down in the core when power is RAISED.
C; Wrong - ASI moves to top, not bottom. This also is the wrong direction to move CEAs for a positive ASI.
D; Wrong - withdrawing CEAs will make ASI worse.

Reference MP2 LOUT, A75-01-C, MB-5441

NRC K/A System/E/A NRC K/A Generic

System 001 Control Rod Drive System

Number K5.06

Knowledge of the following operational implications as they apply to the CRDS: Effects of control rod motion on axial offset

Importance RO/SRO 3.8 4.1

10CFR Link (CFR: 41.5/45.7)

 # 45 ☑ RO ☑ SRO Question ID: 0154021 Origin Modified ☐ Memory? (Check=Yes)

The plant was operating at 100% power with the "B" RBCCW pump out for PMs.
Then, the "A" RBCCW pump trips on overload, resulting in the following conditions:

* The plant is manually tripped.
* 25B and 24C are lost on the trip.
* ALL appropriate steps of EOP-2525 are carried out.

Which one of the following sets of values for Thot and Tcold are expected to occur approximately ten (10) minutes after the plant trip?

A Thot - 557; Tcold - 532 ☑

B Thot - 582; Tcold - 532 ☐

C Thot - 532; Tcold - 517 ☐

D Thot - 535; Tcold - 532 ☐

Justification A; Correct - the loss of the "A" RBCCW header requires "A" & "C" RCPs be tripped. Loss of 25B takes out the remaining RCPs resulting in these expected RCS temperatures for NC flow.
B; Wrong - because delta-T is > 45 °F.
C; Wrong - because Tcold should remain near the no load value, Thot is the one that rises.
D; Wrong - larger delta-T is required for natural circulation.

Reference MP2 LOUT, A53-01-C, MB-5859

NRC K/A System/E/A NRC K/A Generic

System 003 Reactor Coolant Pump System (RCPS)

Number K2.01

Knowledge of bus power supplies to the following: RCPS

Importance RO/SRO 3.1 3.1

10CFR Link (CFR: 41.7)

 # 46 ☑ RO ☑ SRO **Question ID: 1100023** **Origin Modified** ☐ Memory? (Check=Yes)

The plant is operating at 100% power, one (1) charging pump running, normal letdown flow, with all components normally aligned.

Then, the charging line suffers a double-guillotine shear (complete rupture) in the Enclosure Building, right at the containment penetration.

Which one of the following conditions would result, in the next two to three minutes, from the charging line rupture in the Aux. Building?

A Indicated letdown flow will oscillate rapidly while VCT level remains constant. ☐

B Letdown flow control valves will throttle full open while indicated letdown flow remains constant. ☐

C A standby charging pump will start while pressurizer level remains constant. ☐

D Indicated letdown flow will go to zero while charging flow remains constant. ☑

Justification A; Wrong - the loss of charging flow through the non-regenerative heat exchanger will cause letdown to isolate on high temperature.
B; Wrong - the flow control valves will throttle closed based on PZR level slowly going down from no charging flow and RCP bleedoff.
C; Wrong - PZR level does not lower enough in two to three minutes to start a standby charging pump, and level is not constant.
D; Correct - letdown has isolated (see Choice "A" reason) but the charging rupture is DOWN stream of the flow detector.

Reference MP2 LOUT, CVC-01-C, MB-2395

NRC K/A System/E/A

System 004 Chemical and Volume Control System

Number K5.35

Knowledge of the operational implications of the following concepts as they apply to the CVCS: Heat exchanger principles and the effects of flow, temperature and other parameters

Importance RO/SRO 2.5 2.9

10CFR Link (CFR: 41.5/45.7)

NRC K/A Generic

47 ☑ RO ☑ SRO Question ID: 0071905 Origin Bank ☐ Memory? (Check=Yes)

The plant has experienced a Loss of Coolant Accident and the following conditions exist:

* Sump Recirculation has occurred.
* The Safety Injection Recirculation Header Isolation valves, 2-SI-659 and 660, have NOT automatically positioned.
* ALL other SRAS actuated components are in their accident condition.

Which one of the following statements describes WHEN these valves are required to be closed?

A Immediately after other SRAS actuations have been verified. ☑

B Only after verifying 50 gpm flow from each High Pressure Safety Injection (HPSI) pump. ☐

C Only after RWST header isolation valves (2-CS-13.1A & 2-CS-13.1B) are closed. ☐

D Immediately after closing RBCCW outlet isolation valves from the SDC heat exchangers. ☐

Justification A; Correct - Components 2-SI-659 & 2-SI-660 are verified closed before all of the actions mentioned in the distracters. These valves being open also violate CTMT integrity and offer a direct release path from CTMT to the environment. Therefore, they should be closed as soon as they are found open.
B; Wrong - actions for minimum flow concerns for the HPSI pumps involves stopping pumps as necessary, not reopening the minimum flow path.
C; Wrong - closing RWST suction isolations is in follow-up actions once auto actuations are verified.
D; Wrong - these valves are NOT closed in a SRAS situation, only CTMT header isolations.

Reference MP2 LOUT, E32-01-C, MB-5942

NRC K/A System/E/A

System 013 Engineered Safety Features Actuation System (ESFAS)

Number A1.06

Ability to predict and/or monitor changes in parameters (to Prevent exceeding design limits) associated with operating the ESFAS controls including: RWST level

Importance RO/SRO 3.6 3.9

10CFR Link (CFR: 41.5 / 45.5)

NRC K/A Generic

 # 48 ☑ RO ☑ SRO Question ID: 0167440 Origin Modified ☐ Memory? (Check=Yes)

The plant is operating at 100% power and the Primary Plant Operator (PPO) is inserting Group 7 CEAs to 170 steps for ASI control.
Then, several alarms are annunciated on C-04 and the following indications are reported:

* CEA #38 (Group 7) has slipped and is now 149 steps withdrawn.
* CEA #59 (Group 7) has slipped and is now 164 steps withdrawn.
* The remaining CEAs in Group 7 are at 170 steps.
* All other CEAs indicate fully withdrawn.
* Tc has lowered by 0.3 °F and is now stable at 548.1°F.

Which one of the following actions is required for the existing plant conditions?

A Using AOP-2556, Reduce power to less than or equal to 70% within one hour. ☑

B Using AOP-2575, Commence a plant shutdown using the RWST and one Charging Pump. ☐

C Trip the plant and Go To EOP 2525, Standard Post Trip Actions. ☐

D Immediately withdraw at least one of the misaligned CEAs per OP-2302A. ☐

Justification A; Correct - per AOP 2556, with one CEA misaligned by greater than 20 steps (dropped) and one or more CEAs misaligned by greater than 10 steps but less than 20 steps, a plant trip is required. However, the second CEA is misaligned by only six steps or less. Therefore, actions per AOP-2556 for one dropped CEA is warranted.
B; Wrong - recovery of the CEAs is preferred once power is lowered per procedure (and T.S.).
C; Wrong - because the second CEA is less than 10 steps misaligned, it is NOT necessary to trip the plant. This would subject the plant to an unnecessary, major transient.
D; Wrong - AOP-2556 must be utilized for any CEA recovery, and both the AOP and T.S. require power be lowered to <70% before recovering the CEAs.

Reference MP2 LOUT, A56-01-C, MB-5814

	NRC K/A System/E/A	NRC K/A Generic
System	014 Rod Position Indication System (RPIS)	2.4 Emergency Procedures /Plan
Number	GS	2.4.4
	SEE GENERIC K/A	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.
Importance RO/SRO		4.0 4.3
10CFR Link		(CFR: 41.10 / 43.2 / 45.6)

 # 49 ☐ RO ☑ SRO **Question ID: 0156046** **Origin Modified** ☑ Memory? (Check=Yes)

The plant is presently in MODE 5.

Which of the following Nuclear Instrumentation (NIs) systems, if LOST at this time, would require entering a Technical Specification Action Statement?

A The NI system used by the INPAX program to generate an FrT value. ☐

B The NI system used in the generation of an Auto Aux. Feedwater Signal. ☐

C The NI system used to monitor the audible count rate in containment. ☑

D The NI system used to generate the ASI displayed on the Power Ratio Recorder. ☐

Justification A; Wrong - only Wide Range NIs are required in Mode 5 and they do not feed the FrT calculator.
B; Wrong - these are the control channel, Narrow Range NIs that are not T.S.
C; Correct - the T.S. Wide Range NIs feed the audible count indication.
D; Wrong - the Power Ratio Calculator generates ASI for the PRR using the control channel Narrow Range NIs.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.7

NRC K/A System/E/A NRC K/A Generic

System 015 Nuclear Instrumentation System

Number A4.02

Ability to manually operate and/or monitor in the control room: NIS indicators

Importance RO/SRO 3.9 3.9

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

 # 50 ☐ RO ☑ SRO Question ID: 0153468 Origin Modified ☐ Memory? (Check=Yes)

The plant is in coast-down operation, approaching a refuel outage, with the following conditions:

* Power = 90% and dropping
* Group 7 CEAs at 165 steps

Power is then lowered to 85% when the "Frt-Tq" annunciator alarms. The plant process computer (PPC) has the following information:

* CVINASI = -0.15
* CVFRT = 1.72
* CVFRLIM = 1.69
* CVINTILT = 0.022

Which one of the following actions is required to be taken, per Technical Specifications, to log OUT of any applicable Action Statements?

A Reduce ASI to less than -0.01. ☐

B Reduce FrT to less than 1.70. ☐

C Reduce power to less than 80%. ☐

D Reduce Tilt to less than 0.020. ☑

Justification A; Wrong - 0.15 is the ASI limit for DNB concerns at 95% power.
B; Wrong - the limit for FrT at 85% is ~ 1.74.
C; Wrong - required per the ASI tent, which does not apply when monitoring power on Incore detectors.
D; Correct - Tech Spec 3.2.4(a) requires Tq be < 0.2 or the surveillance requirements of the Action Statement must be performed.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.6

NRC K/A System/E/A NRC K/A Generic

System 015 Nuclear Instrumentation System

Number A1.04

Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the NIS controls including: Quadrant power tilt ratio

Importance RO/SRO 3.5 3.7

10CFR Link (CFR: 41.5 . 45.5)

 # 51 ☑ RO ☑ SRO Question ID: 1000054 Origin New ☑ Memory? (Check=Yes)

Which one of the following manual actions MUST be performed at the Inadequate Core Cooling (ICC) cabinets?

A Change the setpoint for the Saturation Trouble annunciator. ☐

B Bypass a CET that has failed high due to a circuit problem. ☑

C Monitor RCS subcool margin using the second highest CET. ☐

D Monitor reactor vessel level with the head removed for refueling. ☐

Justification A; Wrong - cannot be performed anywhere.
B; Correct - must be performed at the ICC cabinet.
C; Wrong - can be called up on any PPC screen.
D; Wrong - removing the head totally disables the ICC system.

Reference MP2 LOUT, ICC-01-C, MB-2584

NRC K/A System/E/A

System 017 In-Core Temperature Monitor System (ITM)

Number A3.02

Ability to monitor automatic operation of the ITM system including: Measurement of in-core thermocouple temperatures at panel outside control room

Importance RO/SRO 3.4 3.1

10CFR Link (CFR: 41.7 / 45.5)

NRC K/A Generic

 # 52 ☑ RO ☑ SRO Question ID: 0171879 Origin Modified ☑ Memory? (Check=Yes)

Twenty-five minutes into a Small Break LOCA event with a concurrent Loss of All Feedwater, the following plant conditions exist:

* PZR Pressure = 1260 psia
* Head Level = 0%
* PZR Level = 0%
* CET Max = 827°F
* CET High = 793°F
* Thot = 574°F
* Both SGs are empty
* Two Charging pumps are injecting
* Two HPSI pumps are running
* Both LPSI pumps are secured

Which one of the following describes the existing status of the plant?

A Boiling in the reactor vessel has rendered the CETs inaccurate. ☐

B HPSI injection is flowing into the core without passing by the CETs. ☐

C LPSI pumps are required to stabilize RCS and core conditions. ☐

D Heat removal is NOT adequate enough to prevent fuel damage. ☑

Justification A; Wrong - they are designed to read above 2000°F.
B; Wrong - pressure is above the shutoff head of HPSI.
C; Wrong - pressure is too high for LPSI.
D; Correct - per EOPs, CETs >800°F, or two highest CETs reading above saturation with zero indicated level, is indicative of core uncovery and lack of adequate heat removal necessary to prevent core damage.

Reference MP2 LOUT, E40-01-C, MB-5977, CFR 55.43.b.5

NRC K/A System/E/A

System 017 In-Core Temperature Monitor System (ITM)

Number K5.01

Knowledge of the operational implications of the following concepts as they apply to the ITM system: Temperature at which cladding and fuel melt

Importance RO/SRO 3.1 3.9

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

 # 53 ☑ RO ☑ SRO Question ID: 0153466 Origin Modified ☐ Memory? (Check=Yes)

A plant heatup is in progress with the following conditions existing:

* "A", "B" and "C" CAR fans are running in fast speed; "D" CAR fan is secured.
* 10" RBCCW outlet isolations on "A", "C" and "D" CAR fans are open.
* 10" RBCCW outlet isolation on "B" CAR fan is closed to balance "A" and "B" RBCCW header flows.
* Both CTMT Auxiliary Circulation fans are secured.

The CTMT atmosphere begins to heat up.

Which of the following actions will stop the CTMT temperature rise without violating procedures?

A Start both CTMT Auxiliary Circulation fans in fast speed and place a third RBCCW heat exchanger in service. ☐

B Start the "D" CAR fan in fast speed and open the "D" CAR fan 10" RBCCW outlet isolation. ☐

C Open the "B" CAR fan 10" RBCCW outlet isolation and close the "C" CAR fan 10" RBCCW outlet isolation. ☐

D Open the "B" CAR fan 10" RBCCW outlet isolation and close the "D" CAR fan 10" RBCCW outlet isolation. ☑

Justification A; Wrong - only used for rad. monitor flow and 3rd HX cannot be used.
B; Wrong - cannot run more than three car fans in fast, due to duct work limitations.
C; Wrong - "B" RBCCW header supplies the "B" & "D" CAR fans, isolating RBCCW to "C" CAR fan would unbalance the system and not gain any heat sink.
D; Correct - CAR 10" outlets open to supply max. flow of RBCCW to CARs for designed CTMT heat sink and "D" fan is not running.

Reference MP2 LOUT, CCS-01-PT, MB-3366

NRC K/A System/E/A

System 022 Containment Cooling System (CCS)

Number A4.04

Ability to manually operate and/or monitor in the control room: Valves in the CCS

Importance RO/SRO 3.1 3.2

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

NRC K/A Generic

54 ☐ RO ☑ SRO Question ID: 0155326 Origin Bank ☑ Memory? (Check=Yes)

Which one of the following is an expected result of having LESS than the required amount of Trisodium Phosphate (TSP) inside containment, in a post-LOCA environment?

A Containment spray water will induce higher levels of corrosion in the wetted containment surfaces. ☑

B The containment spray nozzles will have a higher probability of clogging from boric acid coming out of solution. ☐

C The ability of containment spray to remove fission product gases through water absorption will be substantially reduced. ☐

D The optimum "window" for boron precipitation control will be substantially reduced (smaller window for success). ☐

Justification A; Correct - TSP chemically "buffers" the low pH effect of boric acid.
B; Wrong - TSP does not alter any other physical properties of boric acid.
C; Wrong - No such purpose of TSP, spray will function in this manner, regardless.
D; Wrong - Boron precipitation control for long term cooling is not impacted by pH level of CTMT spray.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR 55.43.b.2

NRC K/A System/E/A

System 026 Containment Spray System (CSS)

Number K5.04

Knowledge of operational implications of the following concepts as they apply to the CSS: Chemistry control

Importance RO/SRO 2.0 2.7

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

55 ☑ RO ☑ SRO Question ID: 1000053 Origin New ☐ Memory? (Check=Yes)

Which one of the following describes the purpose or bases for the ESAS cabinet Backup Power Supplies?

A Ensures the loss of a Vital DC bus will NOT prevent an ESAS actuation if the loss occurred in concert with a Loss-Of-Offsite-Power and the design base accident. ☐

B Ensures the loss of a Vital DC bus will NOT cause a premature SRAS, which would make the RWST unavailable if the loss occurred in concert with the design base accident. ☑

C Ensures the simultaneous loss of a Vital 120 VAC bus and a Loss-Of-Offsite-Power will NOT prevent an ESAS actuation for any subsequent design base accident. ☐

D Ensures the simultaneous loss of a Non-Vital 120 VAC source and a Vital DC bus will NOT cause a premature Auxiliary Feedwater actuation during an Excess Steam Demand event. ☐

Justification A; Wrong - Vital DC is required for ESAS to function in any way, but either DC bus will allow at least one facility of ESAS to perform its design function.
B; Correct - a loss of vital power deenergizes the instruments powered by the Spec 200 cabinets, which fail in an "actuate" direction. Only the RWST level instruments are powered by the applicable ESAS sensor cabinets, thereby preventing a premature SRAS on a loss of vital power.
C; Wrong - at least one facility of ESAS can still function with the loss of any one AC bus, with or without an LNP.
D; Wrong - AFAS requires power to actuate. Therefore, on a loss of vital power it must be manually actuated if needed.

Reference MP2 LOUT ESA-01-C, ADM-02-J MB-2469, CFR55.41.7

NRC K/A System/E/A

System 026 Containment Spray System (CSS)

Number A2.02

Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control,or mitigate the consequences of those malfunctions or operations: Failure of automatic recirculation transfer

Importance RO/SRO 4.2 4.4

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

 # 56 ☑ RO ☑ SRO Question ID: 0055006 Origin Bank ☑ Memory? (Check=Yes)

A transient has occurred in the Condensate system that has resulted in a reduction of Steam Generator Feedwater Pump suction pressure to 280 psig.

Which one of the following automatic actions occur as a result of this condition?

A The Hotwell Reject Level Control Valve (2-CN-219) is interlocked closed. ☑

B Condensate Surge Tank Level Control Valve (2-CN-664) automatically opens. ☐

C Condensate Surge Tank to Hotwell Level Control Valve (2-CN-221) is interlocked closed. ☐

D CPF Bypass Valve (2-CNM-2) automatically opens. ☐

Justification A; Correct - A low Main Feedwater pump suction pressure of 300 psig causes the Hotwell Reject valve (2-CN-219) to fail closed. This is an attempt to prevent a trip of the Main Feedwater pump on low suction pressure.
B; Wrong - not interlocked to feed pump suction pressure.
C; Wrong - not interlocked to feed pump suction pressure.
D; Wrong - not interlocked to feed pump suction pressure.

Reference MP2 LOUT, CON-01-C, MB-2281

NRC K/A System/E/A

NRC K/A Generic

System 056 Condensate System

Number K4.14

Knowledge of Condensate System design feature(s) and/or interlock(s) which provide for the following: MFW pump NPSH

Importance RO/SRO 2.2 2.6

10CFR Link (CFR: 41.7)

57 ☑ RO ☑ SRO Question ID: 1000060 Origin New ☐ Memory? (Check=Yes)

The plant is currently at 100% power when the Heater Drain Tank High Level Dump Valve, HD-110, begins to fail open.
The following system responses are then seen:

* Condensate Polishing Facility (CPF) high delta-P alarm (local - reported by PEO).
* All three Condensate Pump amp meters are above normal readings.
* Condensate flow rises well above normal.
* "A" Main Feed Pump is operating at 4100 rpm.
* "B" Main Feed Pump is operating at 4250 rpm.
* Main Feed Regulating Valve delta-P has lowered.
* Both Main Feedwater Regulating Valves are open more than normal.
* Both Steam Generator levels are lowering.

The US wants to take action to help stabilize steam generator level while the valve failure is being addressed locally

Which one of the following describes the required control room action to stabilize steam generator level?

A Raise the speed of the "A" main feedwater pump to equal the "B" pump. ☐

B Open the condensate bypass valve around CPF to lower the high delta-P. ☑

C Secure one heater drain pump to minimize system losses to the condenser. ☐

D Manually control feed regulating valves to restore steam generator levels. ☐

Justification The dump valve will recirc heater drains back through the condenser, forcing the condensate pumps discharge flow to rise dramatically. This action causes a much greater delta-P across CPF and lowers the suction pressure to the Main Feed pumps.
A; Wrong - the speed of the two pumps should not be made equal, per procedure, or the two punps will "fight" each other.
B; Correct - bypassing the system head loss of CPF would raise the suction pressure seen by the feed pumps and by time to correct the failure.
C; Wrong - this would not lower system recirc to the condenser, HD-110 comes off the pump suction, not discharge.
D; Wrong - this would solve the level problem but does not address the cause, and will compound the problem elsewhere.

Reference MP2 LOUT CON-01-C MB-2291 2319A

NRC K/A System/E/A NRC K/A Generic

System 059 Main Feedwater (MFW) System

Number K6.09

Knowledge of the effect of a loss or malfunction of the following will have on the MFW components: MFW pump speed and flow regulating valves (reason for adjusting position of both)

Importance RO/SRO 2.4 2.6

10CFR Link (CFR: 41.7 / 45.7)

58 ☑ RO ☑ SRO Question ID: 0053312 Origin Bank ☐ Memory? (Check=Yes)

The plant was operating at power when a low Steam Generator water level trip occurred due to a loss of BOTH Main Feedwater Pumps.
The following conditions now exist:

* EOP 2525 has been completed.
* An Auxiliary Feedwater Actuation Signal (AFAS) has occurred.
* The Auxiliary Feedwater (AFW) pumps have started.
* The AFW valves indicate open, but there is no indicated AFW flow.
* The AFW System Tamper Switch annunciator is not alarming.

A PEO is then sent to the AFW pumps to investigate, and reports the following:

* Both the "A" and "B" AFW pumps are operating.
* Both pumps are extremely noisy.
* The pump discharge lines are extremely hot.
* Local temperature indicators are reading 265 °F.
* No system valves were found out of position.

Which one of the following actions are required to allow use of the AFW system?

A Override the AFAS and locally throttle AFW flow control valves while monitoring pump suction and discharge pressures. ☐

B Override the AFAS, secure the "A" and "B" AFW pumps, and attempt to restart each pump on recirculation flow. ☐

C Override the AFAS, secure the "A" and "B" AFW pumps, shut the AFW pump manual discharge valves, and vent the pump casings. ☑

D Shut down EITHER the "A" OR "B" AFW pump until discharge pressure of the running AFW pump improves. ☐

Justification A; Wrong - the pumps must be vented, this action will not sufficiently vent the pumps to purge any entrapped steam.
B; Wrong - the pumps must be vented, this action will not sufficiently vent the pumps to purge any entrapped steam.
C; Correct - the local indications are that the AFW pumps are steam bound. Per OP-2322, the pumps must be shutdown and vented. Continued operation, in any form, prior to venting has the potential to cause severe damage to the pumps.
D; Wrong - the pumps must be vented, this action will not sufficiently vent the pumps to purge any entrapped steam.

Reference MP2 LOUT, AFW-01-C, MB-2157

NRC K/A System/E/A NRC K/A Generic

System 061 Auxiliary / Emergency Feedwater (AFW) System

Number K1.01

Knowledge of the physical connections and/or cause-effect relationships between the AFW and the following systems: S/G system

Importance RO/SRO 4.1 4.1

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 59 ☑ RO ☑ SRO Question ID: 0253683 Origin Modified ☐ Memory? (Check=Yes)

The plant is operating in Mode 3 following a complete loss of all 6.9 kV, 4.16 kV and 480 volt AC busses. Steps are being taken to minimize the load on vital battery busses by deenergizing non-vital DC loads along with VA-30 and VA-40.

Which one of the following describes the expected control room indication that the steps mentioned above are being correctly implemented?

A ALL breaker indicating lights for 24C and 24D are now deenergized. ☐

B Battery bus amp meters are still indicating a slight discharge, but have moved up, closer to zero. ☑

C 201A Battery bus amp meter is now indicating zero (0) amps, with above normal indicated bus voltage. ☐

D All Safety Channel "A" and "B" meters are now deenergized. ☐

Justification A; Wrong - this indicates that both Vital DC distribution panels, DV-10 & DV-20, have been deenergized. NOT the directed actions.
B; Correct - With the battery chargers deenergized, all of the distribution panels will be kept energized by the battery. There will be no change in the status as long as the Battery lasts, but it will indicate a "discharge" on the bus amp meter.
C; Wrong - an indication of zero amp flow is not consistent with a DC bus still under some load.
D; Wrong - Ch. "A" & "B" are powered by VA-10 & -20, respectively. These distribution panels should not have been deenergized.

Reference MP2 LOUT, LVD-01-C, MB-4875

NRC K/A System/E/A

System 063 DC Electrical Distribution System

Number A4.03

Ability to manually operate and/or monitor in the control room: Battery discharge rate

Importance RO/SRO 3.0 3.1

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

NRC K/A Generic

 # 60 ☑ RO ☑ SRO Question ID: 0156010 Origin Modified ☐ Memory? (Check=Yes)

A plant heatup is in progress with the following conditions:

* RCS Tavg = ~275 °F, rising at ~30 °F/hr.
* Bubble established in the pressurizer.
* Pressurizer level being maintained at 45%.

Then, the Auxiliary Building PEO reports the following conditions while at C-61 (Waste Gas Panel):

* Over the past 4 hours, the "LEAD" Waste Gas Compressor has been cycling "on" and "off"
* The PRESSURE in the "on-service" Waste Gas Decay Tank (WGDT) has INCREASED ~ 5 psig.

Which of the following is the probable cause of this condition?

A Venting of the VCT during the performance of "up-downs". ☐

B Venting of the inservice CWRT to the Waste Gas Header. ☑

C Venting of non-condensables from the pressurizer steam space. ☐

D Containment penetration leakage with rising temperatures. ☐

Justification A; Wrong - with a bubble in the PZR, VCT up-downs should already have been completed.
B; Correct - as the RCS heats up, it expands substantially requiring continuous reject of water to the Clean Waste System. Filling of a CW receiver tank will cause the transfer of tank gasses to the Waste Gas System.
C; Wrong - PZR vents to the VCT when a bubble is present.
D; Wrong - vents to the Enclosure Building.

Reference MP2 LOUT, CLR-04-C, MB-0580

NRC K/A System/E/A NRC K/A Generic

System 068 Liquid Radwaste System (LRS)

Number K1.02

Knowledge of the physical connections and/or cause effect relationships between the Liquid Radwaste System and the following systems: Waste gas vent header

Importance RO/SRO 2.5 2.6

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

61 ☐ RO ☑ SRO Question ID: 0256689 Origin Bank ☑ Memory? (Check=Yes)

Maintenance personnel want to weld-repair a through-wall pipe leak on the outlet of the Waste Gas System Discharge Radiation Monitor.

Which of the following includes required actions that must be performed to ensure personnel safety before repairing this leak?

A A temporary glove box must be constructed to contain any leaking gas as the weld repair is being made. ☐

B All associated piping must be purged with nitrogen before any weld repair is attempted. ☑

C The Waste Gas System compressors must be tagged out to ensure flow through the rad. monitor is isolated. ☐

D The Waste Gas rad. monitor high voltage power supply must be deenergized with grounds installed before allowing work in the area. ☐

Justification A; Wrong - this would CONTAIN the potentially explosive gas around the ignition source, raising the chance of an explosion.
B; Correct - the potential for H2 in the lines must be accounted for.
C; Wrong - compressors do not flow through the rad monitor, they discharge to decay tanks.
D; Wrong - deenergizing the rad monitor is OK, but NOT necessary. Installing grounds is definitely NOT necessary.

Reference MP2 LOUT ADM-02-J MB-4806, CFR55.43.b.4

	NRC K/A System/E/A	NRC K/A Generic
System	071 Waste Gas Disposal System (WGDS)	2.2 Equipment Control
Number	GS SEE GENERIC K/A	2.2.18 Knowledge of the process for managing maintenance activities during shutdown operations.
Importance RO/SRO		2.3 3.6
10CFR Link		(CFR: 43.5 / 45.13)

 # 62 ☐ RO ☑ SRO Question ID: 0159261 Origin Modified ☐ Memory? (Check=Yes)

The plant is at 80% power, in coast-down, preparing to enter a Refueling outage. Reactor Engineering is shuffling spent fuel from previous outages (>18 months old) to other areas in the SFP in preparation for the outage.

Then, upon completion of an internal audit, the I&C Department reports to Operations that due to an error in the channel calibration procedure for the spent fuel pool area radiation monitors, they cannot be considered OPERABLE.

Which one of the following actions is REQUIRED in response to this report?

A Fuel movement must be suspended until area radiation monitors are considered OPERABLE. ☐

B Fuel movement must be suspended until Health Physics sets up portable monitoring instrumentation to continually monitor the SFP area. ☐

C Perform area surveys of the SFP area with portable monitoring instrumentation within 24 hours. ☑

D Immediately initiate AEAS and have Security secure access to the spent fuel pool area. ☐

Justification A; Wrong - There is no longer a REQUIREMENT to stop fuel movement.
B; Wrong - Stopping fuel movement or continuous air monitoring is not required by TS.
C; Correct - T/S LCO 3.3.3.1, Table 3.3-6, item 1a. requires compliance with ACTIONS 13, which requires performing area surveys with portable instruments once/24 hours.
D; Wrong - There is no requirement to secure access to the area due to air monitoring. Access is normally restricted due to fuel movement.

Reference MP2 LOUT, MB-4829, CFR55.43.b.7

NRC K/A System/E/A

System 072 Area Radiation Monitoring (ARM) System

Number K3.02

Knowledge of the effect that a loss or malfunction of the ARM system will have on the following: Fuel handling operations

Importance RO/SRO 3.1 3.5

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

63 ☑ RO ☑ SRO Question ID: 0153331 Origin Modified ☐ Memory? (Check=Yes)

A Small-Break Loss of Coolant Accident has occurred and the appropriate Emergency Operating Procedure has been implemented.
It has been ONE (1) hour since the LOCA occurred and the following conditions exist:

* ALL CETs are ~573 °F and rising.
* Reactor Vessel Level = 0% and stable.
* RCS Pressure = ~1250 psia and rising slowly.
* Pressurizer Level = 0% and stable.
* Both Steam Generators pressures = 900 psia and stable.
* Both Steam Generators levels = 20% - 30% and rising.
* All Facility Two (2) ECCS components are operating.
* 24C is deenergized due to a ground fault on the bus.
* 24E is aligned to 24C.

Which one of the following actions are required per EOP-2532, LOCA, to stop the rising CET temperatures?

A Realign 24E to 24D and start the "B" HPSI pump. ☐

B Override and open both PORVs. ☐

C Open both Atmospheric Dump valves. ☑

D Raise feed flow to both Steam Generators. ☐

Justification A; Wrong - Pressure is too high for HPSI.
B; Wrong - PORVs will not remove enough mass to cool the core or drop pressure fast enough for SI flow to function.
C; Correct - With CETs superheated core heat removal is unsatisfactory. Steam Generators must be used and cool the core via reflux boiling.
D; Wrong - feed flow is not enough because the SG are no longer directly connected to the core (vessel level is 0).

Reference MP2 LOUT, AEP-02-SE, MB-4749 , CFR55.43.b.5

NRC K/A System/E/A NRC K/A Generic

System 002 Reactor Coolant System (RCS)

Number A4.03

Ability to manually operate and/or monitor in the control room:
Indications and controls necessary to recognize and correct saturation conditions

Importance RO/SRO 4.3 4.4

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

 # 64 ☑ RO ☑ SRO Question ID: 0155756 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress with the following conditions:

* Power = 85% and slowly rising.
* Forcing pressurizer sprays.
* Two (2) charging pumps running.

Then, one of the temperature inputs to the Reactor Regulating System fails to MINIMUM.

Which one of the following automatic actions is a result of this failure?

A Letdown flow has gone to minimum. ☐

B Backup charging pumps have stopped. ☑

C Pressurizer pressure controller setpoint lowered. ☐

D All pressurizer backup heaters turned off. ☐

Justification A; Wrong - letdown flow would go to maximum in this scenario.
B; Correct - the Tavg calculator will produce an abnormally low PZR setpoint based on the bad temp. input to the system. This will cause the PZR level control system to respond as if it had an abnormally high PZR level.
C; Wrong - the PZR control setpoint is not effected but the output of the controller will change.
D; Wrong - the backup heaters would be turned on if they were not already on.

Reference MP2 LOUT, PLC-01-C, MB-2989

NRC K/A System/E/A

System 011 Pressurizer Level Control System (PZR LCS)

Number A1.04

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR LCS controls including: T-ave

Importance RO/SRO 3.1 3.3

10CFR Link (CFR: 41.5 / 45.5)

NRC K/A Generic

 # 65 ☑ RO ☑ SRO Question ID: 0153700 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress with the following conditions:

* Power is at 25% and steady.
* #1 Feedwater Control Valves are in manual for Steam Flow/Feed Flow Calibration.
* #2 Feedwater Controls are in automatic.

Then, an RCP breaker fails causing the respective RCP to trip. ALL systems and components respond as designed.

Which one of the following describes the automatic response of the Main Feedwater Control Valves?

A BOTH Main Valves Close and BOTH Bypass Valves open to 40% ☑

B #2 Main Valve Closes and the Bypass Valve opens to 40%; #1 Main and Bypass Valves remain "as is". ☐

C #2 Main Valve Closes and BOTH Bypass Valves open to 40%; #1 Main Feedwater Valve remains "as is". ☐

D ALL Feedwater Regulating Valves shift to Manual and remain "as-is". ☐

Justification A; Correct - Regardless of power level or controller alignment, a turbine trip causes the Main Feed Reg valves to close and the bypass valves to ramp open to 40%, provided an MSI is not present.
B; Wrong - both sets of valves respond the same.
C; Wrong - both main valves will close fully.
D; Wrong - manual is correct, but the main valves fully close and the bypasses open to 40%.

Reference MP2 LOUT, FWC-01-C, MB-2519

NRC K/A System/E/A NRC K/A Generic

System 012 Reactor Protection System

Number K1.08

Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: MFW

Importance RO/SRO 2.9 3.1

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

66 ☑ RO ☑ SRO Question ID: 0055094 Origin Bank ☐ Memory? (Check=Yes)

The plant is at 0% power and 532 °F Tavg. A 5 gpm leak develops in the reference leg of channel "Y" Pressurizer Level Control, which is the selected channel.

As level in the reference leg begins to drop, which one of the following describes the expected system response?

A The blue pen on the pressurizer level recorder will rise and the red pen will lower. ☐

B Channel "X" of Pressurizer level will slowly lower at a rate consistent with a 5 gpm leak in the RCS. ☐

C When the leaking reference leg lowers to 20%, all heaters will deenergize. ☐

D Letdown flow will rise as level in the leaking reference leg lowers. ☑

Justification A; Wrong - the blue pen is level setpoint, which is unaffected by this casualty. Also, the red pen is indicated level, which will rise.
B; Wrong - true if the leak were any place else in the RCS, but the effect here causes letdown flow to rise, draining the PZR faster.
C; Wrong - indicated level must lower to 20% to trip the heaters.
D; Correct - A decreasing reference leg would cause level indication, as seen by the controlling system and the red pen on the recorder, to rise. This would cause the controlling system to increase letdown and cause actual PZR level, as seen by Ch. "X", to decrease even faster than the small leak would on its own.

Reference MP2 LOUT, PLC-01-C, MB-2989

NRC K/A System/E/A

System 016 Non-Nuclear Instrumentation System (NNIS)

Number K1.02

Knowledge of the physical connections and/or cause- effect relationships between the NNIS and the following systems: PZR LCS

Importance RO/SRO 3.4 3.3

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

NRC K/A Generic

 # 67 ☑ RO ☑ SRO Question ID: 0153461 Origin Modified ☐ Memory? (Check=Yes)

Ten hours after the onset of a Loss Of Coolant Accident (LOCA), the following conditions exist:

* Containment Pressure is at 3.5 psig.
* Bus 22E volts = 490 VAC
* Bus 22F volts = 0 VAC.
* Pre-LOCA containment temperature was 91 °F.
* Power indication for both Hydrogen Recombiners is disabled.

What current must be supplied to the available Hydrogen Recombiner for hydrogen removal?

A 76.8 amps ☐

B 75.0 amps ☐

C 63.7 amps ☑

D 53.0 amps ☐

Justification A; Wrong - this uses the "B" recombiner, which has no power with 22F dead. It also exceeds the current limit of the procedure.
B; Wrong - this is the correct limit of the procedure, but is applicable only if the "B" recombiner were used (no power).
C; Correct - EQUATIONS: P = 45 kW x Cp; 45 x 1.2 = 54 kW; I = P / (1.73 x V); 54,000 / (1.73 x 490) = 63.7
D; Wrong - does not use CTMT adjustment factor (1.2).

Reference MP2 LOUT, CCS-01-C, MB-2554

NRC K/A System/E/A

System 028 Hydrogen Recombiner and Purge Control System (HRPS)

Number K2.01

Knowledge of bus power supplies to the following: Hydrogen recombiners

Importance RO/SRO 2.5 2.8

10CFR Link (CFR: 41.7)

NRC K/A Generic

 # 68 ☐ RO ☑ SRO **Question ID: 0153327** **Origin Modified** ☐ Memory? (Check=Yes)

During a plant heatup with Tave at 190 °F, the Primary Plant Operator notes that 2-AC-6 (Containment Purge Exhaust Inboard Isolation) indicates mid-position (both Red & Green lights energized).

Which one of the following actions is required to raise RCS temperature more than 10 °F?

A Verify that the isolation valve is locked closed and the control power fuses pulled. ☑

B Verify containment pressure is less than or equal to zero inches of water. ☐

C Verify that an ESAS containment isolation signal will automatically close the valve. ☐

D Verify that the penetration is isolated by the other Purge Exhaust Isolation Valve. ☐

Justification A; Correct - T.S. 3.6.3.2, T.S. 3.6.3.1 and OP-2314B (Rev. 16), Precaution 3.1 require that all CTMT purge valves be in a locked closed condition to enter Mode 4.
B; Wrong - does not meet admin. requirements for Mode 4.
C; Wrong - the damper is not designed/validated to close in an accident situation. Therefore, T.S. require it be closed before Mode 4.
D; Wrong - both dampers must meet the closure requirements per 3.6.3.2.

Reference MP2 LOUT, ADM-02-J, MB-4829, CFR55.43.b.2

NRC K/A System/E/A

System 029 Containment Purge System (CPS)

Number A2.03

Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Startup operations and the associated required valve lineups

Importance RO/SRO 2.7 3.1

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

69 ☑ RO ☑ SRO Question ID: 0153445 Origin Bank ☐ Memory? (Check=Yes)

The plant is shutdown for a refueling outage and has just completed a total core offload to the Spent Fuel Pool.

Then, a rupture in the Spent Fuel Pool Cooling System occurs and Spent Fuel Pool level begins to drop rapidly.
Several minutes later, an ESAS actuation occurs due to high radiation in the Spent Fuel Pool area.

Which one of the following describes the present status of the Fuel Handling Area Ventilation System.

A Taking suction on outside air, aligned to the Enclosure Building Filtration System (EBFS). ☐

B Outside air supply isolated, discharging to the Main Exhaust System. ☐

C Taking suction on outside air, discharging to the Main Exhaust System. ☐

D Outside air supply isolated, aligned to the Enclosure Building Filtration System (EBFS). ☑

Justification A; Wrong - outside air is isolated on a high rad.
B; Wrong - discharge is via EBFAS to Main Stack (old Unit One Stack).
C; Wrong - outside air isolated, discharge to EBFAS.
D; Correct - The ESAS actuation that would occur due to high radiation in the Spent Fuel area would be an AEAS. This would cause the outside air supply to isolate and the FHA Vent. Sys. to discharge to the Enclosure Building Filtration System, which has automatically started.

Reference MP2 LOUT OP 2314F(9)/6.2; OP 2384(8) /6.13,6.14; P&ID 25203-26028 SH.1; P&ID 25203-26029, RWV-01-C, MB-3108

NRC K/A System/E/A

System 033 Spent Fuel Pool Cooling System (SFPCS)

Number K3.01

Knowledge of the effect that a loss or malfunction of the Spent Fuel Pool Cooling System will have on the following: Area ventilation systems

Importance RO/SRO 2.6 3.1

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

 # 70 ☑ RO ☑ SRO Question ID: 0153864 Origin Modified ☑ Memory? (Check=Yes)

The plant is in a refueling outage with fuel movement in progress. The Refueling Machine is currently performing a core to core move with an assembly in the Refueling Machine. It has just been realized that the Refueling Machine mast is in the wrong position and needs to be rotated 90 degrees to protect the camera.

Which one of the following describes the refuel machine interlocks, with regard to mast rotation, in this situation?

A Refuel machine interlocks allow mast rotation at any time, even while the machine is holding a fuel bundle. Therefore, Reactor Engineering guidance is necessary to proceed. ☑

B Refuel machine interlocks prevent mast rotation while the refuel machine is in the Core Area. The machine must first be moved out of this area and then the mast can be properly positioned. ☐

C Refuel machine interlocks prevent mast rotation while the refuel machine is holding a fuel bundle. The fuel bundle must first be set down in any core location before the mast can be properly positioned. ☐

D The Refuel machine mast cannot be rotated without a special key from Reactor Engineering. Their authorization is necessary to get the key that allows the mast to be properly positioned. ☐

Justification A; Correct - mast can be rotated, but administratively must not be or core physics will be altered. RE is responsible for addressing required actions.
B; Wrong - no interlocks for mast rotation exist within the core area.
C; Wrong - no interlocks exist with a fuel bundle present.
D; Wrong - there is no key for mast rotation, however, RE guidance is required.

Reference MP2 LOUT, REF-04-C MB-0015

NRC K/A System/E/A

System 034 Fuel Handling Equipment System (FHES)

Number K4.02

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Fuel movement

Importance RO/SRO 2.5 3.3

10CFR Link (CFR: 41.7)

NRC K/A Generic

71 ☑ RO ☑ SRO Question ID: 0155052 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress with power stable at 75% for shift turnover. All system controls are in automatic mode and with normal, expected setpoints.

Then, the #1 Atmospheric Dump Valve positioner fails such that the dump valve opens approximately 25%, resulting in the following conditions:

* Tcold is lowering.
* Both steam generator levels are lowering.
* Main Feedwater Regulating Valve delta-P is lowering.
* Delta-T power is rising.

Which one of the following describe immediate actions taken in the control room that will stabilize the plant?

A Lower turbine load and open the condensate polishing facility bypass valve. ☐

B Withdraw control rods and start the third condensate pump. ☐

C Lower turbine load and manually adjust #1 main feedwater regulating valve. ☑

D Insert control rods and raise the speed on both main feedwater pumps. ☐

Justification A; Wrong - the steam flow detector is downstream of the ADV, therefore the detector will not "see" the increase in steam flow even though actual steam demand has gone up. The level in #1 S/G will continue to drop.
B; Wrong - this will raise temp. but not address the feedflow problem. The third pump will help but the feed control valves will not respond to level fast enough.
C; Correct - turbine load controls temp (which is driving the power increase) and manual control of feed accounts for the lack of steam flow input.
D; Wrong - power is high due to lowering temp. Lowering nuclear power will only compound the problem. Speed adjust will be of little help as the control system does not see the steam flow.

Reference MP2 LOUT MSS-01-C MB-2522 2316A

NRC K/A System/E/A

System 039 Main and Reheat Steam System (MRSS)

Number A2.04

Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunctioning steam dump

Importance RO/SRO 3.4 3.7

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

72 ☑ RO ☑ SRO Question ID: 0070642 Origin Bank ☑ Memory? (Check=Yes)

Which of the following features ensures the CAR fans will continue to remove heat from Containment if the discharge ductwork were to be crushed during a LOCA?

A Fusible links at the discharge of each fan ☑

B Backdraft dampers on each fan's discharge ☐

C Spring loaded panels on each fan's independent discharge ductwork ☐

D Spring loaded panels on common ductwork ☐

Justification A; Correct - Fusible links are for collapsed ductwork protection.
B; Wrong - The backdraft damper prevents back flow from other fans.
C; Wrong - The spring loaded panel is on the common ductwork.
D; Wrong - The spring loaded panel relieves any pressure wave traveling up the duct work, preventing the shock wave from damaging the fans.

Reference MP2 LOUT, CCS-01-C, MB-2234

NRC K/A System/E/A

System 055 Condenser Air Removal System (CARS)

Number A3.03

Ability to monitor automatic operation of the CARS, including: Automatic diversion of CARS exhaust

Importance RO/SRO 2.5 2.7

10CFR Link (CFR: 41.7 / 45.5)

NRC K/A Generic

73 ☑ RO ☑ SRO Question ID: 0055354 Origin Bank ☐ Memory? (Check=Yes)

The plant is at 100%, normal line-up, Inverter 1 is being returned to service, with the following additional conditions:

* VA-10 is on its ALTERNATE source.
* Inverter 1 is now energized with no alarms.
* "AUTO/MAN" switch inside the Inverter 1 cabinet is still in MANUAL.

Which one of the following conditions will cause VA-10 to be supplied from its NORMAL source?

A Alternate Source deenergizes. ☐

B "AUTO/MAN" switch is placed in the "AUTO" position. ☑

C Inverter-1 receives an "Out of Sync" condition. ☐

D Alternate Source experiences a ground condition. ☐

Justification A; Wrong - with the "AUTO/MAN" switch in "MANUAL" position, the static switch will NOT transfer to the normal power supply even on a loss of the alternate.
B; Correct - With the "AUTO/MAN" switch in the "AUTO" position, the static switch will automatically transfer from the Alternate Source to the Normal Source if the Normal Source is in Sync and has no alarms.
C; Wrong - will not transfer with an out-of-sync present.
D; Wrong - will not transfer with a ground indicated on the alternate.

Reference MP2 LOUT, LVD-01-C, MB-0213

NRC K/A System/E/A

NRC K/A Generic

System 062 A.C. Electrical Distribution

Number A3.04

Ability to monitor automatic operation of the ac distribution system, including: Operation of inverter (e.g., precharging synchronizing light, static transfer)

Importance RO/SRO 2.7 2.9

10CFR Link (CFR: 41.7 / 45.5)

74 ☑ RO ☑ SRO Question ID: 1000047 Origin New ☑ Memory? (Check=Yes)

The plant has just tripped due to a loss of the switchyard and the following conditions exist:

* ESAS responded as designed to the Loss-Of-Offsite-Power
* Both Emergency Diesel Generators (EDG) running on their respective busses.
* "A" EDG running normally as designed.
* "B" EDG started but output voltage is only ~4050 VAC due to improper setting of the Automatic Voltage Control.

Which one of the following describes a potential consequence of continued operation of the "B" EDG in this condition?

A Potential EDG exhaust fire due to unburned fuel buildup. ☐

B Loss of the EDG due to phase-differential current flows. ☐

C Overheating of motor windings or the EDG windings. ☑

D A reverse-current trip of the EDG output breaker. ☐

Justification A; Wrong - this is only a concern if the EDG is running unloaded for extended periods of time.
B; Wrong - this requires an actual fault on the EDG generator or its immediate bus. Low output voltage should not cause this type of fault.
C; Correct - with low output voltage, amperage must go abnormally high to account for the same power demands on any component.
D; Wrong - with the EDG in isochronous mode and putting out power, it is not possible to reverse-current trip.

Reference MP2 LOUT, EDG-01-C, MB-2425

NRC K/A System/E/A

System 064 Emergency Diesel Generators (ED/G)

Number A2.07

Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of operating under/over-excited

Importance RO/SRO 2.5 2.7

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

75 ☑ RO ☑ SRO Question ID: 0055932 Origin Bank ☐ Memory? (Check=Yes)

The following radioactive waste conditions exist:

* "Hi Rad/Inst. Fail" annunciator is alarming (C06/7 and Aerated Radwaste Panel).
* Aerated Radwaste Monitor Tank level is dropping.
* Discharge Final Filter delta-P is reading 15 psig.

Which one of the following would allow these indications to occur?

A The Radwaste Discharge Valves have been overridden open at the Discharge Panel. ☑

B The radiation monitor is failed but has been locally overridden with the "disable key". ☐

C A Radwaste Discharge is in progress and the rad monitor flush valves have been left open. ☐

D A Radwaste Discharge is in progress with an alarm setpoint of > 1.00E+06 cpm. ☐

Justification A; Correct - if the "Hi Rad/Inst. Fail" annunciator is in alarm and the discharge valves are open (dP on filter), the discharge valves MUST be open on override.
B; Wrong - this only silences the horn on the rad. monitor skid. It does nothing to the discharge valves.
C; Wrong - opening the rad. monitor flush valve is the only operation that would negate the discharge valve override and close the valves.
D; Wrong - it is not necessary, or proceduralized, to override the discharged valves if the alarm setpoint is this high.

Reference MP2 LOUT, ARW-04-C, MB-0633

NRC K/A System/E/A

System 073 Process Radiation Monitoring (PRM) System

Number K3.01

Knowledge of the effect that a loss or malfunction of the PRM system will have on the following: Radioactive effluent releases

Importance RO/SRO 3.6 4.2

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

 # 76 ☐ RO ☑ SRO **Question ID: 0155831** **Origin Modified** ☐ Memory? (Check=Yes)

Repairs to the "B" Circulating Water (CW) bay inlet isolation valve have been partially completed due to lack of the needed parts. Plant management has decided to return the system to service and complete the repairs on-line once parts are acquired. The Secondary Plant Operator (SPO) has been directed to return the "B" CW pump to service. The SPO encounters a "YELLOW" tag on the "B" CW Inlet Isolation Valve control switch stating that the "red" light will NOT energize until the valve is approximately 50% open.

Which one of the following actions must be taken to return the "B" CW Bay to service?

A Follow the pump restart procedure, but position the CW inlet isolation valve per the instructions on the YELLOW tag (50%), using the control board handswitch, prior to starting the pump. ☐

B Clear/close-out the YELLOW tag, then position the "B" CW inlet isolation valve from the control switch per the restart procedure and start the pump. ☐

C Restart the "B" CW pump per procedure after the inlet valve red light is jumpered "on". The YELLOW tag must be lifted until the jumper is removed. ☐

D Leave the YELLOW tag in place. Open the valve operator breaker, locally throttle the CW valve as described in the procedure, reclose the valve operator breaker, then start the "B" CW pump. ☑

Justification A; Wrong - this will NOT satisfy the interlock that allows the circ pump to start, it must be 20% to 25% open.
B; Wrong - the tag must remain until it no longer applies (valve is repaired).
C; Wrong - the inlet valve must be opened to 20%-25% to satisfy the start interlock. The circ pump start procedure requires the valve be opened until the red open light JUST energizes. The red light limit switch is suppose to be set for this valve position to assist the operation of the valve from control, however, the red light is controlled by a different limit switch than the interlock. The YELLOW tag is there for that reason.
D; Correct - this is the only was to tell if the valve is properly positioned with the indication out of calibration, as indicated by the caution tag. Deviation from the guidance of the controlling procedure must be approved by the SM/US.

Reference MP2 LOUT ADM-02-J MB-4765, ADMIN DC-4, Procedural Compliance, CFR55.43.b.3

	NRC K/A System/E/A	NRC K/A Generic
System	075 Circulating Water System	2.2 Equipment Control
Number	GS	2.2.13
	SEE GENERIC K/A	Knowledge of tagging and clearance procedures.
Importance RO/SRO		3.6 3.8
10CFR Link		(CFR: 41.10 / 45.13)

77 ☑ RO ☑ SRO Question ID: 1000058 Origin New ☐ Memory? (Check=Yes)

The plant is in Mode 1 with the "B" Instrument Air Compressor (IAC) shut down for maintenance. "C" IAC is in lead with the "A" IAC and Station Air Compressor in standby.

Then, the plant trips with the following results:

* 24C does not transfer to the RSST, but is energized by the "A" diesel generator.
* All other systems and components respond as designed.

Which one of the following actions is required to maintain Instrument Air Pressure following the plant trip?

A Ensure the "A" IAC automatically starts on the reenergizing of 24C and continues to supply system loads. ☐

B Ensure the "C" IA compressor continues to run and supply system loads. ☐

C Open the Station Air/Instrument Air cross-tie and allow the Station Air Compressor to supply system loads. ☑

D The Fire Water System must first be aligned to cool the "A" IAC before it can be restarted to supply system loads. ☐

Justification A; Wrong - "A" IAC will not auto start on an LNP to 24C, it is locked out until cooling water is verified available.
B; Wrong - "C" IAC is not powered due to the LNP on 24C and is, therefore, unavailable.
C; Correct - the SAC is still energized due to the successful transfer of 24D to the RSST. Therefore, it will supply loads once the systems are x-tied.
D; Wrong - TBCCW is still available to the IACs (24D normal response) and the SAC is still available for use.

Reference MP2 LOUT, ISA-00-C, MB-0608

NRC K/A System/E/A NRC K/A Generic

System 079 Station Air System (SAS)

Number K1.01

Knowledge of the physical connections and/or cause- effect relationships between the SAS and the following systems: IAS

Importance RO/SRO 3.0 3.1

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 78 ☑ RO ☑ SRO Question ID: 0054389 Origin Bank ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power, when a Fire System Trouble annunciator is received on C06/7. An abnormal condition alarm is noted on panel C-26 and a PEO is subsequently dispatched to the West DC Switchgear Room.
The PEO reports the following:

* Two photoelectric type smoke detectors are in alarm.
* The Halon strobe lights and horn are pulsating SLOWLY.
* There is no sign of combustion, but a cleaning crew is blowing dirt out of the overhead cable trays with station air.

Which one of the following describes the present status of the West DC Switchgear Room Halon System?

A It is in an alarmed state warning that a discharge to the room will occur if any ionization detector actuates. ☑

B It is presently discharging or completed discharging to the West DC Switchgear Room. ☐

C It is in an alarmed state warning that a discharge to the West DC Switchgear Room will occur in one minute or less. ☐

D It is in an alarmed state and should have already discharged to the room, but a system malfunction has occurred. ☐

Justification A; Correct - one of the two types of detectors has triggered.
B; Wrong - To actuate the system requires at least one of the three heat sensing detectors also be triggered.
C; Wrong - the horn would be pulsing fast if discharge was immanent.
D; Wrong - the light and horn indication is not conducive with a discharged condition.

Reference MP2 LOUT, FPS-00-C, MB-0568

NRC K/A System/E/A

NRC K/A Generic

System 086 Fire Protection System (FPS)

Number K6.04

Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the: Fire, smoke, and heat detectors

Importance RO/SRO 2.6 2.9

10CFR Link (CFR: 41.7 / 45.7)

 # 79 ☐ RO ☑ SRO **Question ID: 0153872** **Origin Modified** ☐ Memory? (Check=Yes)

A plant heatup is in progress following a refueling outage. Attachment 6 of OP 2201, Plant Heatup, has been completed with RCS temperature at 180°F and slowly rising.

Then, the Work Control SRO informs the control room that an outage scheduling error resulted in BOTH trains of the Enclosure Building Filtration System (EBFAS) being run for surveillance testing while contractors were painting in the Enclosure Building.

Which one of the following describes the impact this discovery will have on the heatup?

A Both Enclosure Building Filtration Systems will be inoperable requiring the plant to remain in COLD SHUTDOWN due to LCO 3.0.3. ☐

B Both Enclosure Building Filtration Systems will be inoperable requiring the plant to remain in COLD SHUTDOWN due to LCO 3.0.4. ☑

C The heatup may continue into MODE 4 provided any exceptions are noted at the end of Attachment 6 and beginning of Attachment 7 of OP 2201. ☐

D The Enclosure Building is inoperable, which requires the plant to remain in COLD SHUTDOWN due to LCO 3.6.5.2. ☐

Justification A; Wrong - Although BOTH trains are affected, TS 3.0.3 does not apply because the plant is presently in Mode 5.
B; Correct - LCO 3.6.5.1 cannot be satisfied until the EBFAS trains filters are tested for damage by the chemical paint fumes. LCO 3.0.4 does NOT permit entry into an operational mode when the conditions for an operational mode are not met.
C; Wrong - TS 3.6.5.1 does NOT have a stated exclusion from TS 3.0.4, therefore, by default, TS 3.0.4 must be met when conditions warrant.
D; Wrong - TS 3.6.5.2 refers to the Enclosure Building operability, which is not applicable in Mode 5 and has the same 3.0.4 requirement as 3.6.5.1.

Reference MP2 LOUT ADM-02-J MB-4829, CFR55.43.b.2

NRC K/A System/E/A NRC K/A Generic

System 103 Containment System

Number K1.03

Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: Shield building vent system

Importance RO/SRO 3.1 3.5

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 80 ☑ RO ☑ SRO Question ID: 0155985 Origin Modified ☐ Memory? (Check=Yes)

A plant cooldown is in progress using the Shutdown Cooling System. The US has directed you to establish a cooldown rate that will result in the MAXIMUM allowable rate per Technical Specifications, for the hour between 0900 and 1000.

During the plant cooldown, RCS temperature dropped from 250 °F to 240 °F from 0900 to 0920.

What should the cooldown rate be in order to reach the Technical Specification MAXIMUM allowable RCS cooldown limit for the rest of the hour?

A 1.75 °F/min. ☐

B 1.0 °F/min. ☐

C 0.5 °F/min. ☑

D 0.3 °F/min. ☐

Justification A; Wrong - assumes 80°F/hr. cooldown limit for 40 remaining minutes.
B; Wrong - assumes 50°F/hr. for 40 more minutes.
C; Correct - T.S. 3.4.9.1; with RCS about to go below 230°F in this hour, C/D rate </= 30°F/hr. In the first 20 minutes, RCS cooled down from 250 - 240 = 10; therefore only 20°F more allowed in the next 40 minutes. 20/40 = 0.5 °F/min. rate.
D; Wrong - assumes 20°F more for 60 more minutes.

Reference MP2 LOUT, N07-01-C, MB-5314

NRC K/A System/E/A

System 005 Residual Heat Removal System (RHRS)

Number A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: Heatup/cooldown rates

Importance RO/SRO 3.5 3.6

10CFR Link (CFR: 41.5 / 45.5)

NRC K/A Generic

 # 81 ☑ RO ☑ SRO Question ID: 0155289 Origin Modified ☐ Memory? (Check=Yes)

A Reactor Trip from 100% power has occurred and EOP-2525,"Standard Post Trip Actions", is in progress. The following conditions are noted:

* On the trip, a Main Turbine Stop Valve and a Control Valve remained open.
* Megawatts are still indicated.

Which one of the following describes the correct order of required actions, per EOP-2525?

A 1. Close both MSIVs. ☐
2. Open the 15G-8T-2 and 15G-9T-2.
3. Monitor for Megawatts dropping to zero.

B 1. Close both MSIVs. ☑
2. Monitor for Megawatts dropping to zero.
3. Open the 15G-8T-2 and 15G-9T-2.

C 1. Open the 15G-8T-2 and 15G-9T-2. ☐
2. Monitor for Megawatts dropping to zero.
3. Close both MSIVs.

D 1. Open the 15G-8T-2 and 15G-9T-2. ☐
2. Close both MSIVs.
3. Monitor for Megawatts dropping to zero.

Justification A; Wrong - Energy trapped in steam lines and MSRs will overspeed the turbine.
B; Correct - these steps must be done in this exact order or the turbine could be seriously damaged due to overspeeding.
C; Wrong - this takes the electrical load off the turbine before isolating steam to it, which would immediately overspeed the machine.
D; Wrong - same as "C", the megawatts would never get to zero.

Reference MP2 LOUT, E25-01-C, MB-5425

NRC K/A System/E/A

NRC K/A Generic

System 045 Main Turbine Generator (MT/G) System

Number A3.07

Ability to monitor automatic operation of the MT/G system, including: Turbine stop/governor valve closure on turbine trip

Importance RO/SRO 3.5 3.6

10CFR Link (CFR: 41/7 / 45.5)

82 ☑ RO ☑ SRO Question ID: 0055084 Origin Bank ☑ Memory? (Check=Yes)

The following plant conditions exist:

* The plant was manually tripped due to a steam generator tube rupture.
* All four RCPs have been secured due to NPSH concerns.
* 15 minutes later, Natural Circulation has developed with an RCS Tavg of 545 °F.
* The SPO then notices all four Condenser Steam Dumps are open and Tavg is dropping rapidly.

Which one of the following actions is required to close the four condenser steam dumps?

A Place the Main Steam Pressure Controller (PIC-4216) in "Manual" and close the valves. ☐

B Place the Reactor Regulating System Channel selector switch (C04) to "X". ☐

C Place the Steam Dump Tavg Controller (HIC-4165) in "Manual" with zero output. ☑

D Place the Quick Open Permissive control switch (C05) to the "OFF" position. ☐

Justification A; Wrong - PIC-4216 will only stop the main steam pressure signal from opening the "A" condenser steam dump, it will have no effect on the other three.
B; Wrong - This would stop a quick "open signal" from opening the steam dumps, but that is not what is opening them.
C; Correct - This is a normal response for the Steam Dumps based on the delta-T and subsequent Tavg. The dump valves are open because the RRS is controlling them by way of the Tavg controller, in auto. Shifting it to manual and closing the valves is all that is required.
D; Wrong - This stops the "quick open" signal to the ADVs only, having no effect on the signal opening the condenser steam dumps.

Reference MP2 LOUT, E25-01-C, MB-5425

NRC K/A System/E/A

System 041 Steam Dump System (SDS) and Turbine Bypass Control

Number A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the SDS controls including: T-ave., verification above low/low setpoint

Importance RO/SRO 2.9 2.9

10CFR Link (CFR: 41.5 / 45.5)

NRC K/A Generic

83 ☑ RO ☑ SRO Question ID: 1000048 Origin New ☐ Memory? (Check=Yes)

The plant has just entered Mode 5, in preparation for refueling, with the following existing conditions:

* "A" LPSI pump running on Shutdown Cooling (SDC).
* Both SDC heat exchangers are in service.
* SDC Total flow control valve (2-SI-306) is in Automatic maintaining SDC flow constant.
* SDC Heat Exchanger flow control valve (2-SI-657) is maintaining a stable RCS temperature.
* Facility One trains of RBCCW and Service Water are in service.
* Present Time-To-Boil is ~45 minutes.

Then, a piece of Service Water piping liner (Arcor) breaks off and lands inside the in service RBCCW heat exchanger, blocking 75% of the tubes.

Which one of the following is expected to occur, under the above conditions, if NO operator action is taken in the next hour?

A RCS temperature will remain constant; Shutdown Cooling heat exchanger flow will rise. ☐

B RCS temperature will rise; total Shutdown Cooling flow will remain constant. ☑

C RCS temperature will remain constant; RBCCW flow through the Shutdown Cooling heat exchangers will rise. ☐

D RCS temperature will rise; Shutdown Cooling heat exchanger flow will rise. ☐

Justification A; Wrong - RBCCW and SDC flow rates through the SDC HX must be MANUALLY adjusted. Therefore, with a diminished RBCCW heat sink, RBCCW temperature must rise. This will cause SDC temperature to rise, which will be reflected in the RCS.
B; Correct - see "A" above.
C; Wrong - RBCCW HX has a temperature controlled throttle valve, which will open in an attempt to hold temperature, but the SDC HXs do not.
D; Wrong - SDC total system flow has an automatic flow control valve, but HX flow does not. It must be manually adjusted.

Reference MP2 LOUT, SDC-00-C, MB-3179

NRC K/A System/E/A NRC K/A Generic

System 076 Service Water System (SWS)

Number K3.05

Knowledge of the effect that a loss or malfunction of the SWS will have on the following: RHR components, controls, sensors, indicators, and alarms, including rad monitors

Importance RO/SRO 3.0 3.2

10CFR Link (CFR: 41.7 / 45.6)

 # 84 ☐ RO ☑ SRO **Question ID: 0156060** **Origin Modified** ☑ Memory? (Check=Yes)

The plant is operating at 50% power and the following crew complement exists:

* Shift Manager (SM)
* Unit Supervisor (US)
* Two Control Operators (PPO and SPO), one of which has an active SRO License.
* Two Plant Equipment Operators (Aux. Building and Turbine Building PEOs), neither holds an NRC License.
* Shift Technical Advisor (STA), not presently qualified any other position.
* Chemistry Technician.
* Health Physics Technician.

Which of the following positions could be vacant for 3 hours WITHOUT resulting in a Technical Specification Shift Staffing violation?

A Either Plant Equipment Operator. ☐

B Health Physics Technician. ☐

C Chemistry Technician. ☑

D Shift Manager OR Unit Supervisor. ☐

Justification A; Wrong - at least two PEOs are required to be on shift.
B; Wrong - the HP tech is specifically mentioned as required in plant at this mode.
C; Correct - the On-Shift Chemistry Technician is not mentioned in the Admin. Requirements.
D; Wrong - cannot be relieved by a CO without lowering the CO number below Admin. Limits.

Reference MP2 LOUT, ADM-02-J, MB-4768, CFR55.43.b.2

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.4
	SEE GENERIC K/A	Knowledge of shift staffing requirements.
Importance RO/SRO		2.3 3.4
10CFR Link		(CFR: 41.10 / 43.2)

85 ☑ RO ☑ SRO Question ID: 0053580 Origin Bank ☐ Memory? (Check=Yes)

The Feedwater System was placed in automatic at 6% power on all controllers. However, the "BYPASS VALVE" switch is left in the "AUTO" position. All equipment operates as designed.

Then, power is slowly raised to 30% with NO operator action taken for feedwater controls.

Which one of the following is the expected response of the Feedwater System to the rise in power?

A The main feedwater regulating valves CLOSE and the bypass valves fully OPEN. ☐

B The main feedwater regulating valves partially OPEN and the bypass valves CLOSE. ☐

C The main feedwater regulating valves partially OPEN and the bypass valves fully OPEN. ☑

D The main feedwater regulating valves CLOSE and the bypass valves CLOSE. ☐

Justification A; Wrong - the MFRVs would not go closed based on this switches position.
B; Wrong - The FRV bypass valves do not ramp closed (over 3 minutes), until the "BYPASS VALVE" switch is manually positioned from "AUTO" to "AUTO CLOSED".
C; Correct - As power is raised, the main FRV will open as necessary in Auto, however the bypass valves will not ramp closed until the associated switches are repositioned, therefore both valves are open.
D; with the controllers in automatic, the Reg valves will open in response to the rise in power.

Reference MP2 LOUT, FWC-01-C, MB-2515

NRC K/A System/E/A		NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.28
	SEE GENERIC K/A	Knowledge of the purpose and function of major system components and controls.
Importance RO/SRO		3.2 3.3
10CFR Link		(CFR: 41.7)

 # 86 ☑ RO ☑ SRO Question ID: 0171629 Origin Modified ☐ Memory? (Check=Yes)

During a refueling outage, a core off-load is in progress. A fuel assembly is being lowered into the upender from the refueling machine when the refueling machine operator notices water level in the refuel pool is lowering at a rate of about one (1) inch/minute.

Which one of the following describes the notifications and action that must be performed first?

A Notify the Spent Fuel Pool refuel operators to commence closing the transfer canal isolation valve. ☐

B Notify the HP Tech on the refueling floor to look for the cause of the water loss. ☐

C Notify the Control Room to immediately sound the alarm to evacuate Containment. ☑

D Notify the Containment Coordinator to contact the control room for additional instructions ☐

Justification A; Wrong - this action is taken after CTMT evac has begun and the time to accomplish valve closure is assessed.
B; Wrong - HP's primary role will be to assist in CTMT evac, then help in looking for the leak if time permits.
C; Correct - personnel evac from CTMT is first priority for loss of refuel/spent fuel pool per AOP 2578.
D; Wrong - the Containment Coordinator may be notified after CTMT evac is commenced and time permits, but the CC has no defined function in the Loss of Refuel Pool AOP.

Reference MP2*LOUT, A78-01-C, MB-5640

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G SEE GENERIC K/A	2.1.14 Knowledge of system status criteria which require the notification of plant personnel.
Importance RO/SRO		2.5 3.3
10CFR Link		(CFR: 43.5 / 45.12)

87 ☑ RO ☑ SRO Question ID: 0053686 Origin Bank ☑ Memory? (Check=Yes)

An operator is performing the independent verification of a valve line-up. During the performance of the second check, a valve is found closed instead of being in the required open position.

Which of the following actions should the operator performing the second check take?

A Open the valve and make a note in the comment section of the valve line-up. ☐

B Contact the individual that originally positioned the valve to open the valve, then perform the second check. ☐

C Contact the Shift Manager or Unit Supervisor for resolution before repositioning the valve. ☑

D Open the valve and get a second person (other than the original first checker) to perform the "second check". ☐

Justification A; Wrong - valves should not be repositioned without express permission of the control room.
B; Wrong - control room must be notified.
C; Correct - the Shift Manager or Unit Supervisor must be notified for resolution before repositioning any valve.
D; Wrong - the control room must be aware of any valve the is being repositioned.

Reference MP2 LOUT, ADM-01-C, MB-2124

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.29
	SEE GENERIC K/A	Knowledge of how to conduct and verify valve lineups.
Importance RO/SRO		3.4 3.3
10CFR Link		(CFR: 41.10 / 45.1 / 45.12)

88 ☐ RO ☑ SRO Question ID: 0053863 Origin Bank ☐ Memory? (Check=Yes)

The unit is operating in MODE 1, 100% power. "B" Charging Pump has been removed from service for extended maintenance (> 1 month). It has been discovered at shift turnover that the applicable surveillance for the "A" Charging Pump has not been performed for 43 days. Two (2) hours later, at the completion of the surveillance, the surveillance results for the "A" Charging Pump are UNSATISFACTORY.

Based on these results, which one of the following conditions apply?

A Restore the "A" Charging Pump to operable within 48 hours or be in Hot Standby in the next 4 hours. ☐

B Restore the "A" Charging Pump to operable within 46 hours or be in Hot Standby in the next 4 hours. ☑

C Restore the "A" Charging Pump to operable within 48 hours or be in Hot Shutdown in the next 12 hours. ☐

D Restore the "A" Charging Pump to operable within 46 hours or be in Hot Standby in the next 2 hours. ☐

Justification A; Wrong - the time of non-compliance starts at the time of discovery. Therefore, the two hours to do the "A" surv. must be deducted.
B; Correct - T.S. 4.0.3 allows you to take a 24 hour time period to perform the surveillance only if the LCO Action Statement is < 24 hours.
C; Wrong - this meets the ECCS TS 3.5.2, which is applicable. However, it is not as restrictive as the Charging Pump TS (3.1.2.4) requirements, 48 hours to restore a pump or 4 hours to get into Hot Standby.
D; Wrong - The two hour delay is deducted from the 48 hours but not the 4 hour requirement to Mode 3.

Reference MP2 LOUT, ADM-02-J, MB-4771, CFR55.43.b.2

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.23
	SEE GENERIC K/A	Ability to track limiting conditions for operations.
Importance RO/SRO		2.6 3.8
10CFR Link		(CFR: 43.2 / 45.13)

89 ☐ RO ☑ SRO Question ID: 1000016 Origin New ☐ Memory? (Check=Yes)

The plant is presently at 100% power. RPS Channel "A" has been declared inoperable due to a Thot input that failed three days ago. All appropriate actions have been taken and RPS Ch. "A" has locked in trips on TM/LP, High Power and Local Power Density.

I&C technicians want to perform troubleshooting activities on the three operable channels of RPS.

Which one of the following actions is required to proceed with the I&C troubleshooting?

A The troubleshooting procedure must be performed by the senior most qualified I&C technicians due to the unusual status of RPS. ☐

B One additional set of RPS trip bypass keys (power trip modules) must be obtained to allow bypassing of more than one channel of RPS simultaneously. ☐

C The troubleshooting procedure must include specific guidance for performance with one channel of RPS inoperable and in a tripped condition. ☑

D A dedicated RO must be assigned to monitor and help manipulate RPS during the performance of the troubleshooting activities. ☐

Justification A; Wrong - any I&C tech. That meets the qualification requirements of the job may perform the test.
B; Wrong - cannot be used at power.
C; Correct - plant conditions are not typical for having one RPS channel in bypass to perform testing. A second channel is in a tripped condition, which changes the initial conditions of the system I&C must test.
D; Wrong - Unnecessary, extra vigilance by all involved is prudent but no additional watch stations are required by any procedure.

Reference MP2 LOUT, ADM-02-J, MB-4812, CFR55.43.b.2

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.20
	SEE GENERIC K/A	Knowledge of the process for managing troubleshooting activities.
Importance RO/SRO		2.2 3.3
10CFR Link		(CFR: 43.5 / 45.13)

 # 90 ☐ RO ☑ SRO Question ID: 0153502 Origin Modified ☐ Memory? (Check=Yes)

The plant is at 100% power when a large leak is identified downstream of 2-SW-12A (Service Water Supply for the "A' diesel). The valve is to be closed for ~48 hours to repair the leak.

Which one of the following describes the administrative actions required to allow the plant to stay at power?

A Within 8 hours verify "offsite transmission network" operable AND ☐
within 48 hours verify SW supply to the "B" EDG is operable OR verify the "B" EDG is operable AND
Restore the "A" EDG to operable status within 72 hours of the leak being identified.

B Within one (1) hour verify "offsite transmission network" operable AND ☑
within 24 hours verify SW supply to the "B" EDG is operable OR verify the "B" EDG is operable AND
Restore the "A" EDG to operable status within 72 hours of the leak being identified.

C Within one (1) hour verify SW supply to the "B" EDG is operable OR verify the "B" EDG is operable AND ☐
within 24 hours verify "offsite transmission network" operable AND
Restore the "A" EDG to operable status within the next 72 hours.

D Within one (1) hour verify "offsite transmission network" operable AND ☐
within 48 hours verify SW supply to the "B" EDG is operable OR verify the "B" EDG is operable AND
align SW to the "A" EDG via 2-SW-12B.

Justification A; Wrong - this is for an inoperable line, the first action item mentioned in TS 3.8.1.1
B; Correct - all offsite circuits are operable, but one EDG is inoperable.
C; Wrong - assumes performance of wrong surveillance with discovery of inoperable EDG.
D; Wrong - time limit is too long and aligning SW to other EDG would cross-tie facilities, violating facility separation.

Reference MP2 LOUT, ADM-02-J, MB-4829, CFR55.43.b.2

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.21
	SEE GENERIC K/A	Knowledge of pre- and post-maintenance operability requirements.
Importance RO/SRO		2.3 3.5
10CFR Link		(CFR: 43.2)

91 ☐ RO ☑ SRO Question ID: 0053358 Origin Bank ☐ Memory? (Check=Yes)

The plant experienced a severe transient and a failure of RPS to automatically trip the reactor. A manual trip was subsequently initiated. A review of the pre- and post-trip reports has been conducted. This review determined that the following plant conditions existed at four independent points in time during the transient.

At which one of the following times was a SAFETY LIMIT violated?

A TIME 1: Pressurizer pressure = 1740 psia; Maximum Tc = 560°F; Reactor power = 107%. ☑

B TIME 2: Pressurizer pressure = 2340 psia; Maximum Tc = 568°F; Reactor power = 108%. ☐

C TIME 3: Pressurizer pressure = 2275 psia; Maximum Tc = 563°F; Reactor power = 110%. ☐

D TIME 4: Pressurizer pressure = 1750 psia; Maximum Tc = 550°F; Reactor power = 106%. ☐

Justification A; Correct - Tech Spec 2.1.1, Figure 2.1-1; 560°F and 107% power intersect ABOVE the 1750 psia line. Therefore, a pressure of 1740 psia is too low and the T.S. is violated.
B; Wrong - values are within Safety Limit graph.
C; Wrong - values are within Safety Limit graph.
D; Wrong - values are within Safety Limit graph.

Reference MP2 LOUT, ADM-02-J, MB-4829, CFR55.43.b.1

NRC K/A System/E/A		NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G SEE GENERIC K/A	2.2.22 Knowledge of limiting conditions for operations and safety limits.
Importance RO/SRO		3.4 4.1
10CFR Link		(CFR: 43.2 / 45.2)

 # 92 ☐ RO ☑ SRO Question ID: 0053670 Origin Bank ☑ Memory? (Check=Yes)

During the course of a normal plant cooldown, the SM elects to disable the first HPSI train using alternate method #2 (rack down and tag the respective pump's breaker).

Which one of the following describes how the disabling of the HPSI facility is documented in Plant Cooldown, OP 2207?

A The on-shift SM/US must initial and date the applicable step. ☑

B The Work Control SRO issuing the tag-out must initial and date the applicable step. ☐

C The PEO performing the step must initial and date that particular step. ☐

D The PPO directing the step must initial and date that particular step. ☐

Justification A; Correct - OP 2207, 1.2 states that the SM or US must initial and date those steps that apply and "NA" those steps that do NOT apply, as well as document the reasons in Section 5.
B; Wrong - must be "on-shift" SRO.
C; Wrong - must be SM/US (SRO).
D; Wrong - must be SM/US, even if PPO has SRO license.

Reference MP2 LOUT, N07-01-S, MB-5339 , CFR55.43.b.5

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.14
	SEE GENERIC K/A	Knowledge of the process for making configuration changes.
Importance RO/SRO		2.1 3.0
10CFR Link		(CFR: 43.3 / 45.13)

 # 93 ☑ RO ☑ SRO Question ID: 0053780 Origin Bank ☐ Memory? (Check=Yes)

The following conditions exist following a Loss of Primary Coolant:

* 'A' Hydrogen Recombiner is INOPERABLE.
* 'B' Hydrogen Recombiner has been in service with no indicated temperature rise.
* Containment Hydrogen concentration is 3.0% and continuing to rise.

Which one of the following actions is appropriate?

A Initiate Station Air supply to containment until hydrogen concentration is diluted down to acceptable levels. ☐

B With Technical Support Center concurrence, open the Hydrogen Purge Valves, 2-EB-91 & -92, or 2-EB-99 & -100. ☑

C With Technical Support Center concurrence, open Containment Purge Valves, 2-AC-4 & -5, or 2-AC-6 & -7. ☐

D NO action is required until Containment Hydrogen concentration reaches 4%. ☐

Justification A; Wrong - SA supply to CTMT is only used when a purge is initiated, not by itself.
B; Correct - if H2 > 3 and rising, combiners are not functioning. Other means of H2 control is necessary before explosive levels are reached. TSC concurrence is required.
C; Wrong - can not use Purge Valves, they are far too big to open under the smallest dP and are inoperable at this time.
D; Wrong - 4% is too high and a potentially dangerous level. Waiting till that level violates procedures and could result in damage to CTMT or equipment.

Reference MP2 LOUT, AEP-02-SE, MB-4749, CFR55.43.b.5

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.9
	SEE GENERIC K/A	Knowledge of the process for performing a containment purge.
Importance RO/SRO		2.5 3.4
10CFR Link		(CFR: 43.4 / 45.10)

 # 94 ☐ RO ☑ SRO **Question ID: 1000021** **Origin Bank** ☑ Memory? (Check=Yes)

A steam generator tube rupture (SGTR) has occurred in Unit 2. The Director of Station Emergency Operations has decided to have personnel seek shelter to limit exposure from the radioactive plume. The wind is blowing out of the southwest, from a heading of 240°.

Using the attached site map, in which one of the following areas are personnel in danger of direct exposure to the blowing radioactive plume?

A North Access Point (NAP). ☐

B South Access Point (SAP). ☑

C Main Cafeteria (Bldg. 475). ☐

D Unit Two Turbine Building. ☐

Justification A; Wrong - this would be a heading of ~140°
B; Correct - Per the supplied site map, and converting "from 240°" to a "blowing to" heading of 60°, the SAP is in the direct path of the plume.
C; Wrong - this would be a heading of ~90°.
D; Wrong - this would be a heading of ~240°.

Reference MP2 LOUT, LICOPR, EP0212 CFR55.43.b.4

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G SEE GENERIC K/A	2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.
Importance RO/SRO		2.9 3.3
10CFR Link		(CFR: 43.4 / 45.10)

95 ☐ RO ☑ SRO Question ID: 1000055 Origin New ☐ Memory? (Check=Yes)

A Waste Gas Decay Tank is in the process of being discharged.

Which of the following describes the reason for checking the discharge radiation monitor approximately 15 minutes after the discharge is started?

A To verify the radiation monitor output and complete the administrative requirement for a Channel Check of the radiation monitoring instrument. ☑

B This radiation monitor skid is not continuously monitored by PIOPS and, therefore, must be checked for proper operation every 15 minutes. ☐

C 10CFR20 requires any ground release of radioactive gas be monitored to ensure applicable federal gaseous discharge limits are not exceeded. ☐

D The discharge flow rate must be monitored to ensure it is not affected by changes in the ventilation from Unit Three, which shares the stack. ☐

Justification A; Correct - TS require a channel check of various instruments that have a safety or radiation relevance. Because there is only one rad detector for the gaseous discharge, a reading is taken at the start of the discharge and compared to the reading 15 minutes later to meet the channel check requirement.
B; Wrong - it is not monitored by PIOPS, but this does not necessitate continuous monitoring. TS accepts a reading comparison for the Operability check.
C; Wrong - the discharge still goes out the Unit One stack, which the plant license defines as an "elevated", not "ground", release.
D; Wrong - the other units are made aware of any discharge and the potential for there ventilation changes affecting it. This, however is a continuous concern and not the reason for checking the discharge rad monitor 15 minutes after starting.

Reference MP2 LOUT, ADM-02-J, MB-4815, CFR55.43.b.2

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.8
	SEE GENERIC K/A	Knowledge of the process for performing a planned gaseous radioactive release.
Importance RO/SRO		2.3 3.2
10CFR Link		(CFR: 43.4 / 45.10)

 # 96 ☐ RO ☑ SRO **Question ID: 0154357** **Origin Modified** ☑ Memory? (Check=Yes)

The plant is in a Site Area Emergency and the SERO is now fully manned. As the Shift Manager, you have been relieved by EOF and are now the Manager of Control Room Operations per EPOP-4417. No approvals for additional exposure have yet been given. You must direct a PEO to check on equipment necessary to preserve a Safety Function. The equipment is located in a high radiation area.

On the Shift Managers authority alone, which one of the following is the highest dose limit authorized for the directed PEO?

A 3000 mrem/year TEDE, including exposure to date. ☐

B 4.5 Rem/year TEDE, inclusive of year-to-date exposures. ☑

C 5 Rem TEDE for the duration of the incident, NOT including year to date exposure. ☐

D 25 Rem TEDE for personnel undertaking a critical mission. ☐

Justification A; Wrong - 4.5 R/hr. = 4500 TEDE allowed to be authorized.
B; Correct - Declaration of an Alert or higher classification incident automatically increases the dose limit to 4.5 Rem/year TEDE, inclusive of year-to-date exposure. This limit is still below the 10CFR20 limit of 5 Rem/year.
C; Wrong - Any further increase in exposure limits requires the specific approval of the DSEO, not the MCRO, as set forth in the EPIP procedure.
D; Wrong - this high a level would require DSEO author.

Reference MP2 LOUT, CBT SERO OVERVIEW, EP-0705, CFR55.43.b.4

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.2
	SEE GENERIC K/A	Knowledge of facility ALARA program.
Importance RO/SRO		2.5 2.9
10CFR Link		(CFR: 41.12 / 43.4 / 45.9 / 45.10)

97 ☐ RO ☑ SRO Question ID: 1000059 Origin New ☑ Memory? (Check=Yes)

A plant trip from 60% power has been initiated due to a rapidly approaching hurricane. Complications on the trip require entry into EOP-2540. Due to rising sea water levels, AOP-2560, Storms, High Winds and High Tides, requires the installation of the portable can on a service water pump.

Which one of the following describes the proper SM/US actions per the above conditions?

A Direct plant recovery using EOP-2540 in parallel with the installation of the service water can per the applicable AOP. ☑

B Utilize EOP-2540 for plant recovery and the applicable sections on Vital Auxiliaries for dealing with the impending storm. ☐

C Utilize EOP-2540 for plant recovery and invoke 10CFR50.54X to take actions for storm preparations. ☐

D The US uses one (1) RO and EOP-2540 for plant recovery actions while the SM uses the other RO and AOP-2560 for storm preparations. ☐

Justification A; Correct - OP-2260 states that guidance contained only in an applicable AOP should be referenced when time allows (example - Hurricane).
B; Wrong - 2560 contains very important and specific guidance for storm preparation, not contained in any other plant procedure.
C; Wrong - 50.54X should not be invoked if specific guidance is contained in approved plant procedures.
D; Wrong - the SM must maintain an overview of the plant. This is improper use of control room resources.

Reference MP2 LOUT, AEP-02-J, MB-4732, CFR55.43.b.5

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.8
	SEE GENERIC K/A	Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.
Importance RO/SRO		3.0 3.7
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

 # 98 ☐ RO ☑ SRO **Question ID: 0054946** **Origin Bank** ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power. The I&C Department is performing surveillance testing on the ESAS equipment due to a suspected short in one of the cabinets.
You suddenly receive various annunciators on C-01, including the following:

* "PRESSURIZER PRESS LO BLOCK B"
* "PRESSURIZER PRESS LO LO B"
* "SIAS ACTUATION SIG CH 1 TRIP"
* "SIAS ACTUATION SIG CH 2 TRIP"

When checked, all plant parameters are verified to be normal and steady.

Which one of the following is the correct action to take IMMEDIATELY, per AOP-2571, Inadvertent ESAS?

A Secure boric acid injection via the Charging System, per AOP-2571, Inadvertent ESAS Actuation. ☑

B Trip the plant and carry out EOP 2525, Reactor Trip. ☐

C Block both channels of SIAS via C-01 pushbuttons in accordance with OP-2384, ESAS. ☐

D Reset SIAS via ESAS actuation cabinet pushbuttons in accordance with OP-2384, ESAS. ☐

Justification A; Correct - AOP 2571 directs securing all charging pumps to stop the ongoing Emergency Boration.
B; Wrong - tripping the plant may be required only after procedure actions have proven to be ineffective.
C; Wrong - blocking the signal is not permitted by the AOP and would serve no purpose as the equipment is already actuated.
D; Wrong - resetting SIAS is farther on in the procedure and would allow additional boric acid to be injected into the RCS, magnifying the transient.

Reference MP2 LOUT, AEP-02-SE, MB-4692, CFR55.43.b.5

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G SEE GENERIC K/A	2.4.31 "Knowledge of annunciators alarms and indications, and use of the response instructions."
Importance RO/SRO		3.3 3.4
10CFR Link		(CFR: 41.10 / 45.3)

 # 99 ☐ RO ☑ SRO Question ID: 0053391 Origin Bank ☑ Memory? (Check=Yes)

The plant trips from 100% power. Conditions indicate that a Loss of Coolant Accident (LOCA) is in progress.

Which one of the following describes when EOP 2532, Loss of Primary Coolant, may be entered.

A As soon as indications of a LOCA are observed by the US and confirmed by the SM. ☐

B As soon as ALL the immediate actions of EOP 2525 have been completed FROM MEMORY. ☐

C Once the SM has carried out his EOP 2525 immediate actions, including queries. ☐

D After EOP 2525 has been completed in its entirety, including the diagnostic flow chart. ☑

Justification A; Wrong - OP 2260, Rev 6, Step 1.2.2 states, "After verification of safety function status in EOP 2525, the SM or US shall attempt to diagnose the event and exit to the appropriate EOP.
B; Wrong - OP 2260, Rev. 6, Step 1.8.8.I states, If contingency actions were taken, the US shall refer to the diagnostic flow chart when conducting the brief.
C; Wrong - still must address diagnostic flow chart.
D; Correct - ensures true status of plant is clear to all crew members.

Reference MP2 LOUT, AEP-02-J, MB-4732 2260, CFR55.43.b.5

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.14
	SEE GENERIC K/A	Knowledge of general guidelines for EOP flowchart use.
Importance RO/SRO		3.0 3.9
10CFR Link		(CFR: 41.10 / 45.13)

 # 100 ☑ RO ☑ SRO Question ID: 1000051 Origin New ☐ Memory? (Check=Yes)

The plant has just tripped from 100% power due to a rupture of the condenser boot seal. On the trip, the following additional items were noted:

* "A" RCP breaker tripped (fault in the breaker).
* RCS Tavg is stabilizing about two to three degrees above normal "no-load" temperature.

Which one of the following sets of annunciators, being in alarm (solid), would account for RCS Tavg stabilizing slightly above normal?

A "CND STEAM DUMP BYPASS LO VACUUM INHIBIT" (C05) ☑
"ATMOSPHERIC DUMP VALVE NOT CLOSED" (C05)
"COND VACUUM LO" (C06/7)

B "RC LO FLOW TRIP CH A/B/C/D" (four separate annunciators, one per channel) (C04) ☐

C "ATMOSPHERIC DUMP VALVE NOT CLOSED" (C06/7) ☐
'STM GEN NO. 1 SAFETY RELIEF VALVE OPEN" (C06/7)

D "TURBINE MASTER RELAY TRIP" (C06/7) ☐
"LOSS OF SPEED SIGNAL TRIP" (C06/7)

Justification A; Correct - the low condenser vacuum inhibit will keep the condenser steam dumps closed, requiring the ADVs to open and maintain RCS heat removal. The ADV setpoint is 920 psia, which accounts for the slightly higher RCS temperature.
B; Wrong - a loss of forced flow would require the RCS to stabilize several degrees above normal due to the required delta-T of natural circulation.
C; Wrong - this is an excess steam demand situation, which would cause temperatures to be several degrees lower.
D; Wrong - these are turbine trip alarms, which could indicate that the turbine tripped first, forcing a reactor trip. Although this could cause a slightly higher RCS temperature post-trip, the RCS would not normally stabilize at the higher temperature if nothing else was abnormal.

Reference MP2 LOUT, MSS-01-C, MB-2903

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.46
	SEE GENERIC K/A	Ability to verify that the alarms are consistent with the plant conditions.
Importance RO/SRO		3.5 3.6
10CFR Link		(CFR: 43.5 / 45.3 / 45.12)