1. ILT 2009 RO 1

Given the following plant conditions:

- Unit 1 startup is in progress with reactor power at 6% and stable.
- All systems are in a normal lineup with no equipment out of service.
- Procedure in effect is OP 1C, "Startup to Power Operation Unit 1."
- As the Unit 1 Control Operator moves rods out one step to continue the power ascension, control rods continue to step out.
- Rod movement is terminated by the Control Operator by manually tripping the reactor.
- Just prior to the manual trip, reactor power is noted to be 22%.
- EOP 0, "Reactor Trip or Safety Injection," is entered.

Which of the following is correct regarding these events?

A. An automatic reactor trip should have occurred since the Low Power Range Trip was **not** blocked and exceeded its reactor trip setpoint.

B. An automatic reactor trip should **not** have occurred since the Low Power Range Trip was automatically blocked when power went above the P-10 interlock.

C. An automatic reactor trip should have occurred since the "At-Power Trips" were enabled when power went above the P-7 interlock.

D. An automatic reactor trip should have occurred since the Intermediate Range Trip was **not** blocked and exceeded its reactor trip setpoint.

Explanation:

A: Correct. Low power trip setpoint is 20%, and was not manually bypassed.

B: Incorrect. Power did go above P-10 (8%) but the trip must be manually bypassed.

C: Incorrect. Power did go above P-7 (9.5%) but the Low Power trip is not affected by the P-7 interlock.

D: Incorrect. Intermediate range trip setpoint is ~25%

2. ILT 2009 RO 2

With the RCS at normal operating pressure and temperature, what is the condition of the steam INITIALLY entering the PRT if a PORV opens?

(PRT is at 100°F, 5 psig: assume an ideal thermodynamic process.)

A. Saturated steam-water mixture at 212°F.

B. Saturated steam-water mixture at 228°F.

C. Superheated steam at 327°F.

D. Superheated steam at 668°F.

Explanation:

A: Incorrect. Temperature is saturation for atmospheric pressure; the PRT is at 20 psia

B: Correct

C: Incorrect. Temperature is saturation for 100 pounds absolute, which could be misread from the Mollier by looking for the 100°F temperature line.

D: Incorrect. Temperature relates to 2250 pounds absolute, the starting point for the process.

3. ILT 2009 RO 3

The following plant conditions exist:

- A SBLOCA has occurred
- The reactor has tripped from 100% power with maximum decay heat
- ECCS is operating as designed
- The RCS is saturated with RCS pressure above steam generator pressure

Which of the following components is required to maintain core cooling?

A. Reactor coolant pumps

B. Accumulators

C. Steam generators

D. Charging pumps

Explanation:

A: Incorrect. RCPs may be tripped for SBLOCA and are not required for cooldown.

B: Incorrect. With RCS pressure above S/G pressure, the accumulators would not be able to inject

C: Correct. With RCS pressure above the S/G pressure they are used for the cooldown.

D: Incorrect. Charging pumps are used to maintain primary inventory but are not required for recovery (BG step 5)

4. ILT 2009 RO 4

The unit has experienced a large break LOCA 30 minutes ago. The crew entered CSP-P.1 "Response to Imminent Pressurized Thermal Shock" and the first step had them return to procedure step in effect.

Why is CSP-P.1 not performed for a large break LOCA?

A. The SI pumps are required to be available for injection.

B. Pressurized thermal shock is not a serious concern during large break LOCA's.

C. The RWST water used for injection limits thermal stress on the reactor vessel.

D. Pressurized thermal shock is not addressed until low head sump recirculation is established.

Explanation:

A: Incorrect. If the RHR pumps were not available CSP-P.1 would be performed.

B: Correct. PTS is not a concern with a large break LOCA because high pressure is not present at the same time as cold temperatures.

C: Incorrect. RWST temperature limits are based on max containment pressure and having adequate cooling in a LOCA, not on PTS concerns.

D: Incorrect. As long as the RHR pumps can inject CSP-P.1 is not performed.

5. ILT 2009 RO 5

Unit 1 CVCS is in a normal at power alignment with 2 charging pumps operating and 1 40 gpm Letdown orifice in service.

1P-2A, "Charging Pump" is in AUTO with 1P-2B, "Charging Pump" in MANUAL.

The following conditions are then noted:

-Unit 1 Pressurizer level is decreasing slowly
-VCT level is rising
-RCP seal injection flow is 6.9 gpm per RCP
-1P-2A Charging Pump controller output is 100%
-1P-2B Charging Pump controller output is 20%

The following alarms are received:
- CHARGING PUMP SPEED CONTROL TROUBLE
- 1P-1A or B RCP LABYR SEAL Δ P LOW

Which of the following has occurred?

A. 1P-2A, "Charging Pump" varidrive failed to minimum speed.

B. 1P-2B, "Charging Pump" VFD failed to maximum speed.

C. Controlling Pressurizer Level channel failed LOW.

D. Seal Injection Line has developed a leak.

Explanation:
A: Correct. Speed trouble alarm comes in when auto charging pump is at min or max speed.
B: Incorrect. Do not get the High/Low speed alarm with manual pump
C: Incorrect.1P-2A would speed up and cause a rising pressurizer level, lowering VCT level, and higher seal injection flow
D: Incorrect. 1P-2A would speed up and have a lowering VCT level

6. ILT 2009 RO 6
Given the following conditions for Unit 2:

- The unit is in MODE 4 on RHR
- RCS Temperature - 320°F and stable
- RCS pressure - 300 psig lowering
- PZR level - 22% lowering
- Sump A level is 24% and rising
- Both RCP's are running

Which of the following would cause these indications?

A. A leak in one of the RHR HXs

B. The Letdown Relief Valve lifting

C. A leak in the RCP seal return HX

D. A leak from the RHR suction header relief valve

Explanation:
A: Incorrect. RHR HX's are outside containment, a leak could lower pressurizer level but not raise sump level.
B: Incorrect. Letdown Relief Valve lifting could cause Pressurizer level and RCS pressure to lower, but the water would be contained in the PRT.
C: Incorrect. Seal return HX's are outside containment, a leak could lower VCT level but not raise sump level.
D: Correct. The valve is inside containment and the given indications are consistent with a leak.

7. ILT 2009 RO 7
Given the following sequence:

- Unit 1 is operating at 100% power.
- CCW is in a normal at power configuration
- A Unit 1 reactor trip occurs
- Offsite power is lost to both Unit 1 safeguards buses
- 1A05 4160 KV and 1B03 480 VAC Safeguards busses are subsequently re-energized by an emergency diesel generator

CCW pump indications are as follows:

- 'A' CCW pump control switch in AUTO with a RED flag and a RED breaker indicating light
- 'B' CCW pump control switch in AUTO with a GREEN flag and a RED breaker indicating light

With no operator action, what is the CCW pump configuration after the transient?

A. Both OFF

B. Both RUNNING

C. 'A' RUNNING 'B' OFF

D. 'A' OFF 'B' RUNNING

Explanation:
A: Incorrect. CCW breakers ride the bus on a UV alone so previously running pump would start. Still have DC control power for 480 Vac busses.
B: Incorrect. The breaker lights indicate shut but only 1 bus is energized so both pumps are NOT running. Still have DC control power for 480 Vac busses.
C: Correct. 'A' pump will ride the bus and start when power restored. Breaker for 'B' pump will shut on low CCW header pressure but not run. Still have DC control power for 480 Vac busses.
D: Incorrect. 'A' pump will stop operating due to loss of power and restart. 'B' pump does not have power available but breaker is closed due to low CCW header pressure. Still have DC control power for 480 Vac busses.

8. ILT 2009 RO 8
Given the following plant conditions:

- Unit 1 is operating at 28% power.
- Normal Letdown has been secured for maintenance.
- Excess Letdown is in service with one Charging Pump running in manual at minimum speed per OP 5E, "Establishing and Securing Excess Letdown."
- Charging and Excess Letdown flow have been balanced and Pressurizer level is stable.
-All other equipment is in a normal alignment.
-No other equipment is out of service.

1LT 428, "Pressurizer Level", Blue channel, fails low.

Assuming no operator action, what effect will this transmitter failure have on the actual primary parameters?

A. Pressurizer pressure lowers.

Pressurizer saturation temperature lowers.

B. Pressurizer pressure rises.

Pressurizer saturation temperature rises.

C. RCS subcooling rises.

Pressurizer saturation temperature lowers.

D. RCS subcooling lowers.

Pressurizer saturation temperature rises.

Explanation:
A: Correct. Pressurizer heaters will lockout on low level, pressure will lower, lowering sat temp.
B: Incorrect. Correct relationship between saturation temp and pressure but pressure would lower not rise.
C: Incorrect. Subcooling will lower as pressure lowers.
D: Incorrect. Saturation temperature will lower with pressure.

9. ILT 2009 RO 9

An automatic reactor trip and SI have occurred from 100% power. EOP 0, "Reactor Trip or Safety Injection", has just been implemented.

The following are observed:

- A Reactor Trip Breaker (RTA) is OPEN
- B Reactor Trip Breaker (RTB) is CLOSED
- Both bypass breakers are racked out
- Reactor power is decreasing in the intermediate range, with SUR at -0.3 dpm
- All rods are fully INSERTED, and rod bottom lights LIT

A manual trip of the reactor was performed; however the "B" Reactor Trip Breaker is still CLOSED.

What action is required to be taken next?

A. De-energize 480V busses B-01 and B-02 in order to de-energize the Rod Drive MG sets.

B. Transition to CSP-S.1, "Response to Nuclear Power Generation/ATWS."

C. Continue with EOP 0, Step 2.

D. Initiate emergency boration.

Explanation:

A: Incorrect. Only de-energize MG Sets if both trip breakers closed with reactor not tripped.

B: Incorrect. Reactor is tripped per provided indications.

C: Correct. The reactor is tripped with the given indications and the RO continues on with EOP 0.

D: Incorrect. Emergency boration completed if all rods not dropped or in CSP S.1

10. ILT 2009 RO 10

Unit 1 has experienced a SGTR and the crew has entered the appropriate EOP. The crew has commenced cooldown to target temperature when a short time later Reactor Coolant Pump trip criteria is met.

Which of the following actions must be taken and why?

A. Trip the Reactor Coolant Pumps to minimize the potential for RCP damage when an RCS depressurization is initiated.

B. Trip the Reactor Coolant Pump on the affected loop to minimize RCS inventory loss.

C. Keep the Reactor Coolant Pumps running to prevent the automatic opening of a S/G Atmospheric.

D. Keep the Reactor Coolant Pumps running because an operator controlled cooldown is in progress.

Explanation:

A: Incorrect. Do not secure RCP's in EOP 3 when starting a cooldown. Plausible due to the lowering pressure and normally securing RCP's in this condition.

B: Incorrect. Tripping RCP's for inventory loss is done for other accidents such as SBLOCA.

C: Incorrect. Keeping the pumps running is correct, but for the wrong reason. Lifting of an atmospheric is of concern during a SGTR after 30 minutes.

D: Correct. Per the note prior to Step 11.

11. ILT 2009 RO 11

The crew is responding to a loss of main feedwater and reactor trip on Unit 1. The turbine driven and both motor driven AFW pumps started on low SG water levels.

1TR-2000B Plant Thermocouple Temperature Recorder point is in alarm for 1P-29, "Turbine Driven AFW pump". The inboard turbine bearing temperature is 260°F and rising.

Which is the **FIRST** action the crew will take?

A. Vent the TDAFW pump casing.

B. Throttle 1AF-4000 and 4001 AFW pump discharge S/G inlet valves open.

C. Open FP-243 emergency AFW seal water supply from fire water.

D. Secure 1P-29 Turbine Driven AFW Pump.

Explanation:

A: Incorrect. This action is taken for steam binding of a secured pump

B: Incorrect. Increasing AFW flow will not provide more cooling to the turbine bearing.

C: Incorrect. Fire protection water is normally already aligned to supply seal water via a pressure regulator

D: Correct. Action per ARB if bearing temperature exceeds 250˚F

12. ILT 2009 RO 12

Both Units are at full power with a normal electrical line up when 1X04 “Auxiliary Transformer” locks out. Emergency Diesel Generators G01 and G03 failed to automatically start.

Prior to any Operator action, Unit 1 inadvertently trips due to a main generator malfunction.

What is the status of the Unit 1 Rod Bottom lights and why?

A. LIT due to being powered from an Instrument Bus.

B. LIT due to the safeguards 480 vac power supply.

C. NOT LIT due to the EDG failures.

D. NOT LIT due to the non-safeguards power supply.

Explanation:

A: Incorrect. Instrument power would not be affected by loss of 1X04 and diesels but rod bottom lights not powered by instrument bus.
B: Incorrect. Correct power supply but it is lost with the EDG failure.
C: Correct. Feed to 1Y06 is dead with no EDG.
D: Incorrect. 1Y06 is powered from safeguards.

13. ILT 2009 RO 13
Unit 2 is at RTP and all LCO's are currently met when the following occurs.

2DY03, "120 VAC White Instrument Inverter", experiences a fault and instrument buses 2Y-03 and 2Y-103 are automatically transferred to the backup power supply.

Several minutes later 2DY04, "120 VAC Yellow Instrument Inverter" experiences a fault and fails.

What is the status of the following LCOs for Unit 2?

LCO 3.8.7 Inverters-Operating
LCO 3.8.9 Distribution Systems-Operating

A. Both LCO 3.8.7 and LCO 3.8.9 are **met**.

B. LCO 3.8.7 is **met**. LCO 3.8.9 is **not met**.

C. LCO 3.8.7 is **not met**. LCO 3.8.9 is **met**.

D. Both LCO 3.8.7 and LCO 3.8.9 are **not** met.

Explanation:
A: Incorrect. LCO 3.8.7 requires the instrument bus to be powered from the inverter. Neither 2DY-03 or 2DY-04 are powering their instrument busses. LCO 3.8.9 requires the instrument bus to have proper voltage. Instrument Busses 2Y04 and 2Y104 are deenergized due to an electrical interlock. 2Y03 and 2Y103 White instrument busses are powered but from an non-class 1E source.
B: Incorrect. Neither 2DY-03 or 2DY-04 are powering an instrument bus.
C: Incorrect. 2Y04 and 2Y104 are not energized from an inverter due to an interlock.
D: Correct. Instrument bus is not energized.

14. ILT 2009 RO 14

Instrument Air is reestablished to containment in the EOP set to regain control of which of the following pieces of equipment?

A. Excess Letdown Isolation valve CV-1299 for Pressurizer level control.

B. PORV's for Pressurizer pressure control.

C. PRT Sparging valve to quench fluid from the Pressurizer PORV’s and Safeties.

D. Reactor Head Vent System to vent steam voids in the upper head region.

Explanation:

A: Incorrect. Normal letdown isolations are AOV's, excess letdown is potentially used in emergency conditions but the isolation CV-1299 is an MOV.

B: Correct. PORV's use IA for operation; their nitrogen backup is isolated at power.

C: Incorrect. PRT sparging valve is an AOV, but is not used in the EOP set.

D: Incorrect. This system is used in some events, but the valves are solenoid operated.

15. ILT 2009 RO 15

Which of the following systems is considered to be the most likely location for a rupture or break outside containment, which would require implementation of ECA 1.2, "LOCA Outside Containment"?

A. Safety Injection

B. Residual Heat Removal

C. Component Cooling

D. RCS Hot Leg Sample line

Explanation:

A. Incorrect. Safety Injection is connected to the RCS

B: Correct. ECA 1.2 bases steps 4 and 5 explain the most probable leak location is RHR.

C: Incorrect. CCW is plausible because it is a lower pressure rated system that is located outside containment.

D: Incorrect. RCS Hot Leg Sample interfaces with the RCS and has piping located outside containment. This line is only 1" and would not result in ECA entry.

16. ILT 2009 RO 16

Given the following:

- Unit 1 has tripped from 100% power due to a Loss of Coolant Accident (LOCA) with a loss of Offsite Power.
- B RHR Pump is danger tagged out
- **G01** and **G02** Emergency Diesel Generators have failed to start.

The Operators are performing EOP 1, "Loss of Reactor or Secondary Coolant."

- RCS pressure is 700 psig.
- Both S/G pressures are stable at 900 psig.
- RWST level is 80% and lowering slowly
- Containment pressure peaked at 10 psig and is decreasing.
- All other equipment is operating normally.

Which of the following procedures will be utilized to address these conditions?

A. EOP 1.3, "Transfer to Containment Sump Recirculation - Low head Injection"

B. EOP 1.2, "Small Break LOCA Cooldown and Depressurization"

C. ECA 1.1, "Loss of Containment Sump Recirculation"

D. ECA 0.0, "Loss of All AC Power"

Explanation:

A: Incorrect. Transition to EOP 1.3 is based on RWST level of <60%.
B: Incorrect. Transition to EOP-1.2 is required if sump recirc available
C: Correct. No train of RHR is available.
D: Incorrect. Transition to ECA-0.0 is not required because 'B' train safeguards power is available from G-03

17. ILT 2009 RO 17

You are responding to a loss of feedwater on Unit 2 caused by a main feed line rupture outside of Containment. You are currently performing CSP-H.1, "Response to Loss of Secondary Heat Sink."

The following conditions exist on Unit 2:

- SG 'A' level	95” WR and lowering
- SG 'B' level	90” WR and lowering
- Loop ‘A’ Hot Leg temperature	570°F and rising
- Loop ‘B’ Hot Leg temperature	571°F and rising
- Loop ‘A’ Cold Leg temperature	550°F and stable
- Loop ‘B’ Cold Leg temperature	550°F and stable
- RCS pressure	2340 psig
- 2RC-430, PORV	OPENING
- Both RCPs	Not running

Based on the above indications, the next actions you would take are:

A. Attempt to establish AFW flow to maintain the secondary heat sink.

B. Initiate RCS Bleed-and-Feed to provide core cooling.

C. Shut the PORV or its block valve to maintain RCS inventory.

D. Attempt to start at least one RCP to stabilize RCS temperature and pressure.

Explanation:
A: Correct. AFW should be restored to recover S/G level.
B: Incorrect. For these conditions a delta-T exists and the S/G are removing heat.
Feed and bleed not required until S/G no longer removing heat.
C: Incorrect. The PORV is operating correctly to limit system pressure.
D: Incorrect. RCPs were secured to limit additional heat input.

18. ILT 2009 RO 18
Both units are operating at 100% when a grid disturbance results in the following conditions:

- MVAR's have lowered to -10
- Voltage Regulator control is in AUTOMATIC

MVARs must be adjusted by _____?

A. lowering AC adjuster.

B. raising the AC adjuster.

C. raising the DC adjuster.

D. lowering the DC adjuster.

Explanation:
A: Incorrect. Correct controls wrong direction
B: Correct.
C: Incorrect. Correct answer if voltage regulator in manual control.
D: Incorrect. Wrong controls and wrong direction

19. ILT 2009 RO 19

Unit 1 was operating at 100% power when one control rod dropped. Operators stabilized the unit at 90% power with Tave equal to Tref. While performing the shutdown margin verification for AOP 6A, "Dropped Rod" the Operators determine Power Defect.

The total Power Defect inserted due to the power reduction is _____.

(Disregard void and redistribution effects)

A. Moderator Temperature Defect times the moderator temperature change

B. Fuel Temperature Defect times the fuel temperature change

C. Fuel Temperature Defect minus the Moderator Temperature Defect

D. Moderator Temperature Defect plus the Fuel Temperature Defect

Explanation:

A: Incorrect. Moderator Temperature Defect includes the temperature change.
B: Incorrect. Fuel Temperature Defect includes the fuel temperature change.
C: Incorrect. Wrong relationship.
D: Correct. Power Defect is the algebraic sum of the moderator temperature and temperature defects.

20. ILT 2009 RO 20

Emergency boration was directed in accordance with Step 5 of CSP-S.1, "Response to Nuclear Power Generation/ATWS." The desired flowpath could not be established and the SRO directs you to borate via the blender per OP 5B, "Blender Operation/Boration/Dilution."

What will be the valve line up to accomplish this task?

A. CV110B, "Z-1 BA Blender to Charging Pump Suction Valve", FULL OPEN, and CV-142 "Charging Flow Control Valve" THROTTLED to get the desired flow rate from the Boric Acid pump.

B. CV110B, "Z-1 BA Blender to Charging Pump Suction Valve" FULL OPEN, and CV-110A, "BA to Z-1 Blender Flow Control Valve" THROTTLED to get the desired flow rate from the Boric Acid pump.

C. CV112C, "VCT Outlet Isolation to Charging Pump Suction Valve", CLOSED, and 1CV-350, "Emergency Boration BA to Charging Pump Suction Valve", FULL OPEN with maximum charging header flow.

D. CV110C, "Z-1 BA Blender to T-4 FCV Flow Control Valve" FULL OPEN, and CV-110A, "BA to Z-1 Blender Flow Control Valve" THROTTLED to get the desired flow rate from the Boric Acid pump.

Explanation:

A: Incorrect. HCV 142 is in the flow path for boration but is not used to adjust flowrate

B: Correct.

C: Incorrect. This is the flowpath that was unavailable in CSP.S.1.

D: Incorrect. This flowpath goes into the top of the VCT and used for dilution.

21. ILT 2009 RO 21
Why is a reactor startup suspended if an IR channel fails?

A. The IR channels provide protection for rod bank withdrawal accidents during startup.

B. The IR channels provide dropped rod protection during startup.

C. The IR channels provide protection for excessive fuel rod power density during startup.

D. The IR channels provide protection against a boron dilution during startup.

Explanation:
A: Correct.
B: Incorrect. The reactor is manually tripped for a dropped rod during startup.
C: Incorrect. Overpower Delta T performs this function.
D: Incorrect. SR NI's provide this function.

22. ILT 2009 RO 22

There has been a LOCA on Unit 2 and Radiation monitor RE-101, "Control Room Area", has gone into **HIGH** alarm.

What effect, if any, will this have on the Control Room Ventilation System?

A. Nothing, ventilation will remain in Mode 1, Normal.

B. Ventilation will shift to Mode 2, 100% recirculation

C. Ventilation will shift to Mode 3, 75% recirculated and 25% filtered recirculation air

D. Ventilation will shift to Mode 4, 75% recirculated and 25% filtered outside air

Explanation:
A: Incorrect. Mode 1 is the Normal mode.
B: Incorrect. Mode 2 is 100% recirculation initiated from Containment Isolation
C: Incorrect. Mode 3 is 75% recirc and 25% filtered recirc initiated manually.
D: Correct. High alarm on RE 101 will cause CR ventilation to automatically switch to Mode 4

23. ILT 2009 RO 23
Given the following:

- A fire was confirmed in the Cable Spreading Room that was affecting plant equipment.
- The crew is implementing AOP 10A, "Safe Shutdown - Local Control."
- H01 13.8 kV bus has a lockout
- The site has a loss of offsite power

Which of the following will power the required equipment per AOP 10A?

A. G05 Gas Turbine

B. G03 or G04 EDG's

C. G01 or G02 EDG's

D. G01 or G02 EDG for Unit 1and G03 or G04 EDG for Unit 2

Explanation:
A: Incorrect. This is correct for loss of offsite power and no loss of H01.
B: Correct. This is correct for loss of offsite power and G05.
C: Incorrect. G01 and G02 are emergency power supplies but are not used in AOP-10A.
D: Incorrect. Only G03 or G04 are used.

24. ILT 2009 RO 24
Consider the following Unit 1 conditions:

- Unit 1 is at 95% reactor power.
- CBD Control rod C-7 is at 178 steps.
- Remaining Control Bank 'D' rods are at 198 steps.
- Control Room crew has entered AOP-6B, "Stuck or Misaligned Control Rod", and actions to realign the rod have been completed.
- Following the realignment of C-7 to 198 steps, the P/A converter was **NOT** set to actual bank position.
- Subsequently, a plant transient occurs and rods begin to drive in until the "Rod Insertion Limit Bank D LOW" (1C04 1A 1-11) Alarm actuates.

Relative to ACTUAL Rod Insertion Limits, at what rod height will the alarm actuate? Would this be conservative or non-conservative? Why?

A. Alarm will actuate 10 steps ABOVE actual Rod Insertion Limit. This would be non-conservative since the alarm warning for a possible loss of Shutdown Margin would be received late.

B. Alarm will actuate 10 steps ABOVE actual Rod Insertion Limit. This would be conservative since the alarm would provide early warning that rod position could cause Axial Flux to exceed allowable limits.

C. Alarm will actuate 10 steps BELOW actual Rod Insertion Limit. This would be non-conservative since the alarm warning for a possible loss of Shutdown Margin would be received late.

D. Alarm will actuate 10 steps BELOW actual Rod Insertion Limit. This would be conservative since the alarm would provide early warning that rod position could cause Axial Flux to exceed allowable limits.

Explanation:
A: Incorrect. If the 20 step disagreement was added to the 10 step alarm setpoint, but it was assumed the alarm normally actuated 10 steps BELOW the RIL, this would be plausible. Shutdown margin is affected.
B: Incorrect. If the 20 step disagreement was added to the 10 step alarm setpoint, but it was assumed the alarm normally actuated 10 steps BELOW the RIL, this would be plausible. Rod position impact on Axial Flux is plausible, since having the rods inserted too far will cause AFD issues.
C: Correct. The realignment process would result in the P/A converter counting the bank 20 steps further out than it actually is. Without resetting,

the RIL alarms will come in 20 steps too late, 10 steps below the limit instead of 10 steps above.

D: Incorrect. If the 20 step disagreement was added to the 10 step alarm setpoint, but it was assumed the alarm normally actuated 10 steps BELOW the RIL, this would be plausible. Rod position impact on Axial Flux is plausible, since having the rods inserted too far will cause AFD issues.

25. ILT 2009 RO 25
Given the following plant conditions:

- -Unit 1 is operating at 100% power
- -A small amount of Steam Generator tube leakage is present on both Steam Generators. However, the leakage is below the Technical Specification limit
- -A fuel cladding defect has been detected via multiple indications of rising RMS monitors
- -The severity and magnitude of the defect is being evaluated
- -An inadvertent Containment Isolation signal is generated

Which of the following radiation monitors would be expected to continue to have an increasing trend?

A. 1RE 231, "Steam Line 'A' Monitor"

B. 1RE 109, "Failed Fuel Monitor"

C. 1RE 116, "Demineralizer Valve Gallery Monitor"

D. 1RE 219, "Steam Generator Blowdown Liquid Monitor"

Explanation:
A: Correct. Contaminated Steam flow continues past the monitor.
B: Incorrect. Hot Leg sample isolates on a Containment Isolation (CI).
C: Incorrect. Letdown isolates on a CI.
D: Incorrect. S/G B/D isolates on a CI.

26. ILT 2009 RO 26
Given the following conditions:

- The reactor has tripped from 100% near BOL.
- A loss of offsite power subsequently occurs.
- Control rod shroud fans are **not** running
- The operating crew has transitioned to EOP 0.2, "Natural Circulation Cooldown."
- The pressurizer and RCS hot leg are sampled for boron and SDM is calculated to be 0.8% $\Delta k/k$.

Which of the following is correct concerning reactor plant cooldown?

A. SDM is adequate, the cooldown can commence at 25°F/hr.

B. SDM is adequate, the cooldown can commence at 50°F/hr.

C. SDM is **not** adequate, additional boration is required before the cooldown can begin.

D. SDM is **not** adequate, cooldown can commence at 25°F/hr and additional boration is required to be initiated when RHR is placed in service.

Explanation:
A: Incorrect. Cooldown rate is correct but SDM is not adequate.
B: Incorrect. Cooldown rate is incorrect and SDM is not adequate.
C: Correct. Step 5 of EOP 0.2 requires a SDM of 1% before cooldown can commence.
D: Incorrect. Cooldown can not commence before boration

27. ILT 2009 RO 27
Unit 2 is in Mode 5 Cold Shutdown with the RCS depressurized.

Both PORVs will be isolated for maintenance.

Regarding LTOP requirements, which of the following is an acceptable vent path?

A. All S/G handhole covers removed

B. Pressurizer manway removed

C. Pressurizer solenoid vent valve open to containment

D. Reactor vessel head vent valve open to PRT

Explanation:
A: Incorrect. A vent path for the secondary side of the S/G.
B: Correct. Identified in the LCO basis as an acceptable vent path.
C: Incorrect. A primary system vent path, but not sufficient for the LTOP LCO.
D: Incorrect. A primary system vent path, but not sufficient for the LTOP LCO.

28. ILT 2009 RO 28

The unit is operating at full power with the following stable initial conditions:

- Pressurizer level is 45.6%
- Charging line flow is 29.5 gpm
- VCT level is 53%
- Lab seal DP is 39" and 41" for RCP A and B

30 minutes later the following conditions are noted with **no** operator action:

- Pressurizer level is 45.6%
- Charging line flow is 31 gpm
- VCT level is 53%
- Lab seal DP is 31" and 33" for RCP A and B

Which of the following is occurring?

A. Seal injection filter plugging

B. Leak on the seal injection line

C. Charging pump relief leaking by

D. Leak on the seal return line

Explanation:
A: Correct
B: Incorrect. Both charging flow and seal DP would lower
C: Incorrect. Both charging flow and seal DP would lower and VCT level would rise.
D: Incorrect. Lab seal DP would be constant and VCT level would lower.

29. ILT 2009 RO 29
Given the following:

- Unit 2 is at full power with Xenon at equilibrium
- Tavg is 569°F
- Time in core life is 4930 MWD/MTU
- Current boron concentration is 1160 ppm
- LDGS is Online

Using ROD 6.6, 8.6 and the Blender book, calculate the amount of dilution required to raise Tavg to 570°F

A. 13.4 gal

B. 16.8 gal

C. 32.6 gal

D. 79.5 gal

Explanation:
A: Incorrect Divide instead of multiply for final step
B: Incorrect. Multiply by boric acid/ppm instead of RMUW/ppm
C: Incorrect. RMUW for 1 ppm change not 1°F change
D: Correct

30. ILT 2009 RO 30
Why does SEP 1, "Degraded RHR System Capability" establish a reactor vessel level of greater than 22%?

A. To ensure capability for establishing reflux cooling.

B. To ensure adequate coolant level for stable RHR pump operation.

C. To extend time to boil, which allows time for the RHR suction line to be reflooded.

D. To minimize thermal stress on the reactor vessel before initiating alternate core cooling.

Explanation:
A: Incorrect. Plausible because reflux cooling is a emergency method of decay heat removal.
B: Correct. 22% level is considered the minimum for stable RHR suction
C: Incorrect. Plausible because reflooding RHR suction line is a strategy in the procedure.
D: Incorrect. Plausible because thermal stress on the vessel is a concern under certain conditions.

31. ILT 2009 RO 31
Given the following:

- A large break LOCA has occurred on Unit 2.
- 480 volt Safeguards Bus 2B04 is locked out.
- The crew is performing actions of EOP 1, "Loss of Reactor or Secondary Coolant."
- Conditions are met to isolate the SI Accumulators.

What actions are required to isolate the accumulators?

A. Dispatch an operator to energize one of the SI Accumulator outlet valves from safeguards power and then manually close that accumulator outlet valve. The other accumulator cannot be vented to containment.

B. Dispatch an operator to energize one of the SI Accumulator outlet valves from safeguards power and then manually close that accumulator outlet valve. The other accumulator is vented to containment.

C. Dispatch an operator to energize both SI Accumulator outlet valves via B08/B09 Alternate Shutdown Load Center, and then manually close both accumulator outlet valves. Both accumulators must be vented to containment.

D. Dispatch an operator to energize one of the SI Accumulator outlet valves from safeguards power and the other from B08/09 Alternate Shutdown Load Center, then manually close both accumulator outlet valves.

Explanation:
A: Incorrect. The A accumulator MOV will be able to be energized and shut from Control. B accumulator will be able to be vented.
B: Correct. One accumulator can be isolated and the other must be vented to containment.
C: Incorrect. Accumulators do not have any back-up power supplies and would not be vented once isolated.
D: Incorrect. Plausible because safeguards power can operate the 'A' isolation valve but accumulators do not have any back-up power supplies.

32. ILT 2009 RO 32

Unit 2 is recovering from a refueling outage and is currently in Mode 5. Reactor Coolant System fill and vent is in progress per OP 4A, "Filling and Venting Reactor Coolant System."

Per OP 4A, what indication is used to confirm the reactor vessel is full?

A. A rising level in the Reactor Coolant Drain Tank (RCDT).

B. RVLIS indication 100% and flat lining.

C. A rising level in the Pressurizer Relief Tank (PRT).

D. A rising Pressurizer level

Explanation:
A: Incorrect RCDT is another common waste water tank in containment
B: Incorrect, RVLIS is used for trending and should be <100%
C: Correct,
D: Incorrect, pressurizer level will rise prior to Rx vessel being full

33. ILT 2009 RO 33
TCV-130, "Component Cooling Water Return from the Non-Regenerative Heat Exchanger Temperature Control Valve", fails due to a broken air line.

Assuming no action by the crew, which of the following describes the effect of this failure on the plant?

A. Letdown temperature goes down; the decrease in letdown temperature causes the letdown demineralizers to remove more boron, resulting in a minor dilution.

B. Letdown temperature goes up; the rise in letdown temperature causes the letdown demineralizers to remove more boron, resulting in a minor dilution.

C. Letdown temperature goes up; the rise in letdown temperature causes the letdown demineralizers to remove less boron, resulting in a minor boration.

D. Letdown temperature goes down; the decrease in letdown temperature causes the letdown demineralizers to remove less boron, resulting in a minor boration.

Explanation:
A. Correct. Temp goes down due to valve failing open and colder letdown causes more boron to be removed
B. Incorrect. Temp goes down
C. Incorrect. Higher temperatures would result in less boron being removed but Temp goes down
D. Incorrect. No boration with boron removal

34. ILT 2009 RO 34

Which of the following describes why the pressurizer spray valves have a continuous bypass flow design feature?

A. Prevents spray nozzle from experiencing severe thermal shock upon initiation of spray flow.

B. Allows variable heaters to be continuously energized to improve chemical mixing in the pressurizer

C. Prevents thermal binding of the spray valves.

D. Provides for backup pressure control if spray valves failed closed on loss of instrument air

Explanation:
A: Correct
B: Incorrect; variable heaters are not normally continuously energized
C: Incorrect; spray valves are designed to operate under varying temperatures.
D: Incorrect; spray valves have a nitrogen backup

35. ILT 2009 RO 35

Which of the following describes the type of core protection afforded by the Reactor Protection System Overtemperature ΔT trip?

A. Departure from nucleate boiling

B. Peak power density

C. Total core power

D. KW per linear foot

Explanation:
A: Correct
B: Incorrect, this is protected by NI high flux trip
C: Incorrect, this is protected by NI high flux trip
D: Incorrect, this is protected by Overpower Delta T

36. ILT 2009 RO 36
Unit 2 is operating at 100%

The Red channel (2PT-429) for Pressurizer Pressure has failed **high** and its bistable has been removed from service per 0-SOP-IC-001 Red, "Routine Maintenance Procedure Removal of Safeguards or Protection Sensor From Service - Red Channels."

Subsequently, the Unit 2 White instrument bus loses power.

You would expect the White Pressurizer Pressure SI bistable (2PC-430) to _____.

A. fail as-is and not impact the SI actuation coincidence

B. trip resulting in an SI signal generation and automatic actuation

C. trip but not generate an SI signal due to the Red channel failing high

D. trip but not generate an SI signal until either the Blue or Yellow pressure channels also trip

Explanation:
A: Incorrect A loss of AC power will result in a trip of the bistable
B: Correct, loss of AC power will trip the SI bistable and 2/3 logic actuates the ESFAS
C: Incorrect, previously removing the red instrument from service placed the channel in a trip position
D: Incorrect, SI actuation logic is 2/3 and the Yellow channel does not input to the pressurizer pressure signal

37. ILT 2009 RO 37

During a large break LOCA, at what RWST level should the Spray and Charging pumps be stopped?

	Spray	Charging
A.	12%	9%
B.	9%	6%
C.	9%	4%
D.	6%	4%

Explanation:

A: Incorrect. Incorrect spray and charging pump level.
B: Correct.
C: Incorrect. Wrong charging pump level, correct level for VCT swap over to RWST.
D: Incorrect. Incorrect spray pump level, correct level for VCT swap over to RWST.

38. ILT 2009 RO 38
Unit 2 has experienced a large break LOCA with loss of offsite power.

The following conditions were noted:

- Containment pressure is 27 psig
- 2A06 4160 VAC Safeguards Bus is deenergized

Which of the following pieces of equipment will be operating?

A. 2P-14B Containment Spray Pump, 2W-1A1 and 2W-1B1 Containment Accident Recirc Fans.

B. 2P-14B Containment Spray Pump, 2W-1C1 and 2W-1D1 Containment Accident Recirc Fans.

C. 2P-14A Containment Spray Pump, 2W-1C1 and 2W-1D1 Containment Accident Recirc Fans.

D. 2P-14A Containment Spray Pump, 2W-1A1 and 2W-1B1 Containment Accident Recirc Fans.

Explanation:
A: Incorrect. Wrong spray pump but correct accident fans.
B: Incorrect. Wrong spray pump and wrong accident fans.
C: Incorrect. Right spray pump with wrong accident fans.
D: Correct. Right spray pump and accident fans.

39. ILT 2009 RO 39

Unit 1 was operating at 100% when the unit tripped inadvertently. Immediate actions are complete and the following indications are observed:

- 1HX-15A Cont Ventilation SW Outlet Flow 580 gpm
- 1HX-15B Cont Ventilation SW Outlet Flow 400 gpm
- 1HX-15C Cont Ventilation SW Outlet Flow 590 gpm
- 1HX-15D Cont Ventilation SW Outlet Flow 575 gpm
- Unit 1 Containment Sump 'A' Level High alarm is LIT
- Alarm "Containment Recirc Coolers Water Flow Low" is **NOT** lit

What actions are required to respond to the above indications?

A. Manually shut 1SW-2907/2908, "Containment Ventilation Coolers Outlet Emergency Flow Control Valves" per Containment Sump A high level alarm response.

B. Isolate the North Service Water Header per AOP 9A, "Service Water System Malfunction."

C. The crew will isolate non-essential service water loads per EOP 0, "Reactor Trip or Safety Injection" Attachment A, "Automatic Action Verification."

D. The crew will have the Primary Auxiliary Building watch isolate affected component(s) per AOP 9A, "Service Water System Malfunction."

Explanation:

A: Incorrect. These valves are already shut, no SI occurred. Plausible because these valves control flow to the accident fans.

B: Incorrect. The leaking SW cooler can be isolated per AOP 9A, but valves are outside containment; isolation of the North header is not required.

C: Incorrect. EOP 0 Att A has these actions for low flow alarm but Attachment A is not applicable without an SI

D: Correct. With no SI, crew will go to EOP 0.1 and respond to the leak per AOP 9A and isolate the leak in the PAB.

40. ILT 2009 RO 40

A LOCA has occurred on Unit 2. The crew transitioned to EOP 1.4, "Transfer to Containment Sump Recirculation - High Head Injection" and placed 'B' ECCS train on high head injection.

The crew was required to complete CSP-Z.1, "Response to High Containment Pressure" and 'A' train of Containment Spray was placed in alignment for sump recirculation.

Subsequently, the following board indications have begun to fluctuate erratically:

- 2PI-628 'A' RHR Pump Discharge pressure
- 2PI-629 'B' RHR Pump Discharge pressure
- 2PI-922 'B' SI Pump Discharge pressure
- 2PI-963 'A' Spray Pump discharge flow
- 2FI-924 'B' SI Pump flow

Which of the following describes the appropriate crew response?

A. Transition to ECA 1.1, "Loss of Containment Sump Recirculation" and stop BOTH Residual Heat Removal Pumps.

B. Transition to ECA 1.1, "Loss of Containment Sump Recirculation" and stop 'A' Containment Spray Pump and 'B' SI Pump.

C. Transition to ECA 1.3, "Containment Sump Blockage" and stop 'A' Containment Spray Pump and 'B' SI Pump.

D. Transition to ECA 1.3, "Containment Sump Blockage" and stop BOTH Residual Heat Removal Pumps.

Explanation:

A: Incorrect. Wrong procedure transition and you would not stop the RHR pumps as they are supplying the SI and Spray pumps.

B: Incorrect. Stopping the SI and Spray pump is done but this is the wrong procedure transition.

C: Correct. Stopping the SI and Spray pumps are correct in order to minimize flow so the blockage may clear.

D: Incorrect. You would not stop the RHR pumps as they are supplying the SI and Spray pumps but this is the correct procedure.

41. ILT 2009 RO 41

A steam line break in Unit 1 Containment caused a Containment Spray actuation. All equipment responded as required.

What is the status of the Unit 1 Containment Spray System components thirty(30) seconds after the spray actuation?

A. Both spray pumps running.
   All four pump discharge valves shut.
   Both spray eductor valves shut.

B. Both spray pumps running.
   All four pump discharge valves open.
   Both spray eductor valves open.

C. Both spray pumps running.
   All four pump discharge valves open.
   Both spray eductor valves shut.

D. Both spray pumps secured.
   All four pump discharge valves open.
   Both spray eductor valves shut.

Explanation:

A: Incorrect Discharge valves get an open signal 10 seconds after spray signal
B: Incorrect. Eductor valves open 2 minutes after signal
C: Correct.
D: Incorrect. Spray pumps start after spray signal

42. ILT 2009 RO 42
Given the following:

- The unit was at full power and had an inadvertent reactor trip.
- Immediate actions have been completed and verified.
- OS-1-MOV and OS-2-MOV, 'Crossover Steam Dump Manifold Inlet' control switches are in **AUTO**.
- On C01R OS-1-MOV and OS-2-MOV RED lights are **LIT** and GREEN lights are **not** lit.
- **No** Operator actions have taken place.

Are these indications correct for the plant conditions, why or why not?

A. Yes, OS-1-MOV and OS-2-MOV will remain open until the turbine rotor is <600 RPM.

B. Yes, OS-1-MOV and OS-2-MOV will remain open until the close pushbuttons are depressed during post trip response.

C. No, OS-1-MOV and OS-2-MOV should have automatically shut due to the lowering crossover steam dump header pressure.

D. No, OS-1-MOV and OS-2-MOV should have automatically shut due to a direct turbine trip signal.

Explanation:
A: Incorrect. The MOVs do not get a signal from turbine RPM. 600 RPM is a turbine number used for lift oil pump start after trip.
B: Incorrect. The MOVs can be closed with these pushbuttons, but this is normally done during testing and manual control during start up.
C: Correct. MOV-1 and 2 should have went shut automatically after the trip.
D: Incorrect. MOV-1 and 2 should have went shut, but they do not get a direct turbine trip signal for their closure.

Learning Objective/#:
LP0051 Crossover Steam Dumps objective 004

43. ILT 2009 RO 43

Unit 1 was at RTP when PT-485 "Turbine First Stage Pressure" failed. Actions per 0-SOP-IC-001- WHITE, "Routine Maintenance Procedure Removal of Safeguards or Protection Sensor From Service - White Channels" have been completed:

- Control Rods are in MANUAL
- Steam Dump Mode Selector Switch is in MANUAL
- 1PC-484 "Steam Dump Controller" is in AUTO at 1000#

Which of the following describes the expected Steam Dump valve response following a reactor trip with 1PT-484 "Steam Header Pressure" failing HIGH?

ASSUME NO OPERATOR ACTION

A. Steam dump valves will NOT open.

B. Steam dump valves will 'blow open" then modulate to control Tavg at 547ºF.

C. Steam dump valves will 'blow open" then modulate to control Tavg at 551ºF.

D. Steam dump valves will fully OPEN and NOT modulate closed.

Explanation:

A: Incorrect. Plausible because dumps are in MANUAL mode.

B: Incorrect. With PT-485 removed from service, dumps would not be set to control temperature. 547F is no load Tavg

C: Incorrect. With PT-485 removed from service, dumps would not be set to control temperature. 551F is Tavg correlated to atmospheric dump setting of 1050#

D: Correct. Steam dumps would be in Steam pressure (Manual) mode after PT-485 was removed from service. When PT-484 failed high, the steam dumps would receive a full open signal.

44. ILT 2009 RO 44

The Unit was in the process of performing a reactor startup when an inadvertent Safety Injection occurred. The plant has been stabilized at normal operating pressure and temperature.

The Main Feed Regulating Valve (MFRV) and MFRV Bypass Valve controllers are in MANUAL.

Which of the following would allow manually opening the Main Feed Regulating Valves?

A. Reset SI ONLY

B. Reset SI and close the Reactor Trip Breakers

C. Momentarily close (cycle) the Reactor Trip Breakers ONLY

D. Reset SI and reset LOFWTT

Explanation:

A: Incorrect. Resetting SI is required, but it is not enough to restore controller function from the Control Room.

B: Correct.

C: Incorrect. Shutting RTB required (they would trip open with SI signal still in) but SI must also be reset.

D: Incorrect. LOFWTT not required. Plausible because both FRVs shut is an input into LOFWTT.

45. ILT 2009 RO 45
Given the following:

- The plant is in a 48% power hold per OP 1C, "Start up to Power Operation" for Reactor Engineering testing.
- P-28B Steam Generator Feedwater Pump is running.
- P-25B Condensate Pump is running.
- All three (3) A S/G NR level indicators are 60% and lowering
- All three (3) B S/G NR level indicators are 64% and stable
- Annunciator STEAM GENERATOR A LEVEL SETPOINT DEVIATION is LIT.

Which of the following describes the actions to be taken by the Control Operator based on these conditions?

A. Start P-28A Steam Generator Feed Pump and monitor S/G A automatic level control for proper operation.

B. Reduce load to < 40% to lower steam demand and monitor S/G A automatic level control for proper operation.

C. Place HC-466 SG A Main Feed Reg Valve controller to MANUAL to restore A S/G level.

D. Start P-25A Condensate Pump and monitor S/G A automatic level control for proper operation.

Explanation:
A: Incorrect. SG levels deviate from setpoint. There is no direction that provides for immediately starting the other Main Feedwater Pump for this condition.
B: Incorrect. SG levels deviate from setpoint. Power reduction is directed for higher power levels, but not for this condition because 1 SGFP can handle the load.
C: Correct. SG levels deviate from setpoint. Manual control of the FRV desired with follow up in AOP 2B. With all three instruments at the same level it should be recognized as a failed controller or valve.
D: Incorrect. An additional Condensate pump is not required.

46. ILT 2009 RO 46
The following conditions exist on Unit 1:

- A reactor trip / turbine trip has occurred
- The crew has transitioned to EOP 0.1, "Reactor Trip Response"
- Current step in effect is "Verify RCS Temperature Control"
- Both steam generator pressures are at 1000 psig and slowly lowering
- Both steam generator narrow range levels are <19% and lowering
- RCS temperature is 547°F and lowering slowly

Which of the following actions is required to control and minimize the cooldown of the RCS?

A. Adjust total AFW flow, maintaining ≥200 gpm until at least 1 SG NR level is >29%, then throttle as needed to control cooldown.

B. Maintain maximum AFW flow until at least 1 SG NR level is >29%, then lower total AFW flow to <200 gpm.

C. Immediately lower total AFW flow to approximately 50 gpm per SG.

D. Raise AFW flow to the S/G's to at least 400 gpm until at least 1 SG NR level is >29%.

Explanation:
A: Correct. EOP 0.1 Step 1 RNO actions to maintain Heat Sink
B: Incorrect. This would be applicable with RCS temperature above 547°F.
C: Incorrect. Applicable actions for cooldown and 2 faulted S/G's.
D: Incorrect. This is done in CSP.S-1.

47. ILT 2009 RO 47

An Auxiliary Operator performing rounds notifies the control room that N2 bottle pressure for the P-38B MDAFW pump control valves is depressurizing rapidly with an unisolable leak in the piping caused by scaffold building activities in the area.

At the time of the notification, what is the status of P-38B MDAFW Pump operability?

A. OPERABLE because Instrument Air is still available to operate the control valves as needed.

B. OPERABLE because the control valves are in their required position for an accident.

C. INOPERABLE because nitrogen is required as a backup to Instrument Air.

D. INOPERABLE because we would not be able to shift the AFW pump suction supply to Service Water during an accident.

+Explanation:
A: Incorrect. TS require the nitrogen back up even though IA is available.
B: Incorrect. The recirc valve is required to have nitrogen even though it is closed.
C: Correct
D: Incorrect. This is required during accident conditions, but it is an MOV.

48. ILT 2009 RO 48
The plant was in a normal configuration at 100% power when the following occurred:

- Supply breaker, 1A52-77, 1A-04 to 1A-06 Bus Tie Breaker tripped.
- Supply breaker, 2A52-76, 2A-03 to 2A-05 Bus Tie Breaker tripped.

Which of the following statements correctly identifies the subsequent electrical lineup with NO operator action?

A. All four EDGs start with G02 supplying 2A-05 and G03 supplying 1A-06.

B. All four EDGs start with G01 supplying 2A-05 and G04 supplying 1A-06.

C. Only G01 and G04 start and supply buses 2A-05 and 1A-06 respectively.

D. Only G02 and G03 start and supply buses 2A-05 and 1A-06 respectively.

Explanation:
A: Correct. All EDG will start but only those aligned to a de-energized bus will load
B: Incorrect. All 4 EDG's do start but EDG's supplying 4160 buses is opposite.
C: Incorrect. Correct train alignments, but EDGs are incorrect and all 4 EDGs start
D: Incorrect. Final configuration is correct but all 4 EDG's start.

49. ILT 2009 RO 49
A reactor trip has just occurred on Unit 1

The 4160 fast bus transfer failed to operate for Non-Safeguards Bus 1A01.

Which of the following loads is now **unavailable**?

A. 1P-28B Steam Generator Feed Pump

B. 1P-27C Heater Drain Pump

C. 1P-25B Condensate Pump

D. 1B02 480 volt Bus

Explanation:
A: Incorrect, powered from 1A02
B: Correct
C: Incorrect, powered from 1A02
D: Incorrect, powered from 1A02

50. ILT 2009 RO 50

Which of the following describes the impact on breaker operation capability with a loss of DC control power for 1B52-17B, "1X-14 Low Side Breaker" on 1B04 safeguards bus?

1B52-17B _____ be opened remotely from the control room.
(CAN / CANNOT)

1B52-17B _____ trip open should a high fault current condition exist.
(WILL / WILL NOT)

A. CAN
WILL

B. CANNOT
WILL

C. CAN
WILL NOT

D. CANNOT
WILL NOT

Explanation:
A: Incorrect. Breaker will not remote operate.
B: Correct. With a loss of DC control pwr the 480v breaker cannot be opened remotely, however 480v safeguards breakers are equipped with an amptector device for overcurrent protection independent of DC control power.
C: Incorrect. Complete opposite of correct answer.
D: Incorrect. Breaker can still trip on a fault but will not remote operate.

51. ILT 2009 RO 51

Given the following:

- G01 Emergency Diesel Generator is not running.
- On C-64, "EDG Gauge Board" the Engine Mode Selector switch is in "Local Start."
- G01 Mode Selector switch on C-02 is in "Auto."
- C34A, "G01 EDG Local Transfer Panel" transfer switches are in their normal "Remote" position.

How is the operation of G01 affected by having this switch alignment?

A. G01 will **NOT** auto start. G01 **CAN** only be IDLE started from the C-64 panel.

B. G01 will **NOT** auto start. G01 **CAN** be FAST or IDLE started from the C-64 panel.

C. G01 **WILL** auto start. G01 **CAN** be FAST or IDLE started from the C-64 panel.

D. G01 will **NOT** auto start. G01 **CAN** be FAST started from the C-34A panel. G01 **CAN** be IDLE started from the C-64 panel.

Explanation:

A: Correct. All fast starts disabled when in LOCAL. G01 can only be Idle started in this condition.

B: Incorrect. Idle start is enabled in this condition. G01 will not auto start, fast starts are disabled.

C: Incorrect. G01 auto starts and fast starts disabled, idle start still works.

D: Incorrect. Fast start from C34A can only occur in Local on C-34A but is disabled by C64 in local start. No auto starts are enabled. G01 will still idle start.

52. ILT 2009 RO 52

Unit 1 has been operating at 100% power for several weeks. 1SC-938C, "1RE-109 Failed Fuel Monitor Flow Valve", which is normally in a throttled position, was inadvertently placed in a full open position after RCS sampling.

1RE-109, "Failed Fuel Monitor", indication will _____.

A. lower due to increased bypass flow around the detector

B. rise because more N 16 gammas will reach the detector

C. remain the same because the gross specific activity of the reactor coolant has not changed

D. lower because of the increased flow which lowers the time N 16 gammas are in the detector

Explanation:

A: Incorrect. 1-SC-938C is inline and not a bypass flow control valve

B: Correct. More flow would result in more N16 flowing through the detector and a higher indication

C: Incorrect. Higher flow would increase the detector indication.

D: Incorrect. Higher volumetric flow rate would result in more N16 gammas

53. ILT 2009 RO 53
Consider the following plant conditions:

- Both Units were at 100% reactor power.
- Unit 2 Safety Injection occurs.
- All systems function as designed.

What is the expected response of the Service Water System to the Safety Injection?

A. SW-2930A/2930B, SFP Heat Exchanger Outlet valves close AND SW-2927A/2927B, SFP Heat Exchanger Inlet valves remain open.

B. 2SW-2880, Unit 2 Turbine Hall Service Water Supply valve closes to isolate Service Water to Unit 2 Turbine Hall.

C. SW-2869/2870, Service Water Cross-Connect valves close to isolate the West Service Water header.

D. 2SW-2907/2908, 2HX-15A-D Containment Recirc Heat Exchanger Emergency flow control valves open to raise flow to Containment Accident Coolers.

Explanation:
A: Incorrect, all SFP HX valves get a shut signal.
B: Incorrect, in the past, Turbine Hall SW flow would be isolated if fewer than 5 SW pumps started on SI signal. This is no longer the case.
C: Incorrect, losing flow in the West header would still allow flow to the vital loads and would be a logical choice to isolate if increased SW flow was needed to SI loads.
D: Correct.

54. ILT 2009 RO 54
The following conditions exist:

- Unit 1 is at RTP.
- There are two Letdown orifices in operation for a planned downpower.
- An inadvertent Containment Isolation has occurred and Instrument Air to Containment has been lost.
- A small air leak exists in the air header inside Containment.

If normal air pressure is **NOT** restored to Containment, which of the following describes the plant's response?

(Assume **NO** operator action is taken)

A. High pressurizer pressure reactor trip.

B. High pressurizer level reactor trip.

C. Low pressurizer pressure reactor trip.

D. Low steam line pressure safety injection.

Explanation:
A: Incorrect. Pressure will rise with level but would not reach the trip setpoint before reactor trip on high level. Spray valves have a nitrogen back up which last longer than it takes for level to rise for the trip.
B: Correct. Loss of Letdown will cause Pzr level to rise until the reactor will trip on high Pzr level
C: Incorrect. Pzr PORV's fail closed on a loss of IA
D: Incorrect. S/G Atmospheric Dump Valves fail closed on a loss of IA

55. ILT 2009 RO 55
Given the following conditions:

-Unit 1 is in Mode 6 with RCS temperature at 100°F.
-RCS time to boil is 2 hours.
-Containment operability is **not** being maintained.
-Containment purge is in operation per OP 9C, “Containment Venting and Purging Unit 1.”

The Unit 1 containment upper personnel airlock has malfunctioned such that neither door can be shut. Maintenance estimates that it will take 12 hours to return at least one of the doors to service.

Which of the following is a valid concern about the status of the upper airlock?

A. An unmonitored release to the atmosphere is taking place while both airlock doors are open.

B. The lower airlock cannot be utilized because one of its bulkhead doors must be locked shut.

C. The containment closure time requirements of CL 1E, “Containment Closure Checklist”, are not met.

D. The upper airlock will not be returned to service before the one hour Technical Specification Action Condition time has expired.

Explanation:
A: Incorrect. Not a concern unless a radiological accident occurs. Both doors are routinely kept open during periods of the outage.
B: Incorrect. Possible solution for >200°F if you have to isolate a broken door.
C: Correct. When containment operability is not maintained, CL1E is the controlling document for securing containment.
D: Incorrect. Correct for >200°F.

56. ILT 2009 RO 56
Given the following:

- Unit 1 is at 100%
- 1P-2A Charging Pump is running in AUTO
- 1P-2C Charging Pump is running in MANUAL
- An inadvertent letdown isolation occurs
- The crew enters AOP 1D, "CVCS Malfunction"
- The procedure step in effect directs that charging be reduced to MINIMUM

What actions would the control operator take to accomplish this?

A. Adjust 1P-2C to minimum speed and adjust HC-142 "Charging Line Flow Controller" to 100% output.

B. Secure 1P-2A, adjust HC-142 "Charging Line Flow Controller" to 100% output and place 1P-2C to minimum speed.

C. Secure 1P-2C, adjust HC-142 "Charging Line Flow Controller" to 0% and stabilize pressurizer level with 1P-2A in MANUAL.

D. Secure 1P-2A, adjust HC-142 "Charging Line Flow Controller" to 0% and establish 20" RCP labyrinth seal DP with 1P-2C.

Explanation:
A: Incorrect. This leaves two pumps running which does not minimize charging.
B: Correct. The pump running in AUTO is secured and adjusting 142 to 100% shuts the valve and directs all charging flow through the RCP seals.
C: Incorrect. HC-142 should be adjusted to 100% output. The running pump should be left MANUAL to allow for minimum setting.
D: Incorrect. HC-142 should be adjusted to 100% output. Lab seal DP will exceed 20" with minimum charging.

57. ILT 2009 RO 57
Given the following:

- Unit 1 is at 75% power
- Power range channel N42 White upper detector fails HIGH

With **no** operator action, which of the following will occur?

A. White channel Over-Temperature ΔT setpoint goes up.

B. White channel Over-Power ΔT setpoint lowers.

C. Bank D control rods step in until fully inserted.

D. Rod withdrawal will be blocked.

Explanation:
A: Incorrect. Higher reactor power reading will lower the OTΔT setpoint.
B: Incorrect. OPΔT setpoint is not affected.
C: Incorrect. Bank D rods will step in for a short time, not until fully inserted.
D: Correct. 1 out of 4 coincidence is made up for rod withdrawal stop
.

58. ILT 2009 RO 58
Given the following plant conditions:

- Unit 2 has tripped due to a Small Break LOCA.
- RCS sub-cooling is 10°F
- Core Exit Thermocouples are reading 595°F and rising
- SI Pumps are running at shutoff head.
- Operators are currently entering EOP-1.2, "Small Break LOCA Cooldown and Depressurization."

Based on these conditions, which of the following choices describes the RCS cooling conditions?

A. Reflux Cooling

B. Inadequate Natural Circulation Cooling

C. Natural Circulation Cooling

D. Normal Forced RCS Cooling

Explanation:
A: Incorrect. RCS is still pressurized and filled so reflux cooling would not occur. Plausible because reflux cooling could occur later in the accident.
B: Correct.
C: Incorrect. Subcooling of >35°F and lowering CET temps is required to verify natural circulation cooling.
D: Incorrect. Not enough sub-cooling margin to have RCP's running.

59. ILT 2009 RO 59
Given the following:

- Unit 1 is at 100% reactor power.
- Rod control is in automatic.
- A single set of Main Air Ejectors is in service.
- 1MS-2074, “Air Ejector Steam Supply control valve” fails closed.

Which of the following will result if NO operator action is taken?

A. Lowering megawatt output and rising hotwell temperature

B. Rising megawatt output and rising gland seal header pressure

C. Rising megawatt output and rising condenser hotwell level

D. Lowering megawatt output and lowering hotwell temperature

Explanation:
A: Correct. Degraded vacuum causes megawatt output to decrease due to reduced delta H and the condenser is a saturated system, so higher P_{sat} means higher T_{sat} and therefore higher hotwell temperature.
B: Incorrect. MW drop
C: Incorrect. MW drop
D: Incorrect. Hotwell temperature rises

60. ILT 2009 RO 60
Given the following conditions:

- Unit 2 is operating at RTP.
- The turbine is in OPERATOR AUTO and IMP IN.
- You are the 4th RO performing TS 4A, "Turbine Trip Test (Monthly) Unit 2."
- The Unit 2 Turbine Hall Auxiliary Operator is holding the turbine trip test handle in the TEST position.
- The turbine is slowly approaching an overspeed condition due to a grid disturbance.

Which of the following describes the expected plant response?

A. The mechanical overspeed trip will actuate and the reactor will trip.

B. Crossover Steam Dumps will **not** actuate and the reactor will trip.

C. IOPS will actuate and the reactor will **not** trip.

D. Aux Governor will actuate and the reactor will **not** trip.

Explanation:
A: Incorrect. The mechanical overspeed is blocked during the testing, reactor would trip on turbine trip.
B: Incorrect. The crossover dumps will actuate on IOPS or Aux Governor actuation at this plant power.
C: Incorrect. IOPS is not expected to actuate due to Aux Governor operation at 103% turbine rpm. IOPS will actuate at 104% turbine rpm and would cause a reactor trip.
D: Correct. Aux Governor will actuate and the reactor will not trip because the governor valves pulse shut to keep below 103% turbine rpm.
.

61. ILT 2009 RO 61
Given the following initial plant conditions:

- Reactor power is 55%
- 'B' SGFP is isolated for maintenance
- 'A' Condensate Pump is in service
- 'B' Heater Drain Tank Pump is in service

Subsequently, the 'A' Condensate Pump trips due to a motor fault and the following is noted:

- 1P-28A SGFP Suction Pressure Low alarm is **LIT**
- 1P-28A SGFP Lo Suction Pressure Timer light is momentarily **LIT**

What actions, if any, are required?

A. Manually start the standby Condensate Pump and manually control CS-2273, “LP FWH Bypass Valve”, to restore SGFP suction pressure.

B. Verify automatic start of the standby condensate pump and monitor the response of the main feed regulating valves.

C. Manually start the Heater Drain Tank pump and direct the AO to take local control of HDT level.

D. Verify automatic start of the HDT pump and monitor CS-2273, “LP FWH Bypass Valve”, to ensure SGFP suction pressure is restored.

Explanation:

A: Incorrect. Auto start of condensate pump would occur; taking manual action to shut CS-2273 is an action in various feed system faults. AOP direction does not have you take manual action to ever open CS-2273.

B: Correct. Auto start of condensate pump at 180# and then verify normal parameters.

C: Incorrect. The HDT pumps do supply suction to the feed pumps, but in this question, the HDT remains running.

D: Incorrect. CS-2273 would open for low SGFP suction pressure, but the HDT would not automatically start.

62. ILT 2009 RO 62

Which of the following will AUTOMATICALLY isolate the selected Monitor Tank discharge during a liquid release to the Circulating Water System?

A. HIGH alarm on Service Water Overboard Monitor 1RE 229.

B. Loss of the running Monitor Tank pump.

C. Loss of the only operating Circulating Water Pump on Unit 1.

D. HIGH alarm on Waste Disposal System Liquid Monitor RE 218.

Explanation:

A: Incorrect. Alarm function only, procedurally we would stop the discharge. These are the back up monitors for RE-218.

B: Incorrect. No auto function on loss of flow.

C: Incorrect. No auto function for securing an overboard discharge.

D: Correct. High alarm auto shuts WL-218 which stops the Monitor Tank discharge.

63. ILT 2009 RO 63
Given the following plant conditions:

-Unit 1 is at 100% power.
-The "A" Gas Decay Tank is being discharged per OP 9D, "Discharge of Gas Decay Tanks."
-A forced vent of Unit 1 containment is in progress per OP 9C, "Containment Venting and Purging."

The following alarms are then received:
- Containment or Aux Bldg Vent System Air Flow Low annunciator on 1C04.
- FT 3298A, PAB Flow Stack Velocity, alarms on the RMS System Server and indicates low.

Which of the following actions is required for these conditions?

A. Start the standby Purge Exhaust Fan.

B. Start the standby Cavity Cooling Fan.

C. Secure the Unit 1 containment forced vent.

D. Secure the Gas Decay Tank discharge.

Explanation:
A: Incorrect. Purge fan trip also brings in 1C04 alarm but not FT3298A. Exhaust stacks are different.
B: Incorrect. Cavity cooling fan also brings in 1C04 alarm but not FT3298A. Exhaust stacks are different.
C: Incorrect. This is correct if you lost a purge fan.
D: Correct. Alarm due to loss of PAB ventilation which is confirmed by FT3298A low.

64. ILT 2009 RO 64

Both units are operating at 100% power. Unit 2 is on "ice melt mode" and the following conditions exist:

- Time: 2 a.m.
- Outside air temperature is 15º F
- 10 mph wind from the northwest
- Lake Michigan temperature is 32º F and stable
- Current Forebay temperature is 33º F
- The Auxiliary Operator reports the presence of floating ice

Which of the following combinations of valve positions provide the **maximum** desired effect at the crib based on these lake conditions?

	Unit 2 Ice Melt Valve	Unit 2 Seal Well Outlet Valve
A.	50% OPEN	100% OPEN
B.	50% OPEN	0% OPEN
C.	100% OPEN	100% OPEN
D.	100% OPEN	0% OPEN

Explanation:

A: Incorrect. Seal well valve is in the opposite required positions with ice melt valve not full open for maximum heating.

B: Incorrect. Ice Melt valve not fully open for maximum heating, but the Seal Well Outlet is positioned correctly.

C: Incorrect. Ice Melt valve full open is correct, but with the Seal Well Outlet still open you are not getting maximum heating.

D: Correct. The most heating effect at the crib intake structure occurs when all of the ice melt unit's circ water discharge is directed to down the intake pipe. This is accomplished by fully opening the ice melt valve, and fully shutting the seal well outlet valve.

65. ILT 2009 RO 65
You are the Third RO and the following alarms come in:

- Fire Protection and Smoke Detector Panel
- Electric Fire Pump Running

When you check Fire Detection Panel C-900 on C01R, the Unit 1X01 Main Transformers area indicates a steady red light.

What actions are required?

A. Fire detection has occurred; deluge will need to be manually activated using the local handles.

B. Fire detection and deluge activation have occurred; contact the AO to check the affected area.

C. Fire detection has occurred; deluge will need to be manually activated using the pushbuttons on C01R.

D. A trouble supervisory alarm has occurred; contact the AO to check the D-400 supervisory panel.

Explanation:
A: Incorrect. Detection is a red blinking light.
B: Correct. There is detection AND suppression.
C: Incorrect. This would be done if indications showed failed suppression.
D: Incorrect. Trouble supervisory is a yellow light.

66. ILT 2009 RO 66
You are a licensed Reactor Operator and were assigned to the Work Control Center on 9/1/08. Both Units have remained at RTP while assigned to the Work Control Center.

You are current in maintaining qualification in the Licensed Operator Requalification Training Program.

The date is February 23, 2009 and you are preparing to return to shift duties.

The time you were on shift since this assignment is as follows:
- 8 hours on September 18, 2008 as Unit 1 CO
- 8 hours on September 19, 2008 as Unit 1 CO
- 8 hours on October 27, 2008 as Unit 2 CO
- 8 hours on October 28, 2008 as Unit 2 CO
- 8 hours on November 23, 2008 as Third CO
- 8 hours on November 22, 2008 as Third CO
- 8 hours on December 24, 2008 as Third CO

Which of the following describes the status of your license in accordance with OM 3.10, "Operations Personnel Assignments and Scheduling"?

A. Your license is active. You may stand watch with no restrictions.

B. Your license is active. You must regain qualification as RO by standing three (3) additional 8-hour shifts in the Unit 1 or Unit 2 CO position.

C. Your license is inactive. You must reactivate your license by standing two (2) additional 8-hour shifts in any CO position.

D. Your license is inactive. You must reactivate your license by standing forty (40) hours on shift under instruction in any CO position.

Explanation:
A: Incorrect. License is inactive due to insufficient hours last quarter.
B: Incorrect. Proficiency is not based on board position.
C: Incorrect. To reactivate you need 40 hours of watch standing.
D: Correct. Last calendar quarter did not stand 7 shifts.

67. ILT 2009 RO 67

In accordance with OM 3.34, "Reactivity Management Procedure", which of the following NON-LICENSED individuals can manipulate the controls of the reactor if under the direct supervision of the licensed Reactor Operator?

A. A Reactor Engineer during physics testing.

B. An individual enrolled in an approved license training program.

C. An Auxiliary Operator during surveillance testing with direct SRO oversight.

D. A qualified Shift Technical Advisor during CSP-S.1 “Response to Nuclear Power Generation/ATWS.”

Explanation:
A: Incorrect. Reactor Engineer works with RO for reactor operations.
B: Correct. Must be enrolled in licensed operator program.
C: Incorrect. NLOs work with ROs but cannot manipulate controls.
D: Incorrect. STAs are allowed to do control board peer checks only

68. ILT 2009 RO 68

Which of the following is an example of an expected behavior of Conservative Decision Making?

Tripping the reactor with _____.

A. NI power 107% and rising

B. the condenser at 24" Hg vacuum and degrading

C. Pressurizer pressure 2365 psig and rising

D. S/G levels 25% and lowering

Explanation:

A: Incorrect. Auto NI trip is at 107%, conservatively should be tripped prior to that.

B: Correct. Auto turbine trip on vacuum trip is at 20" hg, this is a conservative trip.

C: Incorrect. Auto Pressurizer high pressure trip is 2365 psig, conservatively should be tripped prior to that.

D: Incorrect. Auto Reactor trip required at this level, conservatively should be tripped prior to that.

69. ILT 2009 RO 69

Given the following plant conditions recovering from a refueling outage:

- RCS pressure is 375 psig
- RCS temperature is 275°F
- The Pressurizer is solid
- RHR Pumps are secured
- Both Reactor Coolant Pumps are operating

A planned evolution requires the RCP's secured for approximately 15 minutes.

Which of the following plant conditions would **NOT** allow re-starting the RCP's?

A. RCS temperature lowers to 265°F.

B. The 'B' Steam Generator temperature is 60°F above RCS cold leg temperature.

C. Core outlet temperature rises to 20°F below saturation temperature.

D. Steam Generator NR levels are at 40%.

Explanation:

A: Incorrect. LTOP required temperature is 285°F and the examinees may think an RCP cannot be started below this temperature.

B: Correct. Temperature must be within 50°F when less than LTOP required temperature of 285°F.

C: Incorrect. Misapplication of the LOC 3.4.6 note

D: Incorrect. Misapplication of the LOC 3.4.6 note

70. ILT 2009 RO 70

A situation arises during the performance of an operations procedure such that it **cannot** be performed as written and requires a non-intent change to correct. The correct action to be taken is to _____.

A. initiate a temporary change while continuing with the work

B. stop the work and initiate a temporary change to the procedure

C. stop the work and have a supervisor make pen and ink changes before continuing

D. continue with the work and note any deviations in the remarks section of the procedure

Explanation:

A: Incorrect. Correct process but work must stop. You are allowed to continue with typo's, but not if procedure can't be performed as written.

B: Correct.

C: Incorrect. Pen and Ink changes are allowed for typo's but not for step changes

D: Incorrect. The remarks section is used for documenting improvements, why steps were marked N/A, etc.

71. ILT 2009 RO 71
Per NP 4.2.14, "Administrative Dose Levels/Dose Level Extension Procedure", an individual at Point Beach has an administrative dose limit of (1) _____ mrem TEDE per year. This can be raised to a maximum of (2) _____ mrem TEDE per year by the **Shift Manager**.

A. (1) 1000

(2) 3000

B. (1) 1000

(2) 4000

C. (1) 2000

(2) 4000

D. (1) 2000

(2) 4500

Explanation:
A: Incorrect, incorrect initial admin level but second part is correct level for FLS extension.
B: Incorrect, incorrect initial level but second part is correct for Shift Manager permission required to go to 4000 mrem.
C: Correct, correct initial admin level and second part is correct level for Shift Manager extension.
D: Incorrect, correct initial admin level and Operations Manager permission needed to exceed 4000 mrem.

72. ILT 2009 RO 72
An Operator has just completed an **emergency entrance** to the RCA through the RCA checkpoint, including use of an EPD located on top of the RCA Fire Brigade locker. The initial EPD total dose reading was **5 mrem**.

The EPD was reading **10 mrem** when the RCA was exited.

Which of the following describes the Operator's action concerning the EPD and dose received on exiting the RCA?

A. Report 10 mrem dose to the Shift Manager and return the EPD to the top of the RCA Fire Brigade locker.

B. Report 10 mrem dose to the RP group and return the EPD to RP group.

C. Report 5 mrem dose to the Shift Manager and return the EPD to the RP group.

D. Report 5 mrem dose to the RP group and return the EPD to the top of the RCA Fire Brigade locker.

Explanation:
A: Incorrect. Wrong dose reported to correct person
B: Incorrect. Wrong dose reported to wrong group
C: Correct
D: Incorrect. Correct dose but placed back in wrong location

73. ILT 2009 RO 73

Prior to moving irradiated fuel assemblies with the Spent Fuel Bridge and the Spent Fuel Handling Tool, we ensure that long-handled tools have holes drilled in them.

Why do we require long handled tools to fill with water while working in the SFP?

A. Filling the tools with water helps minimize buoyancy for easier handling of fuel assemblies.

B. To prevent radiation streaming from highly radioactive material stored under water.

C. The water provides shielding which minimizes spurious Spent Fuel Pool Area Radiation Monitor Alarms.

D. Keeping the inside of the tool wet prevents airborne conditions from developing thus minimizing personnel exposure.

Explanation:

A: Incorrect. Buoyancy is not an issue with fuel assembly weight.
B: Correct. Minimizes radiation exposure to the upper body.
C: Incorrect. Streaming radiation from the tool would not affect ARM's in the area.
D: Incorrect. A common practice to minimize airborne is wetting surfaces.

74. ILT 2009 RO 74
'Given the following Unit 1 plant conditions:

-OP 3C, "Hot Standby to Cold Shutdown", is in progress.
-1P-10A, "RHR Pump", is running.
-Preparations are being made to start 1P-10B, "RHR Pump."
-RCS temperature is 250°F and slowly lowering.
-1P-10A suddenly trips due to motor failure.
-An attempt to start 1P-10B is made, however, its breaker will NOT close.
-Subsequent attempts to start an RHR pump have failed.
-The procedure currently in effect is SEP 1.1, "Alternate Core Cooling."

Which of the following methods available in SEP 1.1 would **NOT** provide for decay heat removal for these conditions?

A. Steaming via a S/G and utilizing Condensate as makeup to the S/G.

B. Feeding with a Safety Injection Pump and opening a Pressurizer PORV.

C. Gravity drain of the Refueling Water Storage Tank to the RCS via the RHR piping.

D. Steaming via a S/G and utilizing Auxiliary Feedwater as makeup to the S/G.

Explanation:
A: Incorrect. Allowable make up per step 5. Plant conditions have intact RCS and S/G
B: Incorrect. Allowable per Step 43 and 55. This is for an open RCS with no S/G
C: Correct. Due to pressures in the RCS the RWST will not gravity fill.
D: Incorrect. Allowable make up per step 5. Plant conditions have intact RCS and S/G

75. ILT 2009 RO 75
Unit 1 is in the process of recovering from a refueling outage filling the Reactor Coolant System when the following conditions were noted:

- Both Residual Heat Removal (RHR) Pumps were secured due to erratic hydraulic operation.
- The Crew entered SEP 1, "Degraded RHR System Capability."
- Reactor vessel level is 78% and stable.
- The highest reading Core Exit Thermocouple (CET) is 138°F.
- The plant has been shutdown for 30 days.

Using the given references determine the **MAXIMUM** time available until boiling occurs in the Reactor Coolant System.

A. 47 minutes

B. 59 minutes

C. 65 minutes

D. 73 minutes

Explanation:
A: Incorrect. Time given uses 76%, 140°F and does not take into account the 1.3 multiplication factor. (47 minutes)
B: Correct. Conservatively use 76% level, 140°F and using the 1.3 multiplication factor. (46x1.3=59.8 hours or 47x1.3=61.1 hours)
C: Incorrect. Time given uses the 76% level with 35 days and 140°F, with using the 1.3 multiplication factor. (50x1.3=65 minutes)
D: Incorrect. Time given uses the 76% level and 100°F with no multiplication factor. (73 minutes)

1. 2009 ILT SRO 1

Given the following:

- Unit 2 has experienced a large break LOCA inside containment
- The crew is in the process of aligning RHR per EOP-1.3, "Transfer to Containment Sump Recirculation - Low Head Injection"
- RWST level is 32% and slowly lowering
- The STA informs the OS2 that conditions exist for a Red path for Heat Sink

Which of the following is the correct procedure flowpath?

A. Transition to CSP-H.1, "Response to Loss of Secondary Heat Sink."

B. Enter CSP-H.1, "Response to Loss of Secondary Heat Sink" but continue to perform actions in parallel from EOP-1.3 to align sump recirculation.

C. Remain in EOP-1.3 until at least one train of RHR is ready for recirculation and then implement CSP-H.1, "Response to Loss of Secondary Heat Sink". Return to EOP-1.3 when RWST level reaches 9%.

D. Remain in EOP-1.3 until at least one train of RHR is aligned and sump recirculation has been verified. Implement CSP-H.1, "Response to Loss of Secondary Heat Sink" if the Red path condition still exists.

Explanation:

A: Incorrect per note prior to step, would be required when in most other procedures.

B: Incorrect per note prior to step. Would be allowed after in the EOP, after step 21

C: Incorrect, with RWST level <34% CSPs are not implemented until after a train is aligned. 9% RWST level is when spray pumps are secured.

D: Correct per notes prior to step 1 and after step 20 but prior to step 31.

10CFR55.43 Statement met:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

2. 2009 ILT SRO 2

Unit 2 is at 100% with the following indications:

- 2TR-2001 Temperature Monitor annunciator is **LIT**.
- No other annunciators are lit.

	'A' RCP	'B' RCP
- Highest Motor Bearing	60°C	63°C
- Stator Winding	122°C	69°C
- RCP #1 Seal Outlet Temp	99°F	101°F
- Loop Flow	100%	100%
- RCP Current (AC Amps)	603 A	601 A

Which of the following actions must be taken?

A. Shut down the unit using AOP-17A, "Rapid Power Reduction", and then trip 'A' RCP after the reactor is shutdown.

B. Enter AOP-1B, "Reactor Coolant Pump Malfunction", and continue to monitor RCP status.

C. Trip the reactor, carry out EOP immediate actions, and then trip 'A' RCP.

D. Immediately trip 'A' RCP, then trip the reactor and perform EOP immediate actions.

A: Incorrect, this would be the correct action per step 16 of AOP-1B if the RCP is found to be inoperable for reasons which are not covered by RCP trip criteria.
B: Correct, without any other indications to validate the stator temperature the correct action is to continue to monitor the RCP.
C: Incorrect, stator temperature needs to be backed up with a cubicle smoke alarm or abnormal amperage
D: Incorrect, if the RCP needed to be tripped, the reactor would be tripped first.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

3. 2009 ILT SRO 3
Given the following:

- Unit 1 is operating at 100% with normal letdown in service.
- 1P-11A CC pump is running with the 'A' CC HX lined up to Unit 1
- CC surge tank level is 34% and slowly lowering
- The PAB AO reports water coming from the Nonregen HX cubicle
- The following annunciators are **LIT**:
  "Nonregen HX Letdown Outlet Temperature High"
  "1T-12 CC Surge Tank Level High or Low"

Which of the following is the procedurally directed action and the reason for that action?

A. Start a reactor makeup water services pump and open the emergency makeup valve 1CC-815 to restore CC surge tank level.

B. Place CC pumps in pullout and then trip the reactor due to loss of CC suction source.

C. Start the standby Component Cooling Water pump to maintain CC flow.

D. Isolate CVCS letdown to prevent overheating the demineralizers.

Explanation:
A: Correct.
B: Incorrect. Pumps tripped for surge tank level below 10%.
C: Incorrect. Standby pump will start on low pressure if needed, priority is to isolate leak.
D: Incorrect. Demineralizers would be automatically protected from high temperature by divert valve.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

4. 2009 ILT SRO 4

Following a loss of all AC power to Unit 1, Operators are performing ECA 0.0, "Loss of All AC Power."

The following conditions exist:

- All switches are in PULLOUT per step 30.
- G01 EDG is aligned to 1A05 and 2A05 4160 VAC Safeguards Busses but is currently **NOT** operating.
- G02 EDG is OOS for an overhaul.
- G03 EDG is **NOT** operating.
- G04 EDG is **NOT** operating due to mechanical failure.

The following alarms are **LIT**:

- G01 Emergency Diesel Trip or Lockout
- G01 Emergency Diesel Generator
- G01 Overspeed Trip (local alarm)
- G03 Emergency Diesel Trip or Lockout
- G03 Emergency Diesel Generator
- G03 Generator Differential (local alarm)

As Unit OS, what actions are you going to direct?

A. Reset G01 Emergency Diesel Generator from the Control Room per AOP-19B, "Unit 1 Train B Safeguards Bus Restoration" and energize 4160 Vac Safeguards bus 1A05.

B. Reset G01 Emergency Diesel Generator locally per ECA 0.0 and energize 4160 Vac Safeguards bus 1A05.

C. Reset G03 Emergency Diesel Generator from the Control Room per ECA 0.0 and energize 4160 Vac Safeguards bus 1A06.

D. Reset G03 Emergency Diesel Generator locally per AOP-19B, "Unit 1 Train B Safeguards Bus Restoration" and energize 4160 Vac Safeguards bus 1A05.

Explanation:

A: Incorrect. AOP 19B is for wrong train, but does contain actions to locally reset diesel generators. G01 does align to 1A05.

B: Correct. G01 is restored locally per ECA 0.0 Attachment A and aligned to 1A05.

C: Incorrect. G03 is restored locally per ECA 0.0 Attachment C and aligned to 1A06.

D: Incorrect. AOP-19B could be used to reset G03 locally for restart, including generator differential. Wrong bus alignment.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

5. 2009 ILT SRO 5

Given the following conditions:

- Unit 1 'B' S/G is faulted inside containment
- EOP 0, "Reactor Trip or Safety Injection" immediate actions are complete and verified.
- 1MS-2018 'A' MSIV is open
- 1MS-2017 'B' MSIV is shut
- S/G A steam flow is 0.6 E6 lbm/hr and lowering
- S/G B steam flow is 1.0 E6 lbm/hr and stable
- Tave is 523°F and lowering
- Containment pressure is 5 psig and rising

The following annunciators are **LIT**:

- 1C03 1D 4-10 Steam Line A Isolation
- 1C03 1D 4-11 Steam Line B Isolation

What actions, if any, will the SRO direct regarding the open MSIV?

A. Direct the board operator to shut the 'A' MSIV per OM 3.7, "AOP and EOP Procedure Sets Use and Adherence."

B. Direct the PAB AO to shut the 'A' MSIV locally per EOP 2, "Faulted Steam Generator Isolation" Attachment A, "Locally Shut MSIVs."

C. Direct that the MSIV not be shut until directed by EOP 2, "Faulted Steam Generator Isolation."

D. The 'A' MSIV is NOT required to be shut at this time because the 'B' S/G is the one faulted.

Explanation:

A: Correct. Annunciators indicate that both MSIVs should be shut. Shift supervision can direct required manual actions under these conditions.

B: Incorrect. MSIV should be attempted to be shut from the control boards first.

C: Incorrect. EOP 0 Att A will direct MSIVs to be shut if necessary.

D: Incorrect. Both MSIVs should be shut based on setpoints and procedure guidance.

10CFR55.43 Statement met:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

6. 2009 ILT SRO 6

Unit 1 is at Rated Thermal Power and has experienced a loss of DC power to 1DY04 Yellow Instrument Bus Inverter with a failure to automatically shift to its back-up power supply.

In addition to entering AOP 0.2, "Loss of Safety Related Instrument Buses", which of the following will also be directed by the OS?

A. Enter AOP 1D, "CVCS Malfunction" to take manual control of charging pumps.

B. Enter AOP 2B, "Feedwater System Malfunction" to take manual control of the 'B' Main Feed Regulating Valve.

C. Enter AOP 1A, "Reactor Coolant System Leak" to manually shut PORV 1RC-431C.

D. Enter AOP 2A, "Secondary Coolant Leak" to manually shut the 'B' S/G Atmospheric valve.

Explanation:

A: Incorrect. Correct AOP for charging system malfunction, which would have to be addressed in other attachments in AOP 0.2.

B: Correct. AOP 0.2 Attachment D actions to address effect of loss of instrument bus on controlling S/G instruments. AOP 2B would also be entered to stabilize the feedwater system.

C: Incorrect. PORV would not open with this failure. Correct AOP for a PORV failing open.

D: Incorrect. Atmospheric Steam dump would not open with this failure. Correct AOP for addressing an open atmospheric.

10CFR55.43 Statement met:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

7. 2009 ILT SRO 7

T-104B, 'B' Waste Distillate Tank, is aligned to discharge to the Unit 1 overboard. Shortly after commencing the discharge the following conditions exist:

- RE-223, Waste Distillate Tank Overboard Monitor, goes into High Alarm.
- 1RE-229 SW Overboard Monitor Unit 1 is **NOT** in alarm

What automatic actions, if any, will occur, and what actions will the OS direct?

A. BE-LW-15, Waste Distillate Tank Overboard valve will automatically close. The OS will direct the PAB AO to secure the discharge lineup; the chemistry department will sample the 'B' Waste Distillate and issue a new discharge permit if tank levels allow for release.

B. BE-LW-15, Waste Distillate Tank Overboard valve will automatically close. The OS will direct the PAB AO to isolate RE-223 and flush Rad Monitor. If the alarm clears during the flush, direct the AO to recommence the discharge. Otherwise, direct chemistry to resample the tank and continue the discharge after RE-223 High Alarm setpoint is adjusted.

C. No automatic actions will occur. The OS will direct the PAB AO to secure the discharge lineup and place the tank on recirc; the chemistry department will sample the 'B' Waste Distillate Tank and issue a new discharge permit if tank levels allow for release.

D. No automatic actions will occur. The OS will direct the PAB AO to shut BE-LW-15, Waste Distillate Tank Overboard; direct chemistry to resample the tank and recommence the discharge after adjusting RE-223 High Alarm setpoint.

Explanation:

A: Correct, valve automatically closes and the lineup is secured IAW OI-140B. Then the tank is placed on recirc and resampled. If the results of the sample indicate the tank is satisfactory, then a new discharge permit is issued by chemistry and a new discharge of the tank may commence.

B: Incorrect, WL-15 will close, but there is no allowance for purging the radiation monitor to clear a high alarm. Purging the radiation monitor is a plausible activity, since flushing and purging are common activities associated with lowering radiation levels. If the examinee assumes that a purge is the proper action, then it follows that the discharge could continue. Carrying this postulated series of events to its logical conclusion; chemistry could then resample the tank and recommend a higher alarm setpoint.

C. Incorrect, WL-15 automatically shuts, remaining actions are correct.

D: Incorrect, WL-15 automatically shuts, remaining actions plausible since

performance of these actions would allow for the continued release of the tank.

10CFR55.43 Statement met:
Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

8. 2009 ILT SRO 8

A LOCA has occurred on Unit 1 and plant parameters are as follows:

- RCS pressure is 1450 psig and stable
- RCS hot leg temperature is 510°F and slowly lowering
- Containment pressure is 3.2 psig and slowly rising
- RCPs are secured
- The procedure in effect is EOP 1.2 "Small Break LOCA Cooldown and Depressurization"

What is the procedural limit, if any, on cooldown rate and the basis for that limit?

A. No limit on cooldown rate based on minimizing the radioactivity release.

B. Limit cooldown to 200°F/hr based on minimizing thermal stress on the pressurizer.

C. Limit cooldown to 100°F/hr based on minimizing thermal stress on the reactor vessel.

D. Limit cooldown to 100°F/hr based on accident analysis for small break LOCA.

Explanation:

A: Incorrect. EOP-3 directs cooldown at maximum rate for SGTR. EOP 1.2 directs actions for LOCA inside containment.

B: Incorrect. This is the Technical Specifications cooldown rate for the pressurizer.

C: Correct. Maximum cooldown rate is chosen to not exceed RCS TS cooldown limit.

D: Incorrect. Correct cooldown rate but wrong reason, cooldown rates are not based on accident analysis.

10CFR55.43 Statement met:

Facility operating limitations in the technical specifications and their bases

9. 2009 ILT SRO 9
The following Unit 2 conditions exist:

- A Loss of Off Site power has occurred due to a seismic event.
- Unit 2 reactor is tripped.
- Diesel Generators have started and are supplying electrical power to Unit 2 Safeguards busses.
- Both CSTs are slowly losing inventory and RCS cooldown needs to be completed as expeditiously as possible.
- EOP-0.1, "Reactor Trip Response", has been completed.

Which of the following describes the correct procedure flowpath?

A. Transition to OP-3C, "Hot Standby To Cold Shutdown", and cooldown to cold shutdown.

B. Transition to EOP-0.2, "Natural Circulation Cooldown", and complete cooldown to cold shutdown using EOP-0.2

C. Transition directly to EOP-0.3, "Natural Circulation Cooldown With Steam Void in Vessel (RVLIS Available)", and continue to cold shutdown.

D. Transition to EOP-0.2, "Natural Circulation Cooldown", and perform actions until directed to transition to EOP-0.3, "Natural Circulation Cooldown With Steam Void in Vessel (RVLIS Available)", and continue to cold shutdown.

Explanation:
A: Incorrect, OP-3C would be used for cooldown if power was available.
B: Incorrect, EOP-0.2 will be entered and the first 17 steps performed but due to lowering CST levels, rapid cooldown is needed and EOP-0.3 will be used to complete the cooldown.
C: Incorrect, EOP-0.3 cannot be directly entered from EOP-0.1
D: Correct, sequence is to perform EOP-0.2 steps then transition to EOP-0.3 for most rapid cooldown.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

10. 2009 ILT SRO 10
Given the following conditions:

- A steam line fault has occurred on Unit 1
- CSP P.1 "Response to Pressurized Thermal Shock" is the procedure in effect
- RCPs have been secured
- Letdown is isolated
- Both SI pumps are secured
- Containment pressure is 4.5# and lowering
- RCS pressure is being lowered with one PORV manually open
- The following annunciators are **LIT**

  - RCS SUBCOOLING MARGIN ALERT
  - PZR HIGH LEVEL
  - PRESSURIZER LEVEL SETPOINT DEVIATION

What action should the SRO direct to address the highest priority condition?

A. Start SI pumps to restore subcooling

B. Secure charging to lower pressurizer level

C. Shut the PORV to stop depressurization

D. Secure pressurizer heaters to stabilize temperature

Explanation:
A: Incorrect. Foldout page directs starting SI pumps on loss of subcooling, however PORV should be shut first to see if subcooling will return
B: Incorrect. At least one charging pump should be left running
C: Correct.
D: Incorrect. Caution preceding next step directs temperature and pressure to be held stable. Heaters are necesssary to maintain pressurizer saturated.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

11. 2009 ILT SRO 11

Unit 1 is in a refueling outage with half of the core unloaded to the Spent Fuel Pool and Unit 2 is at Rated Thermal Power.

The Boric Acid Storage Tanks (BAST) contain a 3.75% boric acid solution and are in a normal alignment.

The following indications were reported by the Unit 1 Reactor Operator:

- 'A' BAST level is 42% with a temperature of 87°F
- 'B' BAST level is 95% with a temperature of 88°F
- 'C' BAST level is 85% with a temperature of 65°F
- Unit 1 RWST is drained for maintenance.

Using the given references, what actions, if any, should be taken?

A. TLCO 3.5.1 is **met** for **both** units.

B. Declare TLCO 3.5.1 **NOT** met for Unit 1 and enter only TRMAC 3.5.1.A for Unit 1.

C. Declare TLCO 3.5.1 **NOT** met for Unit 2 and enter only TRMAC 3.5.1.C for Unit 2.

D. Declare TLCO 3.5.1 **NOT** met for **both** units and enter TRMAC 3.5.1.A for Unit 1 and TRMAC 3.5.1.C for Unit 2.

Explanation:

A: Incorrect. TRM 3.5.1 is NOT met, you only have 6989 gal of the required 7050

B: Correct. Use TRM and TLB's to calculate around 6900 gal of acid.

C: Incorrect. TRM 3.5.1.C should not be entered because Unit 2 has sufficient BAST volume available. (9107 gal) U2 also has the RWST available.

D: Incorrect. TRM 3.5.1.C should not be entered because Unit 2 has sufficient BAST volume available as well as the RWST.

10CFR55.43 Statement met:

Facility operating limitations in the technical specifications and their bases.

12. 2009 ILT SRO 12
Given the following conditions:

- A reactor trip has occurred on Unit 2
- The crew has transitioned to EOP 0.1 "Reactor Trip Response"
- RCS pressure is 2155 psig and slowly lowering
- RCS temperature is stable at 546°F
- Charging flow has been adjusted to 139 gpm
- While performing step 12 to check pressurizer level, the CO reports that level is 11% and slowly lowering.

What action will the SRO direct?

A. Ensure all 3 charging pumps are at maximum speed and continue to step 13.

B. Manually isolate letdown and continue to step 13.

C. Manually start both SI pumps and return to EOP 0 at step 5.

D. Initiate SI and return to EOP-0 at step 4.

Explanation:
A: Incorrect. Plausible to maximize charging to stabilize pressurizer level, but not all 3 pumps in max (180 gpm) due to meter limitations of 140 gpm.
B: Incorrect. Plausible to isolate letdown to stabilize pressurizer level, but it would have isolated at 12% pressurizer level
C: Incorrect. Plausible to start SI pumps but procedure directs SI to be initiated
D: Correct. Per EOP 0.1 foldout page

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

13. 2009 ILT SRO 13

During the performance of EOP-1.3, “Transfer To Containment Sump Recirculation - Low Head Injection”, the SI test line is isolated.

Which of the following correctly describes the actions which will be directed IAW EOP-1.3 to protect the Containment Spray (CS) pumps and what is the reason for these actions?

A. Direct the CO to secure the CS system prior to isolating the SI test line. SI test line is isolated to prevent backflow of sump recirc water into the CS system.

B. Direct the CO to verify CS pump discharge valves open prior to isolating the SI test line. Opening a discharge valve prevents CS system overpressurization.

C. Direct the CO to align the CS system to RHR Pump discharge prior to isolating the SI Test Line. SI test line is isolated to ensure maximum sump recirc flow.

D. Direct the CO to maintain SI Pump discharge valves open to prevent overpressurization of the CS system while SI test line is isolated. Opening a discharge valve prevents lifting of relief valves in the CS system while on sump recirc.

Explanation:
A: Incorrect, while securing spray would protect the pumps, this is not directed.
B: Correct, CS discharge valves are verified open to prevent overpressurizing CS.
C: Incorrect, incorrect reason for isolating test line, although plausible from a maximum core cooling standpoint, and incorrect method for protecting CS pumps.
D: Incorrect, incorrect way to protect the CS system using SI and incorrect reason for doing so.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

14. 2009 ILT SRO 14
Given the following:

- P-32B SW Pump was started.
- After P-32B was successfully started, P-32D SW pump was secured.
- "North or South Service Water Header Pressure Low" alarm is LIT.
- "G01 Emer Diesel Cooler Low Flow" alarm is LIT.
- "G02 Emer Diesel Cooler Low Flow" alarm is LIT.
- Service Water Header pressure is 47 psig and stable.
- AO reports P-32D SW Pump shaft is rotating backwards.

What actions will be directed by the SRO?

A. ENSURE P-32A, B and C SW Pumps are operating and isolate the North SW Pump header. Perform Attachment A of AOP 9A, "Service Water Malfunction", to shift loads to the alternate header.

B. Start additional SW pumps to restore SW Header pressure >50 psig. Place P-32D SW Pump in pullout and isolate its discharge valve per AOP 9A, "Service Water Malfunction."

C. Start additional SW pumps to restore SW Header pressure to >50 psig and perform Attachment B of AOP 9A, "Service Water Malfunction", to address SW flooding concerns.

D. Attempt to restore SW Header pressure while performing Attachment E of AOP 9A, "Service Water Malfunction", to secure G01 and G02 EDG's for a loss of Service Water cooling.

Explanation:
A: Incorrect. Actions are taken to isolate a header for a major leak, which could be caused by starting a SW pump. Attachment A is performed when isolating a SW header.
B: Correct. Per AOP-9A start pumps to restore pressure and isolate discharge of recently secured SW pumps.
C: Incorrect. Starting pumps is correct action to clear alarm. Flooding not correct with conditions given, but plausible due to recently starting a pump can pertibate system.
D: Incorrect. Actions are from AOP 9A if total loss of SW flow occurs. Plausible distractor due to G01 and G02 low flow alarms in.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

15. 2009 ILT SRO 15

During the performance of TS 30, "High and Low Head Safety Injection Check Valve Leakage Test (Cold Shutdown) Unit 1", for U1R30, the measured leak rate through 1SI-853A, Low Head SI Core Deluge Check Valve, was determined to be 2.4 GPM.

Using the given reference, which of the following is the **lowest** leak rate that would result in an **unacceptable** leak rate for the next TS 30, performed during U1R31 for 1SI-853A?

A. 3.0 gpm

B. 3.5 gpm

C. 4.0 gpm

D. 4.8 gpm

Explanation:

A: Incorrect. Leak rates ≥1 gpm are allowable if, from one test to another leakage can change no more than 50% of the margin towards 5 gpm. 3.7 gpm would be the max allowed.

B: Incorrect. Max leak rate allowed would be 3.7 gpm, so it would be in limits.

C: Correct. Max leak rate allowed is 3.7 gpm, so this exceeds limits.

D: Incorrect. Max leak rate doubled would be 4.8 gpm.

10CFR55.43 Statement met:

Conditions and limitations in the facility license

16. 2009 ILT SRO 16

Unit 2 was operating at 100% power near End of Life when at 0300 a malfunction forced a rapid load reduction to 94% power, where conditions stabilized. Control Bank 'D' rods were at 220 steps at the beginning of the transient.

Current indications at 0430 are:

Control Bank D Rods		
Demand		193 steps
Rod C-7	IRPI	217 steps
Rod G-3	IRPI	216 steps
Rod G-11	IRPI	210 steps
Rod K-7	IRPI	205 steps

What actions, if any, are required to be taken?

A. Rods are not in alignment and Reactor Engineering will be contacted for assistance to re-align Control Bank D per AOP 17A, "Rapid Load Reduction".

B. No action required, the time limit for thermal stabilization after rod motion has not expired.

C. Rods are not in alignment and entry into AOP 6B, "Stuck or Misaligned Rod" is required.

D. Rods are not in alignment and entry into 0-SOP-RDC-001, "Leveling Rod Banks" is required.

Explanation:

A: Incorrect. Rods are not in alignment, AOP 17A does not address rod misalignment.

B: Incorrect. The temperature soak time is for 1 hour.

C: Correct. Rods are more than 18 steps off, bank demand is <215 and power $\geq$85%

D: Incorrect. 0-SOP-RDC-001 does NOT apply with AOP entry in purpose 1.3.

10CFR55.43 Statement met:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Facility operating limitations in the technical specifications and their bases.

17. 2009 ILT SRO 17

You are the Spent Fuel Pool Supervisor during fuel motion. While lowering a Fuel Assembly (F/A) into rack S-28, the Load Cell Watch informs you there was an unanticipated 300 pound load cell deflection with the F/A half-way into the SFP rack.

What actions are procedurally required to take place?

A. Reactor Engineering will document the deflection on PBF-5008, "Fuel Assembly Load Deflection Log." No other inspections are required.

B. Reactor Engineering will document the deflection on PBF-5008, "Fuel Assembly Load Deflection Log." A visual inspection shall be conducted by Reactor Engineering and documented on PBF-5152, "Irradiated Fuel Inspection Record."

C. Reactor Engineering will contact Westinghouse to perform a load deflection analysis which will be attached to PBF-5008, "Fuel Assembly Load Deflection Log."

D. Reactor Engineering will document the deflection on PBF-5008, "Fuel Assembly Load Deflection Log." A core design change will be required since the F/A can not be used.

Explanation:
A: Incorrect. This is what we do for a >50# defection up to 250#.
B: Correct. This is required for a 250# or greater deflection.
C: Incorrect. Westinghouse is not required per procedure. RE does the inspection.
D: Incorrect. Correct form for documentation, F/A not required to be replaced.

10CFR55.43 Statement met:
Fuel handling facilities and procedures

18. 2009 ILT SRO 18
Given the following conditions:

- A reactor trip and safety injection have occurred.
- RCS pressure is 1600 psig and LOWERING.
- PZR level is offscale LOW.
- Tavg is 500°F and LOWERING.
- Containment pressure is 4.5 psig and RISING.
- SG "A" pressure is 620 psig and LOWERING.
- SG "B" pressure is 600 psig and LOWERING.

Which of the following procedure flowpaths will be used to mitigate the event following EOP 0, "Reactor Trip or Safety Injection"?

A. EOP 1, "Loss of Reactor or Secondary Coolant" and then EOP 2, "Faulted Steam Generator Isolation."

B. EOP 2, "Faulted Steam Generator Isolation" and then EOP 1, "Loss of Reactor or Secondary Coolant."

C. EOP 2, "Faulted Steam Generator Isolation" and then ECA 2.1, "Uncontrolled Depressurization of Both Steam Generators."

D. EOP 1, "Loss of Reactor or Secondary Coolant" and then ECA 2.1, "Uncontrolled Depressurization of Both Steam Generators."

Explanation:
A: Incorrect. Transition to EOP 2 prior to getting to EOP 1
B: Incorrect. Transition to EOP 1 would be incorrect with 2 faulted S/G's.
C: Correct
D: Incorrect. Transition to ECA 1.2 occurs from EOP 2. EOP 1 would not be entered due to the size of the breaks.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

19. 2009 ILT SRO 19

During refueling operations, Technical Specification 3.9.4 Residual Heat Removal (RHR) and Coolant Circulation - High Cavity level allows RHR cooling flow to be stopped for up to one (1) hour in an eight (8) hour period for certain activities.

Which of the following is an activity that permits securing RHR cooling?

A. To keep unsupported assemblies from falling.

B. When flow turbulence reduces visibility.

C. To allow removal of reactor vessel upper internals.

D. When moving fuel assemblies near the hot legs.

Explanation:

A: Incorrect. When loading FA's, we support them with adjacent FA's or the baffle plates.

B: Incorrect. Flow turbulence is plausible, but it does not impair visibility.

C: Incorrect. When removing the upper internals, the cavity level is too low for allowing RHR to be secured.

D: Correct. TS and RP 1C both state RHR flow could shift the FA towards the hot leg opening.

10CFR55.43 Statement met:

Facility operating limitations in the technical specifications and their bases.

Fuel handling facilities and procedures.

20. 2009 ILT SRO 20

Unit 2 was operating at 75% power when a plant transient resulted in a Reactor Trip and Safety Injection. EOP 0, “Reactor Trip or Safety Injection”, is in progress. The RO announces that pressurizer level is 5% and slowly lowering.

Given the following additional indications:

- RCS pressure 1100 psig and slowly lowering.
- Pressurizer PORVs closed.
- Spray valves closed.
- Steam Generator levels normal.
- Steam Generator pressures normal.
- Containment pressure normal.
- Containment radiation normal.
- Sump 'A' level normal.
- RE 214, PAB Exhaust Monitor rising.
- Several PAB area radiation monitors rising.

What procedure will the SRO direct the crew to transition to?

A. ECA 1.2, “LOCA Outside Containment.”

B. EOP 1.1, “SI Termination.”

C. EOP 1.3, “Transfer To Containment Sump Recirculation, Low Head Injection.”

D. EOP 0.0, “Rediagnosis.”

Explanation:

A: Correct. For given indications, the transition should address a LOCA outside containment

B: Incorrect. EOP1.1 can be entered from EOP 0, but would not be correct for these conditions

C: Incorrect. Would be the right strategy for a LBLOCA inside containment

D: Incorrect. This procedure would be incorrect because the crew is still in EOP 0.

10CFR55.43 Statement met:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

21. 2009 ILT SRO 21

Plant conditions are as follows:

- 1HX-12A CC Heat Exchanger is aligned to Unit 1 and is the in-service HX.
- 2HX-12D CC Heat Exchanger is aligned to Unit 2 and is the in-service HX.
- CCW heat exchangers have been placed in the following alignment in order to validate design basis flowpath capabilities.
- HX-12B CC Heat Exchanger is aligned to Unit 2.
- HX-12C CC Heat Exchanger is aligned to Unit 1.

You are filling in the required valve positions for the relief crew Auxiliary Operators so they can perform 1-TS-CCW-001, "Component Cooling Water Flow Path Valve Position Verification (Monthly)."

Using the given references, what required valve positions are you going to fill in?

EQUIP ID	DESCRIPTION	REQUIRED POSITION
1CC-726B	HX-12B CC HX Inlet From Unit 1	
1CC-726C	HX-12C CC HX Inlet From 1P-11A/B CC Pump	
1CC-728B	HX-12B CC HX Outlet To Unit 1 Equipment	
1CC-728C	HX-12C CC HX Outlet To Unit 1 Equipment	
2CC-726B	HX-12B CC HX Inlet From Unit 2	
2CC-726C	HX-12C CC HX Inlet From Unit 2	
2CC-728B	HX-12B CC HX Outlet	
2CC-728C	HX-12C CC HX Outlet To Unit 2 Equipment	

A. 1CC-726B - SHUT, 1CC-726C - SHUT, 1CC-728B - SHUT, 1CC-728C - SHUT, 2CC-726B - OPEN, 2CC-726C - OPEN, 2CC-728B - OPEN, 2CC-728C – OPEN.

B. 1CC-726B - OPEN, 1CC-726C - OPEN, 1CC-728B - OPEN, 1CC-728C - OPEN, 2CC-726B - SHUT, 2CC-726C - SHUT, 2CC-728B - SHUT, 2CC-728C - SHUT.

C. 1CC-726B - OPEN, 1CC-726C - SHUT, 1CC-728B - OPEN, 1CC-728C - SHUT, 2CC-726B - SHUT, 2CC-726C - OPEN, 2CC-728B - SHUT, 2CC-728C – OPEN.

D. 1CC-726B - SHUT, 1CC-726C - OPEN, 1CC-728B - SHUT, 1CC-728C - OPEN, 2CC-726B - OPEN, 2CC-726C - SHUT, 2CC-728B - OPEN, 2CC-728C – SHUT.

Explanation:
A: Incorrect. Line up is for HX-12B and HX-12C to go to Unit 2.
B: Incorrect. Line up is for HX-12B and HX-12C to go to Unit 1.
C: Incorrect. Line up is correct for our normal dual unit line up.
D: Correct.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

22. 2009 ILT SRO 22

Chemistry has approved a discharge permit for the B Waste Distillate Tank which was sampled 4/4/2009 @ 1330.

Of the following, which is the latest time that the release could be started without Chemistry being required to draw another sample?

A. 4/4/2009 @ 1830

B. 4/5/2009 @ 0100

C. 4/5/2009 @ 1215

D. 4/5/2009 @ 1445

Explanation:

A: Incorrect. Selected 6 hours, common number used in Technical Specifications.
B: Incorrect. 12 hours is the time for gaseous release start.
C: Correct. Release must start no more than 24 hours after sampling.
D: Incorrect. >24 hours for liquid release start.

10CFR55.43 Statement met:

Radiological hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

23. 2009 ILT SRO 23
Unit 1 is currently in a refueling outage with a core offload in progress.

You are the Relief Crew SRO and have two Operators who need to hang a danger tag in containment on the 21' behind the LHRA refueling boundary.

What must be done prior to sending your Operators into the LHRA to hang the tag?

A. Sign on specific Operations Outage RWP, establish radio communication with the Core Load Supervisor (CLS), and obtain authorization from the CLS prior to entering the area. Fuel may **NOT** be moved through the transfer tube.

B. Sign on the fuel motion RWP. Entry is allowed with concurrence of the CLS. Fuel may be moved through the transfer tube.

C. No entry into fuel motion LHRA's is allowed unless the fuel transfer tube gate valve is danger tagged shut.

D. The Operations standing RWP allows for a short duration entry into areas posted due to fuel motion for such activities as hanging tags. Outage Manager permission is required as long as no fuel is actively being transferred between the SFP and Containment.

Explanation:
A: Correct.
B: Incorrect. Entry is allowed during fuel motion.
C: Incorrect. CLS permission and LHRA controls apply, but fuel may not be moved while in the area.
D: Incorrect. Operations standing RWP does not allow entry into these areas. CLS or SM permission is required not the outage manager. Direct communication is also required.

10CFR55.43 Statement met:
Radiological hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

24. 2009 ILT SRO 24

Unit 2 has experienced an accident resulting in a reactor trip and safety injection combined with a total loss of auxiliary feedwater to both steam generators.

CSP-H.1, “Response to Loss of Secondary Heat Sink” is the current procedure in effect.

Under which of the following conditions must this CSP procedure be immediately **suspended**?

A. The STA reports a RED path exists for CSP-P.1, “Response to Pressurized Thermal Shock.”

B. The STA reports an ORANGE path exists for CSP-S.1, “Response to Nuclear Power Generation/ATWS.”

C. Auxiliary feedwater is restored to both steam generators at greater than 200 gpm.

D. Power is lost to 2B-03 and 2B-04 480 volt Safeguards Buses and cannot be immediately restored.

Explanation:

A: Incorrect. This transition would be wrong due to the loss of both 480 safeguards busses.

B: Incorrect. CSP-S.1 is the highest CSP so examinee may select this answer.

C: Incorrect. CSP H.1 could eventually be exited when AFW is restored, but it is procedurally directed.

D: Correct. CSP procedures assume AC safeguards power exists on at least one train. If it does not, the CSP shall be suspended until power is restored to at least one 480v bus.

10CFR55.43 Statement met:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

25. 2009 ILT SRO 25

You have been directed by the OS to monitor the critical safety functions. The following plant conditions are noted:

- RCS pressure is 500 psig
- AFW flow is 125 gpm to each Steam Generator
- Core exit thermocouples indicate 800°F
- PR NIS reads 0%
- Intermediate range startup rate is zero
- Containment pressure is 27 psig
- RVLIS (narrow range) indicates 28 ft
- Steam generator level (wide range) in both S/Gs is 150 inches
- Neither reactor coolant pump is running

Which of the following procedures is the next one required to be performed?

A. CSP S.2, “Response to Loss of Core Shutdown.”

B. CSP C.2, “Response to Degraded Core Cooling.”

C. CSP H.1, “Response to Loss of Secondary Heat Sink.”

D. CSP Z.1, “Response to High Containment Pressure.”

Explanation:
A: Incorrect. Applicable YELLOW path CSP, lower priority than C.2.
B: Correct. C.2 ORANGE path is correct.
C: Incorrect. H.1 not applicable, have >200 gpm AFW flow.
D: Incorrect. Z.1 applicable ORANGE path lower priority than C.2.

10CFR55.43 Statement met:
Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

POINT BEACH 2009 WRITTEN EXAMINATION
LIST OF REFERENCE HANDOUTS PROVIDED

Related Question #	REFERENCE HANDOUTS PROVIDED	REVISION NUMBER
RO 2	Steam Tables / Mollier Diagram	N/A
RO 29	Blender 4.0 U2 ROD 6.6 ROD 8.6	Revision 0 Revision 12 Revision 12
RO 75	SEP-1, Attachment C, "Degraded RHR System Capability"	Revision 7
<u>NOTE</u>: The following reference handouts are for the SRO-only examination.		
86 (SRO 11)	TLB 5, "Tank Level Book," Boric Acid Storage Tanks TRM 3.5.1, "Chemical and Volume Control System"	Revision 9 Revision 5
90 (SRO 15)	Technical Specification 5.5.16	U1 – Amendment 226 U2 – Amendment 206
96 (SRO 21)	WEST 110E018 Sheet 3, "P&ID Auxiliary Coolant System Point Beach N. P. Unit 1"	Revision 41

POINT BEACH May 2009 ILE Written Examination Answer Key

RO:						SRO:	
Q#	**Answer**	**Q#**	**Answer**	**Q#**	**Answer**	**Q#**	**Answer**
1	A	26	C	51	A	1	D
2	B	27	B	52	B	2	B
3	C	28	A	53	D	3	A
4	B	29	D	54	B	4	B
5	A	30	B	55	C	5	A
6	D	31	B	56	B	6	B
7	C	32	C	57	D	7	A
8	A	33	A	58	B	8	C
9	C	34	A	59	A	9	D
10	D	35	A	60	D	10	C
11	D	36	B	61	B	11	B
12	C	37	B	62	D	12	D
13	D	38	D	63	D	13	B
14	B	39	D	64	D	14	B
15	B	40	C	65	B	15	C
16	C	41	C	66	D	16	C
17	A	42	C	67	B	17	B
18	B	43	D	68	B	18	C
19	D	44	B	69	B	19	D
20	B	45	C	70	B	20	A
21	A	46	A	71	C	21	D
22	D	47	C	72	C	22	C
23	B	48	A	73	B	23	A
24	C	49	B	74	C	24	D
25	A	50	B	75	B	25	B