1. 2007 ILT RO 1
2007 NRC BANK

Consider the following Unit 1 conditions:

- Unit has tripped due to the loss of 'B' RCP.
- All other equipment is operating as expected.

Which of the following describes expected RCS flow in 'A' and 'B' loops?

| | 'A' Loop | 'B' Loop |
|---|---|---|
| A. | Less than 100% | ~15% forward |
| B. | Less than 100% | ~15% reverse |
| C. | Greater than 100% | ~15% forward |
| D. | Greater than 100% | ~15% reverse |

Answer: D
New

K/A # and IR: 007.EA1.04 (3.6)

K/A Statement: Ability to operate and monitor the following as they apply to a reactor trip: RCP Operation and flow rates

References:
FSAR 14.1.5, Startup of an Inactive Reactor Coolant Loop

Explanation:
A: Incorrect, 'A' Loop flow will rise due to parallel flowpath as described in D below. 'B' Flow will be reversed.
B: Incorrect, 'B' flow is correct, but 'A' will have higher than normal flow.
C: Incorrect, flow in 'B' loop is reversed.
D: Correct, 'A' Loop flow rises since it no longer "pushes" against the 'B' RCP discharge pressure. 'B' Loop becomes a parallel flowpath with the reactor with flow reversed in 'B' Loop. 'B' RCP acts as a flow restriction since it has an anti-rotation pawl installed.

Learning Objective: Describe the function and/or purpose, design bases, and operating characteristics of the Reactor Coolant System.
(LP0231.01)

2. 2007 ILT RO 2
The following conditions are observed about 3 minutes after an automatic safety injection:

- Core Exit Thermocouple temperature - 540°F
- Pressurizer level - 58% and rising
- RCS pressure - 1100 PSIG and lowering
- Containment pressure - 0 PSIG

Based on these indications, it is likely that a:

A. Main Steam Line is broken outside containment.

B. Small Break LOCA is occurring outside containment.

C. Steam Generator Tube is ruptured.

D. Pressurizer PORV is stuck open.

Answer: D
Bank: From INPO Exam Bank, Prairie Island, 9/03, 26069

K/A # and IR: 008.AA2.12 (3.4)

K/A Statement: Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident: PZR level indicators

References:
LP3821, Accident and Transient Analysis - TMI-2 and Response of Instrumentation Lesson Plan

Explanation:
A: Incorrect, CETs are too high for a steam break and PZR level is rising.
B: Incorrect, PZR level is rising
C: Incorrect, Tube rupture causes PZR Level to lower and will not drop RCS pressure to 1100 PSIG in 3 minutes
D: Correct, RCS has saturated and bubble in the head is pushing water into the PZR.

Learning Objective: Given access to the Site Specific Simulator, Assess the following:
e. Pressurizer level and pressure responses during LOCAs.
(LP0435.01.e)

3. 2007 ILT RO 3
Consider the following Unit 1 Conditions:

- A LOCA has occurred and a controlled RCS cooldown and depressurization per EOP-1.2, "Small Break LOCA Cooldown and Depressurization" is in progress.
- ALL ECCS equipment is OPERABLE.
- RCS Pressure – 1500 PSIG
- RCS Temperature - 480°F.
- 'A' RCP has been stopped IAW EOP-1.2.

- After 'A' SI pump is secured as part of the RCS cooldown and depressurization, the following alarms occur:

  - "Containment High Pressure SI"
  - "Accumulator A Pressure High/Low"
  - "Accumulator B Pressure High/Low"
  - "Accumulator A Level High/Low"
  - "Accumulator B Level High/Low"

What action(s) must be taken, if any, based on these conditions?

A. Trip 'B' RCP ONLY

B. Restart 'A' SI pump ONLY

C. Trip 'B' RCP AND Restart 'A' SI pump

D. No action required

Answer: B
Bank: From INPO Exam Bank, Kewaunee, 2/04, 26847

K/A # and IR: 009.2.4.31 (3.3)

K/A Statement: Knowledge of annunciators, alarms and indications and use of the response instructions. (Small Break LOCA)

References:
EOP-1.2, Small Break LOCA Cooldown and Depressurization

Explanation:
A: Incorrect, no direction to stop RCP in this condition.
B: Correct, if subcooling cannot be maintained, 'A' SI pump must be restarted. Since the Containment High Pressure SI alarm is in, it may be inferred that containment is adverse. Since Accumulator alarms are actuating, it may be inferred that RCS pressure has dropped to < 800 PSIG. Thus, subcooling has lowered below that allowed by the foldout page and SI pump must be restarted.
C: Incorrect, no trip of RCP needed.
D: Incorrect, SI pump must be started.

Learning Objective: Given appropriate conditions/parameters and access to the Site Specific Simulator, Implement the following procedures for the specified conditions:
b. EOP-1.2 to cooldown and depressurize the RCS following a small break LOCA. (LP0435.10.b)

4. 2007 ILT RO 4

One of the heat removal methods used during a loss of containment sump recirculation condition is reflux cooling.

Which of the following describes the reflux cooling mechanism and what conditions are necessary to enhance this method of cooling?

A. - Steam produced in the core rises in the hot legs to the steam generators where it is condensed and returned to the vessel via the cold legs.
- Steam Generator levels must be maintained to enhance reflux cooling.

B. - Steam produced in the core rises in the hot legs to the steam generators where it is condensed and returned to the vessel via the cold legs.
- RCS pressure must be maintained less than 1000 PSIG to ensure reflux cooling will occur.

C. - Steam produced in the core flows along the top of the hot leg piping to the steam generators where it is condensed and returns to the vessel via the bottom of the hot leg piping.
- Steam Generator levels must be maintained to enhance reflux cooling.

D. - Steam produced in the core flows along the top of the hot leg piping to the steam generators where it is condensed and returns to the vessel via the bottom of the hot leg piping.
- RCS pressure must be maintained less than 1000 PSIG to ensure reflux cooling will occur.

Answer: C
New

K/A # and IR: 011.EK1.01 (4.1)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the Large Break LOCA: Natural circulation and cooling, including reflux boiling

References:
ECA-1.1, Loss of Containment Sump Recirc Background
Lesson Plan N-RO-01-L-014I, Natural Circulation

Explanation:
A: Incorrect, flow returns via Hot Legs.
B: Incorrect, flow returns via Hot Legs and there is no limitation on RCS Pressure.
C: Correct, steam flows along top of Hot Legs to SG where it condenses and returns to the core via the Hot Legs and SG level must be maintained to cause condensation.
D: Incorrect, no limitation on RCS Pressure.

Learning Objective: Differentiate between natural circulation and core reflux boiling. (N-RO-01-L-014-I.10)

5. 2007 ILT RO 5
Consider the following Unit 1 'A' RCP indications:

- Motor Amps are slowly rising.
- Shaft and frame vibrations are slowly rising.
- Seal Inlet temp - 116ºF stable.
- #1 Seal Outlet temp - 136ºF stable.
- High Range Seal leakage recorder reads 2.0 GPM and stable.
- #1 Seal Delta P >400 PSID (pegged high).
- 'A' RCS Loop flow - slowly lowering.

Which of the following explains these conditions (Assume Unit 1 is at 100% power)?

'A' RCP…

A. #1 Seal is failing.

B. #2 Seal is failing.

C. Shaft has sheared.

D. Thrust Bearing is failing.

Answer: D
New

K/A # and IR: 015.AK2.10 (2.8)

K/A Statement: Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions and the following: RCP indicators and controls.

References:
OP-4B, Reactor Coolant Pump Operation

Explanation:
A: Incorrect, Seal indications are normal.
B: Incorrect, Seal indications are normal.
C: Incorrect, sheared shaft produces immediate drop in flow and low amps.
D: Correct, As the Thrust Bearing begins to fail, friction in the bearing increases. This would lead to an increase in motor amps to overcome the increased friction. Increased friction would also lead to a lowering in flow and a rise in pump vibration. 'D' is the only failure which accounts for all listed parameters.

Learning Objective: Describe the plant response to the following conditions:
c. RCP malfunction
(LP2438.01.c)

6. 2007 ILT RO 6
In procedure OP-5A, "Reactor Coolant Volume Control," there is a Precaution and Limitation that states: "Do not secure letdown flow without also securing charging flow..."

Why is charging flow required to be isolated? (ASSUME: All systems are in a normal at power lineup.)

A. Prevent damage to CVCS resin beds.

B. Reduce thermal shock on the Non-Regenerative Heat Exchanger.

C. Reduce thermal shock on the charging penetration into the RCS.

D. VCT level will decrease causing possible damage to the charging pumps.

Answer: C
Bank: From INPO Exam Bank, PBNP, 8/99, 2755

K/A # and IR: 022.AK3.07 (3.0)

K/A Statement: Knowledge of the reasons for the following responses as they apply to the Loss of Reactor Coolant Pump Makeup: Isolating charging

References:
OP-5A, Reactor Coolant Volume Control
LP0079, CVCS

Explanation:
A: Incorrect, Letdown temps are affected by charging flow, but divert valve will protect demins.
B: Incorrect, not limiting component.
C: Correct, without letdown flow to heat charging water, great thermal stress is introduced to charging line penetration.
D: Incorrect, VCT level would lower, but Auto Swap to RWST will protect charging pumps.

Learning Objective: Describe the procedures which govern operation of the CVCS. Description should include significant prerequisites, precautions, and notes associated with each operating procedure.
(LP0079.05)

7. 2007 ILT RO 7
Consider the following Unit 1 conditions:

- Unit is in MODE 5.
- RCS is drained to normal ¾ pipe level for nozzle dam removal.
- 'A' RHR Train is in service with normal flow.
- Subsequently, a leak occurs in the RHR to Letdown line.
- 'A' RHR pump flow and discharge pressure are fluctuating.
- Reactor Vessel level now indicates 12% and lowering.
- SEP-1, "Degraded RHR System Capability" has been entered.

What action will the Control Room take next?

A. Secure 'A' RHR pump.

B. Dispatch AO to isolate system leak.

C. Reduce Train 'A' RHR flow to 1000 GPM.

D. Place 'B' RHR Train in service and secure 'A' RHR Train.

Answer: A
New

K/A # and IR: 025.AA1.02 (3.8)

K/A Statement: Ability to operate and/or monitor the following as they apply to the Loss of Residual Heat Removal System: RCS Inventory

References:
SEP-1, Degraded RHR System Capability

Explanation:
A: Correct, Control Room must stop the running RHR pump to protect against air binding.
B: Incorrect, may be a follow-up action.
C: Incorrect, vessel level is well below allowed value of 22% and lowering flow will not prevent air binding.
D: Incorrect, this would merely shift the problem to the other RHR loop.

Learning Objective: Given a specific set of plant parameters or access to the Site Specific Simulator and appropriate plant/system condition, Implement the following procedures:
a. SEP-1
(LP2189.08.a)

8. 2007 ILT RO 8

What is approximate normal VCT temperature at full power and what **MINIMUM** value of VCT temperature requires a reactor trip if CCW cooling is lost to the NRHX?

| | Normal | Trip Required |
|---|---|---|
| A. | 90º-100ºF | 130ºF |
| B. | 90º-100ºF | 160ºF |
| C. | 110ºF-120ºF | 130ºF |
| D. | 110ºF-120ºF | 160ºF |

Answer: C
New

K/A # and IR: 026.AA2.04 (2.5)

K/A Statement: Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The normal values and upper limits for the temperatures of the components cooled by CCW

References:
STPT 7.1, CVCS
AOP-9B, CCW Malfunction
OP-5A, Reactor Coolant Volume Control
LP0077, Letdown Gas Stripper

Explanation:
A: Incorrect, see C
B: Incorrect, see C
C: Correct, Normal Temp is about 115F. Trip is required at 130F.
D: Incorrect, see C

Learning Objective: Describe the function and /or purpose, design bases, and operating characteristics of the Chemical and Volume Control System.
(LP0079.01)

9. 2007 ILT RO 9
Consider the following Unit 1 conditions:

- Unit 1 is at 100% power.
- Controlling channel of Pressurizer Pressure, (1PT-431) fails low.

Assuming NO operator action is taken, which of the following describes how the plant will respond?

A. RCS pressure will rise until **ONE** PORV lifts, which will lower pressure. PORV will then shut and the cycle will repeat. The reactor will **NOT** trip.

B. RCS pressure will rise until **BOTH** PORVs lift, which will lower pressure. PORVs will then shut and the cycle will repeat. The reactor will **NOT** trip.

C. RCS pressure will rise until the reactor trips; pressure will continue to rise until Pressuirzer safety(ies) lift(s), which will lower pressure. The Pressurizer safety(ies) will then shut and the pressure cycle will repeat.

D. RCS pressure will rise until the reactor trips; pressure will continue to rise until **BOTH** PORVs lift, which will lower pressure. PORVs will then shut and the pressure cycle will repeat.

Answer: A
New

K/A # and IR: 027.2.1.28 (3.2)

K/A Statement: Knowledge of the purpose and function of major system components and controls. (Pressurizer Pressure Control System Malfunction)

References:
STPT 1.4, PZR Level and Pressure
STPT 5.3, PZR Pressure and Level Control
Logic Sheet 18, PZR Pressure and Level Control

Explanation:
A: Correct, When PT-431 fails low, all heaters will energize to attempt to raise pressure. This will cause a high pressure condition in the RCS. One PORV uses 431 as an input and will not open with 431 failed low. The remaining PORV uses diverse inputs and will open to limit the pressure rise. The lift setpoint is below the reactor trip setpoint, thus the reactor will not trip. Plant pressure will cycle back and forth on the heaters and single PORV.
B: Incorrect, Both PORVs would normally lift on a high pressure condition, but due to the failure, one will stay shut.
C: Incorrect, PORVs will lift prior to trip and well before Safety lift setpoint.
D: Incorrect, Only one PORV will lift due to the failure.

Learning Objective: Identify and Describe the response to of the Pressurizer Pressure and Level Control System. (LP0457.06)

10. 2007 ILT RO 10
Consider the following Unit 2 conditions:

- Control Room has indication of a Main Steam Line break on 'B' SG.
- Unit 2 reactor has been tripped and both MSIVs have been shut at the direction of OS2.
- PAB operator reports that steam is still leaking in the vicinity of the CCW heat exchangers on the supply line to 2P-29, TDAFW pump.

Which of the following describes the **NEXT** action which is required to be taken regarding the steam leak?

A. Direct PAB AO to shut 2MS-237, 'B' SG Supply to TDAFW pump to isolate steam leak.

B. Shut MS-2019 and 2020, TDAFW supply valves to limit RCS cooldown.

C. Rapidly cooldown RCS to limit steam release from the 'B' Steam Generator.

D. Direct PAB AO to shut 2MS-236, MSIV Bypass valve and 2MS-238, Steam Trap isolation valves to isolate steam leak.

Answer: A
New

K/A # and IR: 040.AK1.06 (3.7)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: High-energy steam line break considerations

References:
AOP-2A, Secondary Coolant Leak and Background

Explanation:
A: Correct, procedure directs isolation of 2MS-237 to limit the high energy line break in the PAB. The AO should be able to access the valve, since the break is in the PAB and 2MS-237 is in the Facade.
B: Incorrect, this will probably not isolate the leak. Additionally, it is unlikely that these valves would be open in this condition.
C: Incorrect, Isolating a faulted SG is the proper action to take in the event of a break. Rapid RCS cooldown will merely exacerbate the PTS concerns with the RCS.
D: Incorrect, these are actions to be taken in EOP-2 to isolate the SG, but will not isolate the leak.

Learning Objective: Given access to the Site Specific Simulator or specific plant conditions, Evaluate plant indications associated with the following events:
a. Secondary Coolant System leak.
(LP2439.04.a)

11. 2007 ILT RO 11

If the air supply is isolated to a main feedwater regulating valve with a unit at 100% power what automatic action will occur and why is the automatic action necessary?

| | Auto Action | Basis |
|---|---|---|
| A. | Turbine trip and FW isolation on high SG level | Prevent Carryover to main steam lines and main turbine |
| B. | Turbine trip and FW isolation on high SG level | Limit Containment pressure rise during a steam break |
| C. | Reactor trip on SG level | Provide protection against a loss of low heat sink |
| D. | Reactor trip on low SG level | Prevent DNBR from lowering to <1.3 |

Answer: C
Bank: From INPO Exam Bank, Prairie Island, 9/2003, 26079

K/A # and IR: 054.AK3.01 (4.1)

K/A Statement: Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): Reactor and /or turbine trip, manual and automatic

References:
FSAR Chapter 14, 14.1.10
M-202 Sh. 2, MFW Drawing

Explanation:
A: Incorrect, MFRVs fail closed, plausible basis listed if examinee wrongly assumes that MFRVs fail open.
B: Incorrect, MFRVs fail closed, plausible basis listed if examinee wrongly assumes that MFRVs fail open.
C: Correct, MFRVs fail closed which causes a reactor and turbine trip. This action is needed to prevent losing all SG inventory, which would cause heat sink to be lost.
D: Incorrect, fail position is correct, but DNBR limit is not challenged.

Learning Objective: Given access to appropriate equipment/indication, Diagnose malfunctions associated with the following systems:
c. Main Feedwater
(LP2439.01.c)

12. 2007 ILT RO 12
Considering the SI Load Sequencer operation during an accident with a Loss of Offsite Power, which of the following describes the reason(s) behind the SI Load Sequencer order and time to initiation of power to the various loads?

A. The considerations deal ONLY with maintaining the diesel generator frequency and voltage within tolerance.

B. The considerations deal ONLY with ensuring the starting of the various engineered safety features are within the required safety analysis response time values.

C. The required response time values of the various emergency safety features are based on the accident analysis of the plant for the design based accident AND the diesel generator capability.

D. In order to ensure that the diesel generator's speed will not decrease below 95% of nominal value, the largest loads are started first when the diesel generator can best handle the starting currents.

Answer: C
Bank: From INPO Exam Bank, Farley, 5/03, 26468

K/A # and IR: 056.AK3.01 (3.5)

K/A Statement: Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Order and time to initiation of power for the load sequencer.

References:
DBD-24, ESF Actuation System, Section 2 Pg. 17

Explanation:
A: Incorrect, only one of the reasons
B: Incorrect, only one of the reasons
C: Correct
D: Incorrect; Diesel generator's speed must be maintained and starting currents must be allowed to decay between subsequent equipment starts making this a potential reason.

Learning Objective: Describe the automatic functions associated with the ESFAS and its major components. Description should include ...protection afforded by the system. (LP0486.14)

13. 2007 ILT RO 13
Consider the following Unit 1 conditions:

- Unit 1 is at 100% power.
- DC input fuse to 1DY01, Red Instrument Bus inverter, blows on high current.

Which of the following automatic or manual actions will restore the Unit 1 Red Vital Instrument Buses to a SAFETY-RELATED power supply?

A. Buses will automatically swap to the SAFETY-RELATED backup power supply (Y-16).

B. Buses must be manually swapped to the SAFETY-RELATED backup power supply (Y-16).

C. Buses will automatically swap to DY0A, Red Swing Inverter. Buses must be manually transferred back to 1DY01 to restore bus to a SAFETY-RELATED power supply following fuse replacement.

D. Buses must be manually swapped to DY0A to provide a SAFETY-RELATED power supply.

Answer: D
New

K/A # and IR: 057.AA1.01 (3.7)

K/A Statement: Ability to operate and/or monitor the following as they apply to the Loss of Vital AC Instrument Bus: Manual inverter swapping

References:
LP0123, Instrument Bus System
1-SOP-Y-001, Shifting 120V Safeguards Instrument Buses

Explanation:
A: Incorrect, buses automatically swap, but the backup power is not SR.
B: Incorrect, see above. Y-16 is not SR.
C: Incorrect, DY0A is the appropriate SR power supply, but the transfer is manual.
D: Correct, manual swap to DY0A.

Learning Objective: Describe the interlocks associated with the Instrument Bus Electrical System. (LP0123.04)
Identify components of the Instrument Bus Electrical System which are TS related. (LP0123.08)

14. 2007 ILT RO 14
Consider the following plant conditions:

- 2C20 A 2-2, "D-01/D-03 125V DC Bus Under/Over Voltage" alarm is alarming.

U2 CO determines D-01 voltage is low and is **AT** the low alarm setpoint and **STABLE**. What is the expected voltage and what are the implications of this alarm?

| | Voltage | Implications |
|---|---|---|
| A. | 105 Volts | Charger is malfunctioning or misadjusted |
| B. | 105 Volts | DC Bus Voltage is at Tech Spec minimum |
| C. | 127 Volts | Charger is malfunctioning or misadjusted |
| D. | 127 Volts | DC Bus Voltage is at Tech Spec minimum |

Answer: C
New

K/A # and IR: 058.AA2.02 (3.3)

K/A Statement: Ability to determine and interpret the following as they apply to the Loss of DC Power: 125V dc bus voltage, low/critical low, alarm

References:
ARB 2C20 A 2-2 D-01/D-03 125V DC Bus Under/Over Voltage Alarm Response

Explanation:
A: Incorrect, see below.
B: Incorrect, alarm comes in earlier than this value. Plausible to have an alarm near TS minimum voltage.
C: Correct, alarm warns of slightly lower than normal voltage to give the CR time to address the failure prior to other, more drastic, conditions.
D: Incorrect, see above

Learning Objective: Identify and Describe the Control Room controls, alarms, and indications associated with the DC Electrical System
(LP0121.06)

15. 2007 ILT RO 15
Units 1 and 2 are at 100% power. Service Water Pumps P-32A, B and F are running. The following annunciators are then received:

- "Service Water Strainers delta P High"
- "North or South Service Water Header Pressure Low"
- "G01 Emergency Diesel Cooler Low Flow"
- "G02 Emergency Diesel Cooler Low Flow"
- "Unit 1 Turbine Building Sump Level High"

Which of the following indicates the cause of these alarms and the appropriate remedial action?

(OI-70 is Service Water System Operation)
(AOP-9A is Service Water System Malfunction)

A. The Unit 1 Turbine Building Zurn Strainer is clogged; use OI-70 to backwash the strainer.

B. The South Service Water Main Zurn Strainer is clogged; use OI-70 to backwash the strainer.

C. There is a leak in the North Service Water Header, use AOP-9A to isolate the leak.

D. There is a leak in the South Service Water Header, use AOP-9A to isolate the leak.

Answer: D
Modified: From INPO Exam Bank, PBNP 9/03, 26207, modified stem to make one of the incorrect distractors the correct answer

K/A # and IR: 062.2.1.2 (3.0)

K/A Statement: Knowledge of operator responsibilities during all modes of plant operation. (Loss of Nuclear Service Water)

References:
ARB C01 A 1-5; C01 A 3-5; C02 D 3-6; C02 F 3-1; 1C20 B 3-5. Alarm Responses for alarms in stem.

Explanation:
A: Incorrect: Turbine Hall Zurn strainer clogging would not account for low flow on both EDGs or Low SW header pressure.
B: Incorrect, South Main Zurn strainer clogging might account for Strainer alarm and header pressure alarm but would likely not affect both EDGs and would not cause sump alarms.
C. Incorrect, Leak accounts for most indications, but U1 Turbine Hall sump alarm would indicate a South Header leak.
D: Correct, South Header leak accounts for all given indications.

Learning Objective: Identify and Describe the Control Room controls, alarms, and indications associated with the Service Water System.
(LP0086.11)

16. 2007 ILT RO 16
Given the following:

- Unit 2 is at 100% power.
- A Unit 1 startup is in progress at 6% power.
- The Unit 1 main turbine is being rolled to 1800 RPM.
- An instrument air leak occurs that results in instrument air header pressure subsequently lowering to 70 PSIG.
- K2A, Instrument Air compressor is tripped.
- K2B, Instrument Air compressor is running.
- The green light for 1MS-2017, Main Steam Isolation valve, is lit.

What action is required to be performed **NEXT**?

A. Trip both reactors and enter EOP-0, "Reactor Trip or Safety Injection" for both units.

B. Trip the Unit 1 reactor ONLY and enter EOP-0, "Reactor Trip or Safety Injection" for Unit 1.

C. Split Instrument Air headers and trip affected unit's reactor once leak location is determined.

D. Ensure K3A and K3B Service Air compressors are running and open IA-SA cross connect valve.

Answer: B
Bank: From INPO Exam Bank, Kewaunee, 2/06, 30415

K/A # and IR: 065.2.1.23 (3.9)

K/A Statement: Ability to perform specific system and integrated plant procedures during all modes of plant operation. (Loss of Instrument Air)

References:
AOP-5B, Loss of Instrument Air

Explanation:
A: Incorrect, Unit 2 trip is not yet required.
B: Correct, Unit 1 MSIV has shut, which requires a trip IAW AOP-5B
C: Incorrect, this is a plausible action but Unit 1 MSIV has already shut.
D: Incorrect, these should already be running at this pressure.

Learning Objective: Given access to the Site Specific Simulator or specific plant conditions, Evaluate plant indications associated with the following events:
d. Loss of Instrument Air
(LP2439.04.d)

17. 2007 ILT RO 17
Unit 1 operators are attempting to place ECCS on Containment Sump recirculation following a LOCA.

Which of the following would prevent ANY recirculation flow from being established unless alleviated? (Consider each condition separately.)

A. RCS pressure is 475 PSIG

B. 1SI-896B, 'B' SI pump suction from RWST isolation valve OPEN

C. BOTH 1SI-897A and B, SI test line return isolation AOVs OPEN

D. 1SI-857A, 'A' RHR heat exchanger outlet to SI pump suction SHUT

Answer: C
Bank: From INPO Exam Bank, Prairie Island, 4/04, 27552

K/A # and IR: W/E11.EK2.01 (3.6)

K/A Statement: Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features

References:
LP0066, Safety Injection

Explanation:
A: Incorrect, Sump recirc may be established at this pressure
B: Incorrect, this may prevent 'B' recirc train, but not 'A'
C: Correct, at least one of the 897 valves MUST be shut.
D: Incorrect, does not affect 'B' train.

Learning Objective: Describe the interlocks associated with the Safety Injection System and its major components.
(LP0066.04)

18. 2007 ILT RO 18
While attempting to restore cooling using CSP-H.1, "Loss of Secondary Heat Sink", what is the proper order for attempting to restore cooling (by priority)?

A. MFW, Condensate, AFW, Bleed and Feed

B. MFW, Bleed and Feed, AFW, Condensate

C. AFW, MFW, Condensate, Bleed and Feed

D. AFW, MFW, Bleed and Feed, Condensate

Answer: C
Bank: From INPO Exam Bank, Ginna, 4/04, 27275

K/A # and IR: W/E05.EK2.02 (3.9)

K/A Statement: Knowledge of the interrelations between the Loss of Secondary Heat Sink and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility (Loss of Secondary Heat Sink)

References:
CSP-H.1, Loss of Secondary Heat Sink Background

Explanation:
A: Incorrect, see C below.
B: Incorrect, see C below.
C: Correct, AFW is preferred since it is the SR source. MFW is next, since it may be established with the SGs at a much higher pressure. Condensate requires depressurization of a SG to establish flow. Bleed and Feed is the least desirable due to low efficiency and radiological concerns.
D: Incorrect, see C above.

Learning Objective: State the major actions accomplished by each of the following Critical Safety Procedures:
a. CSP-H.1
(LP1998.06.a)

19. 2007 ILT RO 19
AOP-6A, "Dropped Rod", contains steps for recovering the dropped rod following plant stabilization and any needed repairs to the Rod Control system.

Which of the following describes the location of the Rod Disconnect Switches and how they are operated to recover the rod? (Assume a Control Bank 'C', Group 1 rod (J-10) is dropped on Unit 1.)

A. Located in 1C-120A Instrumentation Rack in the Control Room. The dropped rod will be disconnected and remaining rods in the **BANK** will be inserted to match dropped rod height. Dropped rod will then be reconnected.

B. Located in 1C-120A Instrumentation Rack in the Control Room. The remaining rod in the same **GROUP** is disconnected and the dropped rod is connected and withdrawn to match **GROUP** position.

C. Located on C04 Rear. The remaining rods in the **BANK** are disconnected and the dropped rod is connected and withdrawn to match **BANK** position.

D. Located on C04 Rear. The dropped rod will be disconnected and remaining rod in the **GROUP** will be inserted to match dropped rod height. Dropped rod will then be reconnected and both rods in the group withdrawn to match bank height.

Answer: C
New

K/A # and IR: 003.2.1.30 (3.9)

K/A Statement: Ability to locate and operate components, including local controls. (Dropped Control Rod)

References:
AOP-6A, Dropped Rod
Photo of 1C04 Rear from I&C Lesson Plan

Explanation:
A: Incorrect location, disconnecting the dropped rod and inserting the remainder of the bank would work to bring all rods in the bank to the same height, but would cause unnecessary large reactivity changes.
B: Incorrect location. Rods are not selectable by groups.
C: Correct, located on rear of C04 panel. Remaining bank rods are disconnected IAW AOP-6A and dropped rod is withdrawn to match.
D: Incorrect, location is correct but rods are not controlled in groups. If it were possible to control the individual group, then it would be plausible to insert the other rod in Bank C, Group 1, since there are only two rods in this group.

Learning Objective: Given access to the Site Specific Simulator, Diagnose and Respond to the following events IAW appropriate procedures:
b. Dropped Control Rod.
(LP2441.06.b)

20. 2007 ILT RO 20
How is the temperature of piping which carries concentrated boric acid for emergency boration flow via CV-350, Emergency Borate valve, maintained?

A. Maintained by PAB ventilation system.

B. Maintained automatically by Boric Acid Heat Trace system heaters.

C. Maintained manually by the AO using Boric Acid Heat Trace system heaters.

D. Maintained by continuous recirculation of BAST through system piping.

Answer: A
New

K/A # and IR: 024.AK1.04 (2.8)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: Low temperature limits for boron concentration

References:
OI-99A, Boric Acid Piping Temperature Monitoring
TRM Table 3.5.1-1
Boric Acid Heat Trace Recorder Log from PAB Logs (PBF-2031).

Explanation:
A: Correct, The PAB ventilation system maintains the temperature of these lines.
B: Incorrect, heaters are disconnected. Plausible way to maintain temperature.
C: Incorrect, heaters are disconnected. Plausible way to maintain temperature.
D: Incorrect, BASTs may be recirculated from time to time, but this would be ineffective at adding substantial heat to the system.

Learning Objective: Identify and Describe the local controls, alarms and indications associated with the CVCS.
(LP0079.07)

21. 2007 ILT RO 21

With the Pressurizer Level Control Selector Switch in the NORMAL position, a Pressurizer level instrument failure on Unit 1 caused the following **SEQUENTIAL** plant events:

- Charging flow was reduced to minimum.
- Pressurizer level lowered.
- Letdown flow isolated and Pressurizer heaters turned off.
- Pressurizer level increased until a high level trip occurred.

Which of the following instrument failures caused this sequence of events? (assume NO operator action)

A. Pressurizer level channel 426 (Red) failed low.

B. Pressurizer level channel 426 (Red) failed high.

C. Pressurizer level channel 428 (Blue) failed low.

D. Pressurizer level channel 428 (Blue) failed high.

Answer: D
Bank: From INPO Exam Bank, Braidwood, 7/02 and PBNP, 7/01

K/A # and IR: 028.AK2.02 (2.6)

K/A Statement: Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: Sensors and detectors.

References:
Logic Drawing 883D195 Sh. 13, Pressurizer Trip Signals
Logic Drawing 883D195 Sh. 18, PZR Level and Pressure Control

Explanation:
A: Incorrect, channel is not a controlling channel but direction of failure would cause letdown and heaters to isolate.
B: Incorrect, channel failed in the correct direction to cause above indications, but is not normally a controlling channel.
C: Incorrect, channel is a controlling instrument and the direction of failure would cause letdown to isolate and heaters to turn off.
D: Correct, Charging flow lowered due to the false high signal, actual Pressurizer level lowered due to lower charging flow which subsequently isolated letdown and turned off heaters. Due to letdown being secured, eventually the Pressurizer filled up to the high level trip setpoint.

Learning Objective: Describe the plant response to the following conditions:
a. Failure of Pressurizer Pressure and/or Level Control system.
(LP2438.01.a)

22. 2007 ILT RO 22
Steam dumps will not operate when the conditions of the condenser available interlock are **NOT** met. Which of the following describes the basis for this interlock?

A. Prevent damaging the condenser

B. Prevent further degradation of condenser vacuum

C. Prevent exceeding condenser design steam inlet flowrate

D. Prevent damaging condenser tubes from Circ Water boiling

Answer: A
Bank: From INPO Exam Bank, Seabrook, 3/03, 24682

K/A # and IR: 051.AK3.01 (2.8)

K/A Statement: Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of Steam Dump capability on loss of condenser vacuum.

References:
DBD-07, Main Steam and Steam Dump
DBD-25, NSSS Control System - Condenser Steam Dump Control

Explanation:
A: Correct, with improper vacuum in the condenser or adequate cooling water, the condenser cannot dissipate the volume of steam energy admitted.
B: Incorrect, probable occurrence, but not the basis for interlock.
C: Incorrect, Steam dump will not exceed condenser flow capacity.
D: Incorrect, possible occurrence, but not the basis for interlock.

Learning Objective: State actuation setpoints and Explain effects of automatic actuations and interlocks associated with the Steam Dump System. Explanation should include...Condenser Availability signal....
(LP0035.04)

23. 2007 ILT RO 23
Consider the following plant conditions:

- Both units are at 100% power.
- PAB Ventilation is aligned as follows:
  - W-35, PAB Supply fan, is running.
  - W-30A, PAB Filter fan, is running, W-30B is secured.
  - W-21A, PAB Stack fan, is running, W-21B is secured.
  - PAB Ventilation filters are in the normal alignment.
- Subsequently, a Waste Gas decay tank begins to leak.
- RE-214, Aux Building Vent Exhaust monitor, goes into HIGH ALARM.

Which of the following correctly describes the FINAL PAB Ventilation system alignment assuming no operator actions?

| | W-21/W-30 PAB Exhaust Fans | W-35, PAB Supply Fan | F-23 PAB Charcoal Filter | F-29 PAB HEPA Filter |
|---|---|---|---|---|
| A. | As-is | Running | Aligned | Secured |
| B. | As-is | Running | Secured | Aligned |
| C. | All Running | Off | Aligned | Secured |
| D. | All Running | Running | Aligned | Aligned |

Answer: A
Bank: From INPO Exam Bank, PBNP 9/05, Outline Randomly Generated, 30290

K/A # and IR: 060.AA1.02 (2.9)

K/A Statement: Ability to operate and/or monitor the following as they apply to the Accidental Gaseous Radwaste: Ventilation system

References:
RMSARB for RE-214
PAB ventilation Drawing M-215, Sh. 3

Explanation:
A: Correct, on a high RE-214 alarm, the PAB charcoal filter is automatically aligned and the HEPA filter secured along with no change in fan alignments.
B: Incorrect, the HEPA filter is secured and the charcoal aligned.
C: Incorrect, The filter alignment is correct, but there is no shift of fan alignment.
D: Incorrect, The charcoal filter is aligned, but there is no shifting of fans and the HEPA filter is secured.

Learning Objective: Describe the interlocks associated with the Auxiliary and Service Building Ventilation System and its major components.
(LP2711.04)

24. 2007 ILT RO 24
Fire dampers in the Auxiliary Feedwater Pump area have pressure actuators instead of fusible links. Why?

A. Dampers must shut to prevent possible spread of fire from one train of AFW to the other.

B. Dampers must shut to ensure sufficient concentration of Halon is maintained in the AFW room.

C. Dampers must open to allow use of smoke removal system.

D. Dampers must open to prevent asphyxiation of personnel from Halon discharge.

Answer: B
New

K/A # and IR: 067.AA2.02 (2.5)

K/A Statement: Ability to determine and interpret the following as they apply to the Plant Fire on Site: Damper Position

References:
LP0003, Fire Protection
FPTE 015, Fire Technical Evaluation
TS-78, Halon Test

Explanation:
A: Incorrect, plausible since both trains of AFW are contained within the same room, separated by a fire wall.
B: Correct, Halon must be at proper concentration for a proper amount of time to work. Dampers are actuated by Halon pressure.
C: Incorrect, the smoke removal system connects to the AFW room, but dampers shut. Plausible from the standpoint of needing to provide fresh air when ventilating a space.
D: Incorrect, there is a danger to personnel from Halon, but there is a warning in the affected space prior to Halon discharge to allow personnel exit before actuation.

Learning Objective: Describe the interlocks and automatic actuation setpoints associated with the Fire Protections System and its major components.
(LP0003.04)

25. 2007 ILT RO 25
What is the RED PATH entry criteria for CSP-Z.1, "Response to High Containment Pressure"?

Containment Pressure ...

A. ≥ 25 PSIG.

B. ≥ 30 PSIG.

C. ≥ 60 PSIG.

D. ≥ 65 PSIG.

Answer: C
New

K/A # and IR: W/E14.2.4.4 (4.0)

K/A Statement: Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. (High Containment Pressure)

References:
CSP-ST.0, Critical Function Status Trees

Explanation:
A: Incorrect, this is the Containment Spray Actuation Setpoint.
B: Incorrect, this is the ORANGE path criteria.
C: Correct
D: Incorrect, this is the upper leak testing limit found in various containment isolation testing procedures.

Learning Objective: STATE the RED PATH entry conditions for CSP-Z.1 from memory. (LP2000.02)

26. 2007 ILT RO 26

During the performance of CSP-Z.3, "Response to High Containment Radiation", which of the following systems are directed to be checked/started and what functions do they accomplish?

A. Hydrogen Recombiners to remove radioactive gas from containment, PAB Ventilation to restore access to the PAB, Containment Accident Fans to lower containment pressure

B. PAB Ventilation to restore access to the PAB, Hydrogen Recombiners to remove radioactive gas from containment, Control Room Ventilation to ensure CR habitability

C. Containment Isolation to ensure radioactivity remains in containment, Control Room Ventilation to ensure CR habitability, Containment Cleanup fans to remove radioactivity from containment

D. Containment Isolation to ensure radioactivity remains in containment, Containment Accident Fans to lower containment pressure, Containment Cleanup fans to remove radioactivity from containment

Answer: C
New

K/A # and IR: W/E16.EK1.01 (2.7)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the (High Containment Radiation): Components, capacity and function of emergency systems.

References:
CSP-Z.3, Response to High Containment Radiation Background

Explanation:
A: Incorrect, PAB access is not a concern in CSP-Z.3 nor is containment pressure.
B: Incorrect, Control room ventilation is a correct answer, Hydrogen Recombiner is used to lower hydrogen concentration, not lower radiation and PAB access is not a concern in CSP-Z.3.
C: Correct, containment isolation, containment clean up and control room habitability are actions in CSP-Z.3.
D: Incorrect, containment isolation is correct along with clean up fans; however, lowering pressure is not part of CSP-Z.3.

Learning Objective: State the major actions accomplished by the CSP-Z series procedures for the Containment Safety Functions.
(LP2000.06)

27. 2007 ILT RO 27
The crew has entered CSP-P.1, "Response to Imminent Pressurized Thermal Shock". What is the basis for CSP-P.1 instructing that SI be terminated and RCP(s) to be started if possible?

A. The soak required by CSP-P.1 requires SI to be secured. RCPs are started to provide ability to use normal spray to depressurize primary.

B. The soak required by CSP-P.1 requires SI to be secured. RCPs are started to equalize boron concentration throughout the primary to ensure proper shutdown margin as the RCS cools.

C. SI is a significant contributor to cold leg temperature decrease and may prevent lowering RCS pressure and should be terminated if possible. RCPs are started to provide mixing of cold SI and warm reactor coolant water.

D. SI is a significant contributor to cold leg temperature decrease and may prevent lowering RCS pressure and should be terminated if possible. RCPs are started to minimize temperature gradient across S/G tube sheets.

Answer: C
Bank: From INPO Exam Bank, Seabrook, 5/03, 24624

K/A # and IR: W/E08.EK2.01 (3.4)

K/A Statement: Knowledge of the interrelations between the (Pressurized Thermal Shock) and the following: Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

References:
CSP-P.1, Response to Imminent Pressurized Thermal Shock Background

Explanation:
A: Incorrect, There is a soak required in CSP-P.1 but SI is preferred to be secured not required and other means besides spray are available to depressurize the RCS. Starting an RCP is for mixing of water to equalize temperature.
B: Incorrect, there is a soak required in CSP-P.1 but SI is preferred to be secured not required, RCP start is for mixing water to equalize temperature not boron.
C: Correct, stopping SI flow stops the addition of cold water into the RCS and starting the RCPs mixes the RCS to warm it up reducing PTS concerns.
D: Incorrect, SI is a correct answer but RCPs do not mix the water to reduce the temperature gradient across the S/G tube sheet.

Learning Objective: Compare the operator-initiated recovery techniques assumed in the analysis to the actions in CSP-P.1.
(LP1999.03)

28. 2007 ILT RO 28
Which of the following describes where RCP #1 seal leak-off goes at 100% Reactor Power?

A. #2 Seal ONLY

B. VCT and #2 Seal

C. VCT and Standpipe

D. #2 Seal and Standpipe

Answer: B
Bank: From INPO Exam Bank, Surry, 3/03, 25700

K/A # and IR: 003.K4.07 (3.2)

K/A Statement: Knowledge of RCPS design feature(s) and/or interlock(s) which provide for the following: Minimizing RCS leakage (mechanical seals)

References:
LP0125, Reactor Coolant Pumps
AOP-1B, Reactor Coolant Pump Malfunction

Explanation:
A: Incorrect, water goes to #2 seal and the VCT.
B: Correct, the major portion of the leakoff goes to the VCT and the rest to #2 seal.
C: Incorrect, Major portion of the leakoff goes to the VCT which is correct; however, it is #2 seal that goes to the standpipe.
D: Incorrect, it is correct that some water goes to #2 seal and it is #2 seal that supplies water to the standpipe.

Learning Objective: Describe the function and/or purpose, design bases, and operating characteristics of the Reactor Coolant Pump System.
(LP0125.01)

29. 2007 ILT RO 29
Which is the purpose of the RCP flywheels?

A. Prevent core damage when power is lost to the RCPs at full power.

B. Minimize thermal shock when RCP is started by slowing RCP acceleration.

C. Minimize backflow through idle RCS loop by adding mass to the impeller.

D. Dampen RCS pressure surge when RCP is started.

Answer: A
New

K/A # and IR: 003.K5.02 (2.8)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the RCPS: Effects of RCP coastdown on RCS parameters.

References:
DBD-09, Reactor Coolant System

Explanation:
A: Correct, The flywheel adds mass to the RCP, allowing for a gradual lowering of RCS flow on a loss of AC power when the RCPs are coasting down.
B: Incorrect, slowing down RCP acceleration on a start would have a negative impact on starting duty limits for the motor and there is flow through idle loops so thermal stress is not an issue on RCP start.
C: Incorrect, the reverse flow pawls are located on the flywheel but not a safety related design requirement.
D: Incorrect, dampening pressure surges on initial RCP start are controlled by differential temperature limitations between the RCS and S/G.

Learning Objective: Describe the function and/or purpose, design bases, and operating characteristics of the Reactor Coolant Pump System.
(LP0125.01)

30. 2007 ILT RO 30
Consider the following:

- A reactor plant has just tripped following 100 days of operation at 100% power.
- It is now desired to keep Shutdown Margin constant during the Xenon transient.

Using the CVCS system, what must the operator do to maintain a constant value of SDM following the trip?

A. Dilute for ~10 hours, then borate for the next ~70 hours.

B. Borate for ~10 hours, then dilute for the next ~70 hours.

C. Dilute for ~25 hours, then borate for the next ~55 hours.

D. Borate for ~25 hours, then dilute for the next ~55 hours.

Answer: A
New

K/A # and IR: 004.K5.19 (3.5)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the CVCS: Concept of SDM

References:
LP N-RO-01-035-I, Fission Product Poisons

Explanation:
A: Correct, Following a trip, xenon will require ~80 hours to reach equilibrium. During this time, xenon will be building in for the first 10 hours, then decaying to xenon-free conditions over the remaining 70 hours.
B: Incorrect, Reverse of correct answer.
C: Incorrect, xenon will reach pre-trip levels about 25 hours following a trip, after it has peaked. Since 25 hours is a number related to xenon transients related to a trip, this number is plausible. 55 hours represents the remainder of the time to xenon-free conditions.
D: Incorrect, combination of errors B and C.

Learning Objective: Plot and explain relative Xenon-135 reactivity versus time for a given power history in terms of magnitude of change and time for change for:
c. Trips from equilibrium xenon.
(N-RO-01-035-I.03.B)

31. 2007 ILT RO 31
Consider the following Unit 1 conditions:

- The RCS is solid.
- RCS temperature is 185ºF.
- RHR Train 'A' is operating to maintain RCS temperature.
- RHR letdown is aligned.
- 1HC-135, LP Letdown Line Pressure Controller, is in AUTO set to 325 PSIG.

What will occur if PT-135, Letdown Line Pressure Transmitter fails HIGH?

1CV-135, Letdown Line Backpressure Control valve, moves fully...

A. open and RCS pressure increases.

B. open and RCS pressure decreases.

C. closed and RCS pressure increases.

D. closed and RCS pressure decreases.

Answer: B
Bank : From INPO Exam Bank, Kewaunee, 12/00, 19353

K/A # and IR: 004.K6.26 (3.8)

K/A Statement: Knowledge of the effect of a loss or malfunction on the following CVCS components: Methods of pressure control of solid plant (PZR relief and water inventory)

References:
CVCS Drawing, 684J741 Sh. 2

Explanation:
A: Incorrect, correct valve response with wrong RCS response.
B: Correct, sensing a high pressure the valve will open trying to reduce pressure thus lowering RCS pressure due to solid plant conditions.
C: Incorrect, correct RCS response with wrong valve response.
D: Incorrect, wrong valve and RCS response.

Learning Objective: Predict the effects and Recognize the associated corrective actions for malfunctions of the RHR system. (051.03.LP0069.10)
Given access to the Site Specific Simulator, Diagnose and Respond to CVCS malfunctions IAW appropriate procedures. (055.03.LP3718.04)

32. 2007 ILT RO 32
Consider the following Unit 1 conditions:

- Unit 1 is in MODE 5.
- RCS Temperature is 175ºF and stable.
- RCS Pressure is 300 PSIG.
- 'A' RHR pump and heat exchanger are in service and aligned to the RCS.
- 'B' RHR Train is secured.
- 'A' Train RHR flow is being maintained at 1500 GPM in AUTO.

- A 100 GPM leak develops in the 'A' RHR heat exchanger.

Which of the following describes the plant response to these conditions? (Assume NO operator action.) (1RH-624 is 'A' RHR HX Outlet FCV, 1RH-626 is RHR HX Bypass FCV)

A. - 1RH-624 will close slightly to maintain HX outlet temperature.
   - 1RH-626 position will not change.

B. - 1RH-624 will open slightly to maintain constant HX flow.
   - 1RH-626 will close slightly to maintain RHR return temperature.

C. - 1RH-624 position will not change
   - 1RH-626 will open slightly to maintain constant RHR return flow.

D. - 1RH-624 position will not change
   - 1RH-626 will close slightly to maintain constant RHR return flow.

Answer: C
New

K/A # and IR: 005.K6.03 (2.5)

K/A Statement: Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: RHR heat exchanger

References:
RHR Drawing, 110E018 Sh. 1

Explanation:
A: Incorrect, see C.
B: Incorrect, see C.
C: Correct, RH-624 is a manually controlled valve with RH-626 sensing a lower flow due to the leak and therefore adjusts itself open to raise flow to maintain 1500 GPM.
D: Incorrect, correct RH-624 response but opposite RH-626 response.

Learning Objective: Predict the effects and Recognize the associated corrective actions for malfunctions of the RHR system.
(LP0069.10)

33. 2007 ILT RO 33
According to OP-7A, “Placing RHR System in Operation”, what is the minimum **CONTINUOUS** flow requirement for **ONE** RHR pump?

A. 150 GPM

B. 210 GPM

C. 425 GPM

D. 520 GPM

Answer: D
New

K/A # and IR: 005.A1.02 (3.3)

K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: RHR Flow Rate

References:
OP-7A, Placing RHR in Operation

Explanation:
A: Incorrect, 150 GPM is minimum allowed flow for 30 minutes, not continuous.
B: Incorrect, 210 PSIG is the interlock with crosstie valves between RHR and SI
C: Incorrect, 425 PSIG is the interlock with the RCS to RHR valves
D: Correct

Learning Objective: Describe the procedures which govern operation of the Residual Heat Removal System. Description should include significant prerequisites, precautions, and notes associated with each operating procedure.
(LP0069.09)

34. 2007 ILT RO 34
Consider the following Unit 1 conditions:

- A small break LOCA has occurred.
- The crew is in EOP-1.2, "Small Break LOCA Cooldown and Depressurization".
- One RCP is operating.
- One Charging pump is operating.
- RCS subcooling - 72°F and stable.
- The crew has determined that one SI pump can be stopped.

What is the short-term response of RCS subcooling to the stopping of the SI pump? Why?

A. Subcooling lowers. RCS pressure decreases in response to reduced ECCS flow.

B. Subcooling lowers. RCS break flow remains constant while ECCS flow is decreased.

C. Subcooling remains the same. Flow from the running SI pump increases, reaching a balance with break flow.

D. Subcooling remains the same. RCS temperature and pressure increase in response to the reduced ECCS flow.

Answer: A
Bank: From INPO Exam Bank, Robinson, 9/04, 28055

K/A # and IR: 006.A1.16 (4.1)

K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: RCS temperature, including superheat, saturation and subcooled

References:
EOP-1.2, Small Break LOCA Cooldown and Depressurization Background

Explanation:
A: Correct, Effect described in EOP-1.2 BG for Step 16.
B: Incorrect. Break flow is dependent on the DP across the break. With less makeup volume, DP will go down.
C: Incorrect. Flow from the running HPSI will not make up for the HPSI that was turned off, reason why subcooling must be elevated prior to turning off a pump.
D: Incorrect. System is subcooled; distractor describes characteristics of a saturated system.

Learning Objective: Given access to the Site Specific Simulator, Assess the following:
f. Subcooling Margin following Safety Injection actuation.
(LP0435.01.f)

35. 2007 ILT RO 35
Consider the following Unit 1 conditions:

- A Large Break LOCA has occurred.
- Crew is currently in EOP-1.3, "Transfer to Containment Sump Recirculation – Low Head Injection".
- Crew is unable to open 1SI-850A, Train 'A' RHR pump suction from Containment sump 'B', from the control room or locally while performing step 17, “Align RHR Sump Suction Valves”.

What are the implications of this failure and what procedural actions should be taken?

A. 'A' train of sump recirc will not be available; 'B' train will be used to mitigate the accident. Continue in EOP-1.3 and align 'B' train of sump recirc.

B. The RHR pump cross-connects must be opened in order to use the 'A' train of sump recirc; perform applicable sections of OP-7A, "Placing Residual Heat Removal System in Operation" in parallel with EOP-1.3 to establish required lineup and continue with EOP-1.3

C. 1SI-850B, 'B' Train sump suction valve, will need to be aligned for 'A' train of sump recirc. Continue in EOP-1.3 and direct PAB AO to align alternate suction to 'A' recirc train.

D. 1SI-850B, 'B' Train sump suction valve, will need to be aligned for 'A' train of sump recirc. Enter ECA-1.1, "Loss of Containment Sump Recirculation", to perform the alternate alignment.

Answer: A
New

K/A # and IR: 006.A2.02 (3.9)

K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of flow path

References:
EOP-1.3, Transfer to Containment Sump Recirc - Low Head Injection and Background

Explanation:
A: Correct, With the 'A' train unavailable EOP-1.3 has train 'B' lined up for sump recirc.
B: Incorrect, RHR pump cross-connects are used during Shutdown Cooling alignment, utilizing these cross-connects would not address the issue of being unable to open the 'A' train sump suction valve.
C: Incorrect, there are no cross-train connections within the sump suction alignment.
D: Incorrect, ECA-1.1 is used when both trains of sump recirc are lost.

Learning Objective: Given appropriate conditions/parameters and access to the Site Specific Simulator, Implement the following procedures for the specified conditions:
c. EOP-1.3 to transfer to Containment Sump recirculation. (LP0435.10.c)

36. 2007 ILT RO 36
Which of the following relief valves discharge to the Pressurizer Relief Tank (PRT)?

A. 1WL-1712, Reactor Coolant Drain Tank relief valve

B. 1CV-283A, 'A' Charging Pump Discharge relief valve

C. 1CC-762A, RCP Thermal Barrier relief valve

D. 1CV-203, Letdown Line relief valve

Answer: D
Bank: From INPO Exam Bank, Braidwood, 10/01, 20065

K/A # and IR: 007.A3.01 (2.7)

K/A Statement: Ability to monitor automatic operation of the PRTS, including: Components which discharge to the PRT.

References:
CVCS Drawings 684J741 Sh. 2 and 3
Waste Disposal Drawing 684J741 Sh. 1A
CCW Drawing 110E018 Sh. 2

Explanation:
A: Incorrect, relieves to the containment
B: Incorrect, relieves to suction of charging pumps
C: Incorrect, relieves to the containment
D: Correct

Learning Objective: Draw and Discuss a one line diagram of the CVCS. Discussion should include flowpaths/flow ratings, major components, and interfaces with other major systems.
(LP0079.02)

37. 2007 ILT RO 37
When establishing CCW flow for the RCPs, how is proper CCW flow to the various RCP heat exchangers established?

A. CCW supply lines are sized to properly supply needed cooling to the HXs and a single orifice on the CCW outlet controls total flow.

B. CCW throttle valves on the RCP CCW HX outlets are set to provide proper flow for HXs and total CCW return flow.

C. CCW return lines from the RCP contain orifices to establish proper HX flows and total flow is set using a single throttle valve.

D. Automatic temperature control valves monitor CCW temperature leaving RCP HXs and adjust CCW flow as required.

Answer: B
New

K/A # and IR: 008.A4.06 (2.5)

K/A Statement: Ability to manually operate and/or monitor in the control room: Remote operation of hand-operated throttle valves to regulate CCW flow rate

References:
1-SOP-CC-001, Component Cooling System
STPT 8.1, Aux Cooling System Setpoints
CCW Drawing 110E018 Sh. 2

Explanation:
A: Incorrect, throttle valves set the required flows not an orifice.
B: Correct, throttle valves are used to set up required flows.
C: Incorrect, orifices are not used.
D: Incorrect, no auto TCV.

Learning Objective: Describe the procedures which govern operation of the CCW system and its major components.
(LP0084.05)

38. 2007 ILT RO 38
OP-1A, "Cold Shutdown to Hot Standby", contains a Precaution and Limitation regarding the allowable temperature difference between Pressurizer and spray fluid temperatures.

What is the basis for this temperature limit?

A. Prevent thermal binding of spray valves

B. Ensure spray is effective in lowering RCS pressure

C. Maintain thermal stress on spray nozzle below design limits

D. Limit the rate of pressure decrease during maximum spray conditions

Answer: C
New

K/A # and IR: 010.2.1.32 (3.4)

K/A Statement: Ability to explain and apply all system limits and precautions.
(Pressurizer Pressure Control)

References:
OP-1A, Cold Shutdown to Hot Standby
LP0078, Pressurizer
TRM 3.4.2, PZR Temp Limits

Explanation:
A: Incorrect, not the design basis however it could be a concern.
B: Incorrect, stem does not address whether limit is a minimum or maximum. Examinee could plausibly determine that if RCS temp and PZR temp were too close, spray would be less effective in lowering pressure.
C: Correct, there are differential temperature limitations on the spray nozzle.
D: Incorrect, similar reasoning as B above, only applied from a large delta T standpoint.

Learning Objective: Describe the function and/or purpose, design bases, and operating characteristics of the Pressurizer, Level Control, Pressure Control, and Relief System and its major components.
(LP0078.01)

39. 2007 ILT RO 39
Consider the following Unit 2 conditions:

- Unit 2 is at 16% power following startup
- Turbine is latched and rolling at 1800 RPM.
- Main Generator output breaker is open.
- Subsequently, Unit 2 Reactor trips.
- Both Circ Water pumps are running.
- Condenser Vacuum is 26" Hg.
- $T_{avg}$ is 530ºF and lowering.
- Turbine is still operating.

EOP-0, "Reactor Trip or Safety Injection", is in progress and C02 is carrying out Immediate Action steps.

Are plant conditions as expected? Why or why not?

A. Conditions as expected, turbine does not automatically trip if <P-9.

B. Conditions **NOT** as expected, turbine should have tripped due to low vacuum.

C. Conditions **NOT** as expected, turbine should have tripped when reactor tripped.

D. Conditions **NOT** as expected, turbine should have tripped when $T_{avg}$ lowered to 547ºF.

Answer: C
New

K/A # and IR: 012.K1.06 (3.1)

K/A Statement: Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: T/G

References:
Logic Drawing 883D195 Sh. 2, Reactor Trips
STPT 15.1, Turbine Trips

Explanation:
A: Incorrect, see C.
B: Incorrect, correct as far as conditions not as expected, but wrong reason for turbine trip. Vacuum trip is about 20" Hg.
C: Correct, turbine should have tripped with a reactor trip signal.
D: Incorrect, correct as far as conditions not as expected, but wrong reason for turbine trip.

Learning Objective: Describe the interlocks, actuation setpoints, and permissives associated with major components and operations associated with the Turbine Protection Trip System.
(LP0021.03)

40. 2007 ILT RO 40
Which of the following directly powers 1C-156/157, Unit 1 Safeguards Train 'A' Relay Racks?

A. 1B03, 480V AC Safeguards Bus

B. 1Y-01, 120V AC Instrument Bus

C. D-16, 125V DC Panel

D. D-03, 125V DC Bus

Answer: C
Bank: PBNP Exam Bank
(53.06.LP0486.02.01)

K/A # and IR: 013.K2.01 (3.6)

K/A Statement: Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control

References:
MDB 3.2.12 D16, D-16 Master Data Book

Explanation:
A: Incorrect, wrong source, power is from a safeguards bus.
B: Incorrect, wrong source, many safeguards instruments are from 120V AC.
C: Correct, power supply is a DC source.
D: Incorrect, correct source, wrong bus.

Learning Objective: State the power supplies for the ESFAS and its major components. (LP0486.02)

41. 2007 ILT RO 41
Containment temperature has increased from 90ºF to 120ºF due to a Containment Cooling malfunction.

If the plant is stable at 100% power and there are negligible RCS or Containment pressure changes, which of the following describes the effect of the increase in containment temperature on the Pressurizer level indicated by the Pressurizer level control channels?

A. Indicated level will be HIGHER than actual level because the reference leg fluid density decreases.

B. Indicated level will be HIGHER than actual level because the elevated containment temperature causes increased flashing in the reference leg.

C. Indicated level will be LOWER than actual level because the reference leg fluid density decreases.

D. Indicated level will be LOWER than actual level because of the elevated containment temperature causes increased flashing in the reference leg.

Answer: A
Bank: From INPO Exam Bank, Kewaunee, 2/04, 26772

K/A # and IR: 022.K3.02 (3.0)

K/A Statement: Knowledge of the effect that a loss or malfunction of the Containment Cooling System will have on the following: Containment instrumentation readings

References:
LP N-RO-01-L-020I, Sensors and Detectors Lesson Plan

Explanation:
A: Correct, temperature rise of water will lower density. With a lower density on the reference leg and no change in Pressurizer level, indicated level goes up.
B: Incorrect, correct actual level response but wrong reason.
C: Incorrect, wrong level response but correct reason.
D: Incorrect, wrong level response and reason.

Learning Objective: Describe the effect on level detectors using D/P cells from the following failures:
e. Reference Leg Flashing
(N-RO-01-01-L-020-I.8.e)

42. 2007 ILT RO 42
Consider the following Unit 2 conditions:

- A Large Break LOCA occurred one minute ago.
- Containment pressure is now 35 PSIG and rising.
- All systems have functioned as designed.
- No operator action has been taken.

What is the expected position of 2SI-836 A and B, Spray Additive Eductor Suction valves and what is the concern, if any, with the present status of the Spray Additive System?

| | Position | Concern |
|---|---|---|
| A. | Open | No concern, system operating as designed |
| B. | Open | Increased corrosion of stainless steel inside containment |
| C. | Closed | No concern, system operating as designed |
| D. | Closed | Increased corrosion of stainless steel inside containment |

Answer: C
New

K/A # and IR: 026.K4.04 (3.7)

K/A Statement: Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: Reduction of temperature and pressure in containment after a LOCA by condensing steam, to reduce radiological hazard and protect equipment from corrosion damage (spray)

References:
LP0064, Containment Spray

Explanation:
A: Incorrect, spray additive valves do not open until two minutes after the containment spray signal is received.
B: Incorrect, valves should not be open yet. If the valves failed to open, there would be a corrosion concern.
C: Correct, valves have not yet received an open signal and system is operating as designed
D: Incorrect, valves should be closed, but there are no concerns with the current status of the system.

Learning Objective: Describe the interlocks associated with the Containment Spray system and its major components:
c. Spray additive valves (timer interlock).
(LP0064.04)

43. 2007 ILT RO 43
Consider the following Unit 2 conditions:

- Reactor Startup is in progress.
- Core Burnup is at 8000 MWD/MTU.
- $T_{avg}$ - 547ºF
- The reactor has just been brought critical.
- Source Range counts - $4x10^4$ CPS
- 2MS-2016, 'B' SG Atmospheric Dump Valve then slowly fails full open.

Assuming NO operator action, which of the following describes the effect on the plant? (POAH = Point of Adding Heat)

A. $T_{avg}$ will lower; Reactor power will rise to the POAH, $T_{avg}$ will rise and then stabilize, reactor power will stabilize at about 5%.

B. $T_{avg}$ will lower; Reactor power will rise to SR high flux trip setpoint and the reactor will trip.

C. $T_{avg}$ will lower; Reactor power will remain unchanged since power is below the POAH.

D. $T_{avg}$ will lower; Reactor power will lower until the reactor is no longer critical.

Answer: B
New

K/A # and IR: 039.K5.08 (3.6)

K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the MRSS (Main and Reheat Steam System): Effect of steam removal on reactivity

References:
LP N-RO-01-L-039I, Reactor Operational Physics Lesson Plan
ROD 8.6, MTC VS. Burnup Table

Explanation:
A: Incorrect, $T_{avg}$ will lower and power will rise but will be arrested by the SR high flux trip. If SR had been blocked, this would be correct.
B: Correct, Power will rise and reactor will trip on high SR flux at $5x10^5$ CPS
C: Incorrect, Power will rise due to negative MTC. Plausible to think that MTC effect will not occur below POAH.
D: Incorrect, negative MTC. Plausible since MTC may be positive at BOL.

Learning Objective: Predict the reactor response to reactivity changes prior to reaching the POAH.
(N-RO-01-L-039-I.04)

44. 2007 ILT RO 44
Consider the following Unit 1 conditions:

- Unit 1 is at 75% power.
- 1P-28A, 'A' Main Feedwater Pump has just tripped.

What turbine load does AOP-2B, "Feedwater System Malfunction", direct the operator to establish?

A. $\leq$ 50%

B. $\leq$ 55%

C. < 60%

D. < 65%

Answer: C
Bank: From INPO Exam Bank, Prairie Island, 8/02, 22974

K/A # and IR: 059.A1.03 (2.7)

K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Power level restrictions for operation of MFW pumps and valves

References:
AOP-2B, Main Feedwater Malfunction

Explanation:
A: Incorrect, this is a number seen in AOP-17A which would be used to lower power.
B: Incorrect, plausible as it is between half power and the actual limit.
C: Correct, AOP directs power to go less than 60% for loss of a main feed pump.
D: Incorrect, plausible as it is near the limit and the unit would likely maintain SG levels at 65%.

Learning Objective: Given access to the Site Specific Simulator or specific plant conditions, Evaluate plant indications associated with the following events:
b. Feedwater System Malfunction.
(LP2439.04.b)

45. 2007 ILT RO 45
Consider the following Unit 1 conditions:

- Unit 1 experienced a Small Break LOCA and SG levels were being maintained using 1P-29, Turbine Driven AFW pump when 1C03 1D 3-8, “1P-29 Low Suction Pressure Trip” Alarm was received.
- Auxiliary Operator reports Turbine Driven AFW pump suction pressure indicates 10 PSIG locally.

What are the implications of this alarm?

A. Turbine Driven AFW Pump cannot be restarted with an active Low Suction Pressure signal.

B. Turbine Driven AFW Pump can be restarted from the control room without taking local actions.

C. Turbine Driven AFW Pump can be restarted from the control room after locally resetting the overspeed trip mechanism.

D. Turbine Driven AFW Pump must be restarted locally.

Answer: B
New

K/A # and IR: 061.K6.01 (2.5)

K/A Statement: Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners

References:
LP0169, Auxiliary Feedwater Lesson Plan

Explanation:
A: Incorrect, plausible for pump protection
B: Correct, 1P-29 can be overridden with control room actions only.
C: Incorrect, plausible since local actions must be taken for an overspeed trip and LSP and overspeed trip both utilize the valve operator to accomplish their functions.
D: Incorrect, plausible way to restart the pump.

Learning Objective: Describe the interlocks, automatic actuation setpoints, and permissives associated with major components of the Auxiliary Feedwater System. (LP0169.04)

46. 2007 ILT RO 46
Consider the following plant conditions:

- Unit 1 is at 100% power.
- Unit 2 is performing a Reactor Startup and reactor is at **1%** power.

- The following malfunctions then occur:

  - Input fuse blows to 1DY02, BLUE Instrument Bus Inverter, system responds as expected.
  - Subsequently, Input fuse for 2DY01, RED Instrument Bus Inverter, blows.

What is the impact on **UNIT 2** and what actions are taken?

A. Reactor does NOT trip, various Unit 2 instrumentation loses power; Enter AOP-0.2, Loss of Vital AC Instrument Bus.

B. Reactor does NOT trip, Unit 2 Instrument Buses swap to backup power; Implement 2-SOP-Y-001, Shifting 120V Safeguards Instrument Buses to restore proper alignment.

C. IR Channel N35 loses power, causing a Unit 2 reactor trip; Enter EOP-0, Reactor Trip or Safety Injection.

D. SR Channel N31 loses power, causing a Unit 2 reactor trip; Enter EOP-0, Reactor Trip or Safety Injection.

Answer: C
New

K/A # and IR: 062.A2.10 (3.0)

K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the AC distribution system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Effects of switching power supplies on instruments and controls

References:
LP0123, Instrument Bus System
LP2416, Nuclear Instruments

Explanation:
A: Incorrect, Entry into AOP-0.2 would eventually be required, but the reactor does trip.
B: Incorrect, this would be correct if the interlock was not there or didn't work.
C: Correct, Unit 2 reactor trip occurs due to loss of Red instrument bus because of an interlock with the Blue channel already on back up power. N35 is powered from the Red bus and entry into EOP-0 is required due to the trip.
D: Incorrect, Unit 2 reactor does trip and entry into EOP-0 is required, but power is in the IR not SR.

Learning Objective: For a loss of Red, Blue, White, or Yellow Instrument Bus, Describe the major effects on Plant/Unit operation. (LP0123.11)

47. 2007 ILT RO 47
Both units are operating at 100% power. The DC electrical distribution system is in a normal alignment.

The following conditions are noted:

- D-07 Battery Charger Trouble alarm.
- D-01/D-03 125V DC Bus Under/Over Voltage alarm.
- D-05 AM, Battery Ammeter, indicates 120 amps discharging.
- D-01 VM, Bus Voltmeter, indicates 123 VDC.

The cause of the above indications is:

A. D-01 DC Bus has a ground.

B. D-05 Battery has an internal short in a cell.

C. D -05 Battery Feed to Bus D-01 breaker tripped open.

D. D-07 Battery Charger DC Output Breaker tripped open.

Answer: D
Bank: From INPO Exam Bank, PBNP, 9/03, Outline randomly generated

K/A # and IR: 063.A3.01 (2.7)

K/A Statement: Ability to monitor automatic operation of the DC electrical system, including: Meters, annunciators, dials, recorders and indicating lights

References:
ARP 2C20 A 1-1 and 2-2, Listed in Stem

Explanation:
A: Incorrect, a ground may cause a loss of the bus and associated alarms, but not the battery charger.
B: Incorrect, this may cause abnormal indications for bus voltage and an alarm.
C: Incorrect, this would cause all the above indications except the battery charger alarm.
D: Correct, D-07 alarm in due to output breaker open, with loss of battery charger the battery is discharging, has lower than expected voltage with associated alarm.

Learning Objective: Identify and Describe the Control Room controls, alarms, and indications associated with the DC Electrical System
(LP0121.06)

48. 2007 ILT RO 48
While performing Monthly Emergency Diesel Generator Test on G01 EDG, the following conditions are noted while paralleling G01 to 1A-05:

- Sync Selector Switch for 1A52-60, G01 to 1A-05 breaker, is ON.
- Running Voltmeter reads 123 volts.
- Incoming Voltmeter reads 115 volts.
- Synchroscope is rotating 10 RPM in the **FAST** direction.

What must the operator do to match voltage and make the Synchroscope turn 2 to 5 RPM in the **FAST** direction?

A. Go to **Lower** on the G01 Diesel Generator Voltage Regulator to match voltages. Go to **Raise** on the G01 Diesel Generator Governor control switch to make Synchroscope turn properly.

B. Go to **Lower** on the G01 Diesel Generator Voltage Regulator to match voltages. Go to **Lower** on the G01 Diesel Generator Governor control switch to make Synchroscope turn properly.

C. Go to **Raise** on the G01 Diesel Generator Voltage Regulator to match voltages. Go to **Lower** on the G01 Diesel Generator Governor control switch to make Synchroscope turn properly.

D. Go to **Raise** on the G01 Diesel Generator Voltage Regulator to match voltages. Go to **Raise** on the G01 Diesel Generator Governor control switch to make Synchroscope turn properly.

Answer: C
Modified: From INPO Exam Bank, PBNP, 11/05, 30315, Modified to make one distractor correct, synch scope turning in opposite direction of that question.

K/A # and IR: 064.A4.12 (2.7)

K/A Statement: Ability to manually operate and/or monitor in the control room: Synchroscope

References:
TS-81, G01 Monthly Test

Explanation:
A: Incorrect, both actions are incorrect.
B: Incorrect, correct actions for speed, but not for voltage
C: Correct, matching voltages by raising the EDG and lowering speed to get the RPM lower is what is required.
D: Incorrect, correct actions on voltage but not speed.

Learning Objective: Given access to the PBNP Site Specific Simulator, the trainee should be able to OPERATE the major components of the specified system in accordance with acceptable practices and procedures.
(From ESFAS/Electrical System LP) (LP2519.01)

49. 2007 ILT RO 49
T-104A, 'A' Waste Distillate Tank, is to be released using RE-223, Waste Distillate Tank Overboard Monitor, as the "At Tank" monitor for the release IAW OI-140B, "Standard Radioactive Batch Liquid Release - Waste Distillate Tank".

Which of the following describes the location of RE-223 and how proper radiation monitor flow is established?

A. 66' PAB, East of Waste Distillate Tanks. Radiation monitor is in series with main release flowpath and total discharge flow is throttled to maintain proper radiation monitor flow.

B. 46' PAB, East of CCW HXs. Radiation monitor is in parallel with main release flowpath. A monitor bypass valve is used to adjust monitor flow as required.

C. 26' PAB, Northeast of Monitor Tanks. Radiation monitor is in series with main release flowpath and total discharge flow is throttled to maintain proper radiation monitor flow.

D. 8' PAB, East of CCW pumps. Radiation monitor is in parallel with main release flowpath. A monitor bypass valve is used to adjust monitor flow as required.

Answer: B
New

K/A # and IR: 073.2.1.30 (3.9)

K/A Statement: Ability to locate and operate components, including local controls. (Process Radiation Monitoring)

References:
OI-140B, Standard Batch Release - WDT
WDT Drawing 684J971 Sh. 2
RMSARB RE-223, WDT Overboard Monitor

Explanation:
A: Incorrect, location is near tank to be discharged and close to actual monitor, but wrong level in the plant and flowpath.
B: Correct, correct location, flowpath and required adjustments.
C: Incorrect, wrong flowpath and flow adjustment, wrong location.
D: Incorrect, correct flowpath, adjustment requirements, same system room but wrong level in the plant.

Learning Objective: Identify and Describe the controls, alarms and indications associated with the Liquid Waste Disposal System, including:
a. Location and function of component and/or system operating controls and control stations.
(LP0063.05)

50. 2007 ILT RO 50
Consider the following Unit 1 conditions:

- Plant cooldown is in progress using RHR.
- Two CCW HXs ('A' and 'B') and both RHR heat exchangers are aligned.
- PAB AO adjusts SW-322, 1HX-12A CC HX Outlet, and SW-360, HX-12B CC HX Outlet (12" Service Water outlet valves) to **RAISE** D/P on the Service Water side of the CCW heat exchangers from **0.5** PSID to **1.0** PSID.
- C01 then adjusted RHR controllers to re-establish previous cooldown rate and total RHR flow (assume decay heat input rate did not change).

How will the adjustment of Service Water affect CCW temperature? How would final RHR bypass flow compare to initial RHR bypass flow?

A. CCW temperature would lower. RHR HX bypass flow would be lower.

B. CCW temperature would lower. RHR HX bypass flow would be higher.

C. CCW temperature would rise. RHR HX bypass flow would be lower.

D. CCW temperature would rise. RHR HX bypass flow would be higher.

Answer: B
New

K/A # and IR: 076.K1.08 (3.5)

K/A Statement: Knowledge of the physical connections and/or cause-effect relationships between the SWS and the following systems: RHR system

References:
RHR Drawing 110E018, Sh. 1
Service Water Drawing M-207, Sh. 3

Explanation:
A: Incorrect, See B, flow for RHR is wrong.
B: Correct, When 12" SW valves are opened more, this causes DP to rise ($fLv^2/2Dg_c$) (v increases with more flow). Thus, the adjustment made would represent a higher SW flow and lower CCW temperature. With lower CCW temp, the CO would need to lower flow through the RHR heat exchangers to maintain constant cooldown rate. Since 626 is the bypass flow control valve, this valve would open more to maintain constant total flow through the system.
C: Incorrect, see B temperature is wrong but flow is correct.
D: Incorrect, see B, both answers are wrong.

Learning Objective: Describe the process for performing a plant Shutdown and Cooldown IAW OP-3C. Description should include:
a. Cooldown the RCS
e. Place RHR in service. (LP0272.03)

51. 2007 ILT RO 51
Consider the following plant conditions:

- Both Units were at 100% reactor power with normal electric plant lineup.
- P-32A, P-32B and P-32D Service Water pumps were running.
- Subsequently, 1X04, LV Station Aux Transformer locks out.
- Unit 1 Safety Injection occurred simultaneously with the 1X04 lockout.
- G03 EDG Output breaker failed to close.

Which of the following is a **COMPLETE** list of which Service Water pumps will be running two minutes later? (Assume NO operator action)

A. A, B, D and F

B. A, D, E and F

C. A, B, C, D and E

D. A, B, D, E and F

Answer: D
Modified: From INPO Exam Bank, PBNP 11/05, Different unit and choices. 30331

K/A # and IR: 076.K2.01 (2.7)

K/A Statement: Knowledge of the bus power supplies to the following: Service Water

References:
Logic Drawing 883D195 Sh. 8, Safeguards Sequence

Explanation:
Power supplies to the SW pumps are as follows:

A - 1B03
B - 1B03
C - 1B04
D - 2B04
E - 2B04
F - 2B03

A: Incorrect, if an 'A' train Diesel starts and loads onto the bus, A, B and F SW pumps would start. This would be in addition to D pump which was already running. If 1X04 locked out in this situation without the SI, this would be correct.
B: Incorrect, if the examinee erroneously assigned B pump to B train, a common error, this would be correct.
C: Incorrect, if the examinee erroneously assigned F pump to Unit 1, another common error, this would be correct.
D: Correct, as noted in the table above, only C SW pump would be without power, thus on SI all pumps would start, but only C would have no power.

Learning Objective: ASSESS the response of the service water system to a Safeguards actuation. (LP0086.08)

52. 2007 ILT RO 52
What is the power supply for K-2B, Instrument Air Compressor?

A. 480VAC MCC 1B-32

B. 480VAC MCC 2B-42

C. 480VAC Bus 1B-04

D. 480VAC Bus 2B-03

Answer: B
Modified: From INPO Exam Bank, PBNP 9/03, 26246, Different Compressor

K/A # and IR: 078.K2.01 (2.7)

K/A Statement: Knowledge of the bus power supplies to the following: Instrument air compressor

References:
Master Data Book for 2B42

Explanation:
A: Incorrect, Power to K-2A
B: Correct
C: Incorrect, Power to K-3A Service Air Compressor
D: Incorrect, does not power K-2B

Learning Objective: State the power supply for the following Instrument and Service Air components:
a. Instrument and Service Air Compressors
(LP0338.03)

53. 2007 ILT RO 53
Consider the following Unit 1 conditions:

- Unit 1 is at 100% power.
- Instrument Air has just been inadvertently isolated to Unit 1 containment.

How will this isolation impact Normal Letdown, Pressurizer pressure control and PORV operation (assume 5 minutes have passed since isolation)?

| | Normal LD | PZR Sprays | PORVs |
|---|---|---|---|
| A. | Not Avail. | Failed Closed | On $N_2$ Backup |
| B. | Available | On $N_2$ Backup | On $N_2$ Backup |
| C. | Available | Failed Closed | Failed Closed |
| D. | Not Avail. | On $N_2$ Backup | Failed Closed |

Answer: D
New

K/A # and IR: 078.K3.01 (3.1)

K/A Statement: Knowledge of the effect that a loss or malfunction of the IAS will have on the following: Containment air system

References:
AOP-5B, Loss of Instrument Air

Explanation:
A: Incorrect, letdown cannot operate without IA, spray has nitrogen back up, PORVs have nitrogen back up but it is not aligned at power.
B: Incorrect, letdown incorrect, spray correct, PORVs have nitrogen back up but it is not aligned at power.
C: Incorrect, letdown incorrect, spray incorrect, PORV correct.
D: Correct, spray has nitrogen back up aligned at all times, PORVs fail closed and letdown cannot operate with out IA.

Learning Objective: Recognize and Diagnose the effects of a loss of the Instrument and Service Air Systems on the following:
e. CVCS
h. Pressurizer Control
(LP0338.007.e and .h)

54. 2007 ILT RO 54
What is the purpose of CL-1E, "Containment Closure Checklist", and what are the potential consequences of not maintaining it properly?

A. CL-1E is used to ensure all containment penetrations are intact prior to movement of fuel. Failure to establish containment penetrations intact increases the risk of releasing fission products during a fuel handling accident.

B. CL-1E is used to ensure that containment closure can be established in a timely manner following a loss of RHR when the RCS is not intact. Failure to establish containment closure under these conditions increases the risk of releasing fission products to the environment following bulk boiling and core uncovery.

C. CL-1E is used to track the status of containment penetrations at all times in MODE 3 through Defueled. Failure to track the status of these penetrations requires that Containment system checklists be performed prior to entering MODE 2.

D. CL-1E is used to ensure all containment penetrations are maintained intact when lifting the upper internals. Failure to establish and maintain containment penetrations intact during these conditions increases the risk of fission product release from dropping heavy loads onto the fuel.

Answer: B
New

K/A # and IR: 103.K3.01 (3.3)

K/A Statement: Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under shutdown conditions

References:
CL-1E, Containment Closure Checklist

Explanation:
A: Incorrect, see B.
B: Correct, CL-1E maintains a list of all open containment penetrations to ensure we can establish a containment boundary in a timely manner prior to boiling of the water in the core and release of fission products.
C: Incorrect, see B.
D: Incorrect, see B.

Learning Objective: Describe the purpose and Demonstrate an understanding of the following procedures/conditions/requirements associated with refueling operations:
c. Containment Integrity and maintenance of CL-1E, Containment Closure Checklist. (LP2186.01.c)

55. 2007 ILT RO 55
Which of the following Safeguards Signals **DIRECTLY** causes a Containment Isolation Signal (CI)?

A. AUTO Safety Injection Signal

B. MANUAL Safety Injection Signal

C. Main Steam Line Isolation Signal

D. Containment Spray Actuation Signal

Answer: A
New

K/A # and IR: 103.K4.06 (3.1)

K/A Statement: Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Containment isolation system

References:
Logic Drawing 883D195 Sh. 7, Containment Isolation

Explanation:
A: Correct, auto safety injection sends a signal to the containment isolation circuit.
B: Incorrect, when manual safety injection is used, manual containment isolation is required.
C: Incorrect, safety injection sends a signal to the MSIV isolation circuit.
D: Incorrect, containment spray is at 25# so a containment isolation signal should have been sent at 5# containment pressure.

Learning Objective: Describe the automatic functions associated with the ESFAS and its major components. Description should include ...actuation logic....
(LP0486.14)

56. 2007 ILT RO 56
OP-1B, "Reactor Startup", is commencing to bring Unit 1 critical following a refueling shutdown. At what point in the startup should the operators **BEGIN** to anticipate criticality?

A. Any time after shutdown banks are withdrawn.

B. Any time after All Rods Out position is reached.

C. Any time after three flux doublings.

D. Any time positive reactivity is being added.

Answer: D
New

K/A # and IR: 001.K5.18 (4.2)

K/A Statement: Knowledge of the following operational implications as they apply to the CRDS: Anticipation of criticality at any time when adding positive reactivity during startup

References:
OP-1B, Reactor Startup

Explanation:
A: Incorrect, withdrawing shutdown banks is a positive reactivity addition see D.
B: Incorrect, see D.
C: Incorrect, see D.
D: Correct, the first precaution and limitation in OP-1B states this. When performing a startup from refueling, the reactor is brought critical by dilution. This question relates to the anticipation of criticality at any time during a startup and attempts to determine if the examinee is aware of the difference between anticipation and expectation. In practice, an operator should anticipate criticality anytime positive reactivity is being added to the core, but would not EXPECT criticality until after at all of the conditions in A, B and C have occurred.

Learning Objective: Given access to the Site Specific Simulator, Demonstrate the ability to perform a safe and controlled Reactor Startup IAW the appropriate procedure. (LP0183.07)

57. 2007 ILT RO 57
With reactor power at 100%, the $T_{hot}$ transmitter TE-401A fails LOW.

How does this failure affect the corresponding $T_{avg}$ and Delta-T indications which provide input to RPS?

| | $T_{avg}$ | Delta-T |
|---|---|---|
| A. | Rises | Rises |
| B. | Rises | Lowers |
| C. | Lowers | Rises |
| D. | Lowers | Lowers |

Answer: D
Bank: From INPO Exam Bank, PBNP 2/02, 20627

K/A # and IR: 002.K6.06 (2.5)

K/A Statement: Knowledge of the effect of a loss or malfunction on the following RCS components: Sensors and Detectors

References:
LP0315, RPS Signal Development

Explanation:
A: Incorrect, both indications are incorrect.
B: Incorrect, The difference between $T_{hot}$ and $T_{cold}$ is correct but $T_{avg}$ is incorrect.
C: Incorrect, with $T_{hot}$ failing low combined with $T_{cold}$, $T_{avg}$ will lower, however the difference between $T_{hot}$ and $T_{cold}$ is incorrect.
D: Correct, with $T_{hot}$ failing low combined with $T_{cold}$, $T_{avg}$ will lower and the difference between $T_{hot}$ and $T_{cold}$ will be less.

Learning Objective: Describe the function and/or purpose, design bases, and operating characteristics for the Process Instrumentation and signal development associated with the RPS. Description should include:
a. Major Process Instruments
1. Reactor coolant Temperature (delta T and $T_{avg}$)
(LP0315.01.a.1)

58. 2007 ILT RO 58
Consider the following Unit 1 conditions:

- The Unit is at 100% power with all systems normal.
- The controlling PZR level transmitter fails at the programmed level that **CORRESPONDS TO FULL PLANT LOAD**.

What is the effect on charging flow and PZR level if reactor power is reduced to 90% and stabilized? (Assume NO operator action related to PZR level control during reduction to 90% power.)

A. Charging flow remains constant and actual PZR level remains constant. PZR heaters will energize to compensate for reduced $T_{avg}$.

B. Charging flow decreases and actual PZR level decreases. On low PZR level, letdown will isolate and the PZR heaters will turn off.

C. Actual PZR level increases and charging flow increases. The backup heaters will energize as level rises due to the apparent in-surge.

D. Actual PZR level decreases and charging flow increases. When actual level increases back to program level, charging flow will back down to maintain level.

Answer: B
Bank: From INPO Exam Bank, Beaver Valley, 5/05, 29414

K/A # and IR: 011.K3.02 (3.5)

K/A Statement: Knowledge of the effect that a loss or malfunction of the PZR LCS will have on the following: RCS

References:
Logic Drawing 883D195 Sh. 18, Pressurizer Pressure and Level Control

Explanation:
A: Incorrect, actual level will change with RCS temperature and heaters will energize due to higher Pressurizer level.
B: Correct, Charging flow will decrease because $T_{avg}$ is decreasing and it will appear that actual level is too high due to the failed transmitter. (Indicated level will be 45.8% when actual level will start to decrease). LT-427 will show the actual PZR level, which will decrease to 12%, letdown will isolate and the heaters will cut off.
C: Incorrect, correct level increase with wrong charging flow change. Heaters will turn on with the insurge.
D: Incorrect, see B.

Learning Objective: Identify and Describe the response to of the Pressurizer Pressure and Level Control System.
(LP0457.06)

59. 2007 ILT RO 59
Consider the following Unit 1 conditions:

- Unit 1 is conducting refueling in containment.
- 1VNPSE-3244, Purge Supply Valve is open.
- 1VNPSE-3212, Purge Exhaust Valve is open.
- 1W-2A, Purge Supply Fan and 1W-6A Purge Exhaust Fan are running.
- 1RE-305, Containment Purge Exhaust Low Range Gas monitor goes into high alarm due to a dropped fuel assembly.

What effect will this alarm have on the Containment Purge System?
(CVI - Containment Ventilation Isolation)

A. - Supply and Exhaust valves will shut from CVI.
   - Both fans will trip on interlock.

B. - Supply valve will shut from CVI; Exhaust valve remains open.
   - Supply fan will trip from CVI; Exhaust fan remains running.

C. - Exhaust valve will shut from CVI; Supply valve remains open.
   - Exhaust fan will trip on interlock; Supply fan remains running.

D. - Supply valve will shut from CVI; Exhaust valve remains open.
   - Supply fan will trip on interlock; Exhaust fan remains running.

Answer: A
New

K/A # and IR: 029.A1.02 (3.4)

K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Containment Purge System controls including: Radiation levels

References:
Logic Drawing 883D195 Sh. 21 for Containment Isolation/Containment Ventilation Isolation
Drawing M-215 Sh. 1, Containment Ventilation Drawing

Explanation:
A: Correct, all fans and valves will be secured after a CVI signal.
B: Incorrect, incomplete correct answer, exhaust will get secured as well as supply.
C: Incorrect, correct answer with the exception of the supply valve will go shut.
D: Incorrect, it is plausible to maintain the exhaust valve open and exhaust fan running to maintain a negative pressure on Containment and thereby minimize possible leakage out.

Learning Objective: Describe the interlocks associated with the Containment Ventilation System and its major components:
f. Radiation Monitor Actuations (LP0057.04.f)

60. 2007 ILT RO 60
Consider the following plant conditions:

- A seismic event has occurred that has resulted in a non-isolable leak at the north end of the Spent Fuel Pool.
- The leak is located five feet above the top of the spent fuel racks.
- Level in the pool is slowly lowering.
- The fuel transfer canal doors are open.

What will be the effect of this leak on the Spent Fuel Pool Cooling system and what action will the crew take to mitigate this event?

A. Cooling will NOT be lost since the leak is above the suction pipe opening, the transfer canal doors are required to be shut to conserve water inventory.

B. Cooling will NOT be lost since the leak is above the suction pipe opening, makeup to the pool is required to be initiated to provide radiation shielding above the fuel.

C. Cooling will be lost when level drops below the suction pipe opening, make up to the pool is required to be initiated to control pool temperature and maintain inventory.

D. Cooling will be lost when level drops below the suction pipe opening, pool cooling will be initiated by recirculating water between the transfer canal and the Spent Fuel Pool with P-9, HUT Recirc pump.

Answer: C
Bank: From INPO Exam Bank, PBNP 9/03, Outline randomly generated

K/A # and IR: 033.A2.03 (3.1)

K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Cooling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Abnormal spent fuel pool water level or loss of water level

References:
LP0110, Spent Fuel Pool Cooling
AOP-8F, Loss of SFP Cooling

Explanation:
A: Incorrect, cooling will be lost but actions to isolate the transfer canal would be taken.
B: Incorrect, cooling will be lost; water would be made up for inventory.
C: Correct, cooling is lost due to the suction piping stopping more than 1 foot above the fuel racks. Make up water will have to be added for temperature and inventory.
D: Incorrect, correct except the transfer canal doors are open and inventory from there will be lost at the same time as the spent fuel pool.

Learning Objective: Recognize and Analyze the effects on the Spent Fuel Pool and SFP Cooling System in the event of:
b. SFP liner leakage (LP0110.06)

61. 2007 ILT RO 61
Consider the following Unit 1 Conditions:

- Reactor power is 100%.
- All control systems are in a normal alignment.

Which of the following will **INITIALLY** result in a reduction of feedwater flow to 'A' SG? (Assume NO operator action is taken.)

A. 'A' SG level channel LT-461 fails low.

B. 'A' SG pressure channel PT-468 fails low.

C. 'A' SG steam flow channel FT-464 fails high.

D. 'A' SG feedwater flow channel FT-466 fails low.

Answer: B
Bank: From INPO Exam Bank, Kewaunee, 9/02, 21587

K/A # and IR: 035.A3.01 (4.0)

K/A Statement: Ability to monitor automatic operation of the S/G including: S/G water level control

References:
Logic Drawing 883D195 Sh. 10, Feedwater Control and Isolation

Explanation:
A: Incorrect, with a sensed low level feed flow would be increased.
B: Correct, with the steam pressure failed low, the density compensation affects the steam flow that is sensed so the steam generator level control system thinks actual flow is lower thus lowering feed flow.
C: Incorrect, with flow failing high the feedwater control system would increase feed flow.
D: Incorrect, feed flow would go up with a sensed feed flow low to the steam generator level control circuit.

Learning Objective: Identify and Respond to the following failures/transients:
a. Feedwater Control system malfunctions
(LP0131.06.a)

62. 2007 ILT RO 62
Consider the following Unit 1 Conditions:

- Unit 1 reactor has been tripped from 100% power due to a steam leak in Unit 1 Turbine Hall.
- Unit 1 MSIVs are shut.
- RCS cold leg temperature is now 540ºF and rising slowly.
- Control room is performing EOP-0.1, "Reactor Trip Response", at step 1, “Verify RCS Temperature Control”.

How will C01 control temperature?

A. Place Atmospheric Steam Dump controllers in manual and shut ADVs until cold leg temperature is 547ºF then stabilize temperature in manual.

B. Verify Atmospheric Steam Dump controllers are in Auto and set at 1050 PSIG.

C. Lower Atmospheric Steam Dump controllers Auto setpoints to 1005 PSIG to stabilize temperature.

D. Lower Atmospheric Steam Dump controllers Auto setpoints to 950 PSIG to stabilize temperature.

Answer: D
New

K/A # and IR: 041.A4.06 (2.9)

K/A Statement: Ability to manually operate and/or monitor in the control room: Atmospheric relief valve controllers

References:
EOP-0.1, Reactor Trip Resonse Background
Steam Tables

Explanation:
A: Incorrect, temperature control step instructs operators to not let temperature rise.
B: Incorrect, this action is taken in EOP-3 for ruptured SG
C: Incorrect, using the Steam Tables, examinee should determine appropriate setpoint for given pressure in SGs. 1005 would maintain temperature at 547ºF, which is no-load $T_{avg}$.
D: Correct, Saturation pressure for 540ºF is about 950 PSIG and ADVs should be lowered in AUTO to maintain this temperature.

Learning Objective: Given access to the Site Specific simulator, Respond to accident conditions IAW the plant's Emergency Procedures.
(LP0405.15)

63. 2007 ILT RO 63
Consider the following Unit 2 conditions:

- Unit is at 45% power with 'A' Main Feed pump and 'A' Condensate pump running.
- The following indications are received:

  - "2P-28A SG Feed Pump Suction Pressure Low" alarm is received.
  - 'A' Condensate pump red light is lit.
  - 'A' Condensate pump current reads 40 amps.
  - 'B' Condensate pump green light is lit.
  - 2CS-2273, LP Heater Bypass Valve controller indicates open.
  - Feed Pump suction pressure is 140 PSIG and lowering.
  - SG Levels are 45% and lowering.

What event would explain the indications above and what actions must be taken?

A. 2CS-2273 has failed open; close 2CS-2273 and lower turbine load to restore Feed Pump suction pressure.

B. Main Feedwater Flow channel has failed; place Main Feed Regulating valves in MANUAL and restore SG levels.

C. 'A' Condensate pump shaft has sheared and 'B' Condensate pump failed to start; start 'B' Condensate pump and secure 'A'.

D. Condensate piping downstream of 'A' Condensate pump has ruptured; trip Unit 2 and enter EOP-0, "Reactor Trip or Safety Injection".

Answer: C
New

K/A # and IR: 056.2.4.49 (4.0)

K/A Statement: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. (Condensate)

References:
AOP-2B, Feedwater System Malfunction

Explanation:
A: Incorrect, 2273 failing open would raise SGFP suction pressure
B: Incorrect, Feedwater flow channel failing high would account for lowering SG level on one SG, but would not account for loss of suction pressure
C: Correct, 'A' Condensate pump current is low and 'B' is not running. This scenario explains all indications
D: Incorrect, rupture would cause high current on running condensate pump.

Learning Objective: Given access to appropriate equipment/indication, Diagnose malfunctions associated with the following systems:
a. Condensate (LP2439.01.a)

64. 2007 ILT RO 64
Which of the following is/are vented using the Waste Gas Vent Header?

A. Sump Tank (T-17)

B. Waste Holdup Tank (T-19)

C. CVCS Holdup Tanks (T-8A,B,C)

D. Waste Distillate Tanks (T-104 A,B)

Answer: C
Bank: From INPO Exam Bank, Prairie Island, 8/02, 22978

K/A # and IR: 068.K1.02 (2.5)

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

References:
Drawings:
684J972 Sh. 1, Waste Gas
684J961 Sh. B, Boron Recycle
684J971 Sh. 2, Waste Distillate
684J971 Sh. 1, Waste Disposal System

Explanation:
A: Incorrect, vented to PAB ventilation system
B: Incorrect, vented to PAB ventilation system
C: Correct, CVCS HUTs are vented by Waste Gas system
D: Incorrect, vented to PAB ventilation system

Learning Objective: Given appropriate one-line diagrams of the Waste Gas System, Identify and Discuss flowpaths, major components and their physical locations, and interfaces with other major systems.
(LP0052.02)

65. 2007 ILT RO 65
RE-101, Control Room Monitor, has just reached a HIGH alarm condition.

Control Room Ventilation system will shift to Mode __(1)__ which consists of ____(2)____?

| | (1) | (2) |
|---|---|---|
| A. | 3 | 25% recirculation and 75% filtered outside air |
| B. | 3 | 75% recirculation and 25% filtered outside air |
| C. | 4 | 25% recirculation and 75% filtered outside air |
| D. | 4 | 75% recirculation and 25% filtered outside air |

Answer: D
New

K/A # and IR: 072.K4.03 (3.2)

K/A Statement: Knowledge of Area Radiation Monitoring system design feature(s) and/or interlock(s) which provide for the following: Plant ventilation systems

References:
RMS Alarm Response for RE-101, Control Room Monitor

Explanation:
A: Incorrect, Ventilation shifts to Mode 4 on RE-101 HIGH alarm.
B: Incorrect, Ventilation shifts to Mode 4 on RE-101 HIGH alarm.
C: Incorrect, Mode is correct, but Mode 4 is 25% filtered outside air and 75% recirculation
D: Correct, Correct Mode and alignment.

Learning Objective: Identify and Describe the causes of Interlocks, Permissives, and Automatic Functions associated with operations of the RMS Detectors/Monitors. (LP0289.06)

66. 2007 ILT RO 66
Why are PPCS SGBD constants changed when performing a 5% load swing IAW OP-2A, "Normal Power Operation" and how is this change accomplished?

A. To make **ACTUAL** RTO read higher than **CALCULATED** RTO during a power transient, SGBD constants are manually raised during the power change.

B. To make **ACTUAL** RTO read higher than **CALCULATED** RTO during a power transient, SGBD constants are manually reduced during the power change.

C. To make **CALCULATED** RTO read higher than **ACTUAL** RTO during a power transient, SGBD constants are manually raised during the power change.

D. To make **CALCULATED** RTO read higher than **ACTUAL** RTO during a power transient, SGBD constants are manually reduced during the power change.

Answer: D
New

K/A # and IR: 2.1.19 (3.0)

K/A Statement: Ability to use plant computer to obtain and evaluate parametric information on system or component status.

References:
OP-2A, Normal Power Operation
0-TS-RE-001, Power Level Determination

Explanation:
A: Incorrect, See D below.
B: Incorrect, See D below.
C: Incorrect, See D below.
D: Correct, SGBD constants are manually REDUCED, thus the calculated RTO value is higher than actual Thermal output. SGBD values are entered by the operator and subtracted (automatically) by the computer to give a displayed value of RTO. If a smaller than actual SGBD number is entered, then displayed RTO will be larger than actual heat output of the cycle. Thus, the displayed number will be more conservative than actual.

Learning Objective: Describe the procedures which govern Normal Operations. (LP0258.01)

67. 2007 ILT RO 67
Consider the following Unit 1 conditions:

- Unit 1 was at 26% power and increasing IAW OP-1C, "Startup to Power Operation".
- A loss of Feedwater results in a Reactor Trip.
- Both S/G NR levels are at 0%.
- It is now 30 seconds later.

What is the expected response of the ATWS Mitigation System Actuation Circuitry (AMSAC) and why?

A. AMSAC will NOT actuate because it was not armed.

B. AMSAC will NOT actuate because the time delay is not satisfied.

C. AMSAC will TRIP the Main Turbine and START the AFW pumps.

D. AMSAC will START the AFW pumps, and close the SG blowdown sample valves.

Answer: A
Bank: From INPO Exam Bank, Robinson, 9/04, 28113

K/A # and IR: 2.1.28 (3.2)

K/A Statement: Knowledge of the purpose and function of major system components and controls.

References:
Logic Drawing Sh. 23, LOFWTT
STPT 15.1, Turbine Trips, Alarms and AMSAC

Explanation:
A: Correct, AMSAC does not arm until 30%.
B: Incorrect, if AMSAC were armed, the TD would also not be met.
C: Incorrect, if AMSAC were actuated, this would be correct.
D: Incorrect, Blowdown sample valves do not close on AMSAC

Learning Objective: Using a LOFWTT diagram, Demonstrate which combinations of inputs will result in LOFWT actuation.
(LP1828.02)

68. 2007 ILT RO 68
Which of the following is the RCS Pressure Safety Limit?

A. 2485 PSIA

B. 2485 PSIG

C. 2735 PSIA

D. 2735 PSIG

Answer: D
Bank: From INPO Exam Bank, Byron, 10/01, 20142

K/A # and IR: 2.2.22 (3.4)

K/A Statement: Knowledge of limiting conditions for operations and safety limits.

References:
SL 2.1.2, Safety Limits

Explanation:
A: Incorrect, Safety lift setpoint (but PSIA)
B: Incorrect, Safety lift setpoint
C: Incorrect, Pressure SL (but PSIA)
D: Correct, Pressure SL

Learning Objective: State the following concerning Technical Specification Safety Limits/Settings:
b. Parameters which must be monitored to ensure compliance.
(LP3337.01.b)

69. 2007 ILT RO 69
Consider the following Unit 1 conditions:

- A Unit 1 Core reload is in progress per RP-1C, "Refueling."
- You are the Refueling Unit Control Board Operator.

Which of the following conditions would require the refueling operation to cease?

A. RCS boron concentration has lowered from 2330 to 2275 PPM.

B. RHR Heat Exchanger inlet temperature has risen from 90ºF to 110ºF.

C. Source Range channel N-31 indicates a rise above the baseline count rate by a factor of 3.5.

D. Source Range channels N-32 AND N-40 indicate a rise above the baseline count rate by a factor of 1.5.

Answer: C
Bank: From INPO Exam Bank, PBNP, 2/02

K/A # and IR: 2.2.30 (3.5)

K/A Statement: Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations and supporting instrumentation.

References:
RP-1C, Refueling

Explanation:
A: Incorrect, boron concentration change of 100 PPM requires suspension of refueling operations (RP-1C, Precaution and Limitation 3.2.13.a)
B: Incorrect, Inlet temp rise should be investigated but does not require suspension of refueling.
C: Correct, one channel rising by a factor of three or more requires suspension of refueling.
D: Incorrect, two channels rising by a factor of TWO or more requires suspension.

Learning Objective: Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations and supporting instrumentation.
(SD86.2.30)

70. 2007 ILT RO 70

Using table above, calculate amount of dilution necessary to maintain power and RCS $T_{avg}$ constant while inserting Control Bank 'D' Rods from 210 to 195 steps. Assume power remains constant at 100%.

A. 460 Gallons

B. 561 Gallons

C. 662 Gallons

D. 762 Gallons

Answer: B
New

K/A # and IR: 2.2.34 (2.8)

K/A Statement: Knowledge of the process for determining the internal and external effects on core reactivity.

References:
ROD 1.3, U1C30, Rev. 6. Table 3.

Explanation:
A: Incorrect, this number would be found if the > 200 step DRW (-3.11) was used for all 15 steps of rod motion.
B: Correct, [10 steps x -3.11 pcm/step] + [5 steps x -5.15 pcm/step] = -56.85 pcm change. -56.85 pcm / -6.78 pcm/ppm DBW = 8.38 ppm Boron Concentration change. 8.38 PPM x 66.92 gallons / ppm = 561.1 gallons of dilution.
C: Incorrect, this number would be found if the examinee used 5 steps times -3.11 and 10 steps times -5.15.
D: Incorrect, this number would be found if the < 200 step DRW (-5.15) was used for all 15 steps of rod motion.

Learning Objective: Given specific Core Burnup and RCS Temperature conditions, Determine the appropriate boron concentration IAW the Reactor Operating Data Book and Calculate the amount of boric acid required to obtain this concentration. (LP2185.05)

71. 2007 ILT RO 71
A plant worker has received 1800 mrem TEDE dose for the current year. This worker has been assigned to work in a 250 mrem/hr radiation field.

How long will it take this worker to reach the 10CFR20 and Site administrative whole body dose limits (Assume NO Dose Extensions have been authorized)?

| | 10CFR20 | Site Admin |
|---|---|---|
| A. | 8.8 Hrs | 0.8 Hrs |
| B. | 8.8 Hrs | 4.8 Hrs |
| C. | 12.8 Hrs | 0.8 Hrs |
| D. | 12.8 Hrs | 4.8 Hrs |

Answer: C
New

K/A # and IR: 2.3.1 (2.6)

K/A Statement: Knowledge of 10CFR20 and related facility radiation control requirements.

References:
NP 4.2.14, Administrative Dose Levels/Dose Level Extension Procedure

Explanation:
A: Incorrect, see C below
B: Incorrect, see C below
C: Correct, the 10CFR20 Whole Body Limit is 5000 mrem/yr. The site admin limit with NO extensions is 2000 mrem/yr. Thus, for a worker with 1800 mrem dose, the worker could receive 200 mrem to reach the admin limit; this dose would be received in .8 hours (200 mrem/250 mrem/hr). The federal limit would be reached in 12.8 hours (3200 mrem/250 mrem/hr).
D: Incorrect, see C above

Learning Objective: Knowledge of 10CFR20 and related facility radiation control requirements.
(SD86.3.1)

72. 2007 ILT RO 72
You are exiting the Radiation Control Area (RCA) after completing a plant tour.

- The PCM-1B Personnel Contamination Monitor alarms and indicates contamination on your left shoe.
- You exit the PCM-1B and perform a frisk using a hand held frisker.
- No contamination is detected during the frisk.

In this situation, which one of the following is the proper method for verifying you are not contaminated prior to exiting the RCA through the Portal Monitors?

A. Perform one additional PCM-1B recount; recount MUST be using the same PCM-1B which initially alarmed.

B. Perform one additional PCM-1B recount; recount may be done using any PCM-1B at the RCA exit.

C. Perform two additional PCM-1B recounts; at least ONE of the recounts MUST be using the same PCM-1B which initally alarmed.

D. Perform two additional PCM-1B recounts; recount may be done using any PCM-1B at the RCA exit.

Answer: D
Bank: From INPO Exam Bank, Point Beach, 2/02, 20659

K/A # and IR: 2.3.10 (2.9)

K/A Statement: Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

References:
HP 1.11.1, PCM Use and Alarm Response

Explanation:
A: Incorrect, HP 1.11.1, “PCM Use and Alarm Response”, step 4.4.2 requires TWO additional recounts.
B: Incorrect, HP 1.11.1, “PCM Use and Alarm Response”, step 4.4.2 requires TWO additional recounts.
C: Incorrect, no restriction on which PCM-1B may be used.
D: Correct, this is the direction of the HP procedure above.

Learning Objective: Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.
(SD86.3.10)

73. 2007 ILT RO 73
CSP-P.1, “Response to Imminent Pressurized Thermal Shock Condition” would be entered immediately upon encountering a Status Tree RED Condition for RCS INTEGRITY even if _____(1)_____ is currently being performed _____(2)_____ .

A. (1) step 8 of ECA-0.0, “Loss of All AC Power”
   (2) to “Check Diesel Status”

B. (1) step 1 of EOP-1.3, “Transfer to Containment Sump Recirculation – Low Head Injection”
   (2) to “Reset SI”

C. (1) step 11 of EOP-1, “Loss of Reactor or Secondary Coolant”
   (2) to “Verify Charging Flow”

D. (1) step 25 of CSP-H.1, “Response to Loss of Secondary Heat Sink”
   (2) to “Establish S/G Levels”

Answer: C
Bank: From INPO Exam Bank, Byron, 12/03, 26525

K/A # and IR: 2.4.8 (3.0)

K/A Statement: Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.

References:
OM 3.7, AOP and EOP Procedure Sets Use and Adherence

Explanation:
A: Incorrect, While performing ECA-0.0, CSP procedures are not implemented.
B: Incorrect, During the performance of the first 20 steps of EOP-1.3, CSP procedures are not implemented.
C: Correct, During the performance of EOP-1, CSP RED and ORANGE path procedures take precedence.
D: Incorrect, CSP-H.1 is a higher level RED path CSP and would continue to be implemented.

Learning Objective: Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.
(SD86.4.8)

74. 2007 ILT RO 74
AOP-10A, "Safe Shutdown - Local Control", is being performed and Control Operators are performing assigned attachments. During the performance of the attachments, the SI pumps for both units are disabled by the operators.

(1) Where must the operator go to find the respective SI pump breakers?
(2) What is the reason for disabling the SI pumps?
(VSGR is Vital Switchgear Room, CSR is Cable Spreading Room)

A. (1) Unit 1 Breakers in VSGR, Unit 2 Breakers in EDG Building
(2) Ensure SI pumps do not start and jeopardize RCS cooldown and depressurization efforts.

B. (1) 'A' Train Breakers in VSGR, 'B' Train Breakers in EDG Building
(2) Prevent SI pumps from starting, which could take RCS solid and make pressure control difficult.

C. (1) Unit 1 Breakers in CSR, Unit 2 Breakers in EDG Building
(2) Prevent dead head operation of SI pumps if an SI signal is received.

D. (1) 'A' Train Breakers in CSR, 'B' Train Breakers in EDG Building
(2) Ensure SI pumps are available if needed for RCS inventory control.

Answer: B
New

K/A # and IR: 2.4.34 (3.8)

K/A Statement: Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.

References:
AOP-10A, Safe Shutdown - Local Control Background
Master Data Book 3.2.1 1A05
Master Data Book 3.2.1 2A05
Master Data Book 3.2.2 1A06
Master Data Book 3.2.2 2A06

Explanation:
A: Incorrect, see B below.
B: Correct, each of the locations listed in the question choices contains breakers for various ECCS equipment. Vital Switchgear Room contains breakers for ‘A’ Train 4160 loads, such as the ‘A’ Train SI pumps. EDG building electrical equipment rooms contain breakers for ‘B’ Train SI pumps. VSGR contains breakers for RHR pumps and other ECCS pumps. SI pumps needs to be disabled to prevent taking SI solid and complicate pressure control.
C: Incorrect, see B above.
D: Incorrect, see B above.

Learning Objective: Given access to appropriate equipment, controls, or specific plant

conditions, Demonstrate the ability to perform the following evolutions IAWW applicable procedures:
a. Control equipment locally to maintain both Units in a safe shutdown condition. (LP1275.01.a)

75. 2007 ILT RO 75
Consider the following Unit 1 conditions:

- Power is stable at 92% power following a recent downpower.
- Rods are in AUTO.
- Dilution water has just been added to restore RCS Temperature.
- The following alarms are received in succession:
  - 1C04 1A 1-11, "Rod Insertion Limit Bank D Low"
  - 1C04 1A 2-11, "Rod Insertion Limit Bank D Low-Low"

- Control Rods are currently NOT moving.
- CBD Bank Step counters and IRPI indicators all read 173 Steps.

Using the provided reference, determine which alarms are valid, if any, and what actions should be taken.

A. Neither alarm is valid; investigate early receipt of alarms.

B. Both alarms are valid; commence boration or lower power until alarms clear.

C. Both alarms are valid, place rods to MANUAL and withdraw CBD until alarms clear.

D. Low Insertion Limit alarm is valid; Low-Low alarm is NOT valid. Commence boration or lower power until alarms clear and investigate early receipt of Low-Low alarm.

Answer: D
Bank: From INPO Exam Bank, Kewaunee, 2/06, 30419

K/A # and IR: 2.4.50 (3.3)

K/A Statement: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

References:
ARP 1C04 1A 2-11, Rod Insertion Limit Bank D Low-Low
ARP 1C04 1A 1-11, Rod Insertion Limit Bank D Low
STPT 6.1, Rod Insertion Limit Alarms
COLR (provided to examinee)

Explanation:
A: Incorrect, Low Insertion Limit alarm is valid. Rods are within 10 steps of the Limit, but not yet within 5 steps, which would bring in the Low-Low Alarm
B: Incorrect, Action to borate is correct, but Low-Low alarm should not yet be in.
C: Incorrect, Withdrawing rods to restore rod position without boration would change temperature. Additionally, Low-Low alarm should not be in.
D: Correct, Low Insertion alarm should be in; correct action is to borate and investigate early Low-Low alarm. From figure 3 of the COLR, Insertion limit is 165 steps. Power level was chosen to correspond to a horizontal graph line.

Learning Objective: Identify and Describe the controls, alarms, and indications associated with the Rod Control System. (LP1547.06)

76. 2007 ILT SRO 1
2007 NRC BANK

Consider the following Unit 1 conditions:

- Power has stabilized at 60% power following a turbine runback.
- During the runback, 1RC-430, Pressurizer PORV, opened then reclosed following the runback.
- With the PORV closed, leakage past the PORV has been determined to be 9 GPM.
- PORV is capable of being manually cycled.
- 1RC-516, Block Valve for 1RC-430 is currently open.
- The previous performance of RCS Leak Rate Determination (from the previous shift) recorded an identified leak to the RCDT of 2.2 GPM and S/G tube leakage of 0.015 GPM.

Which of the following describes a complete list of required actions for this condition?

A. The PORV Block valve must be shut with power removed within **ONE** hour.

B. The PORV Block valve must be shut with power maintained within **ONE** hour.

C. The PORV Block valve must be verified open with power maintained within **ONE** hour.

D. The PORV Block valve must be shut with power removed and the PORV placed in MANUAL shut within **ONE** hour.

Answer: B
Bank: From INPO Bank, 19404, Kewaunee, 12/00

K/A # and IR: 008.2.1.33 (4.0)

KA Statement: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications (PZR Vapor Space Accident)

References:
TS 3.4.11, Pressurizer PORVs and Bases
TS 3.4.13, RCS Leakage

Explanation:
A: Incorrect, power must be maintained, to allow opening the Block.
B:Correct, IAW TS 3.4.11 for PORV and Block valves, TSAC 3.4.11.A has the block closed within one hour with power maintained.
C: Incorrect, these are plausible actions to allow PORV to remain available for pressure relief.
D: Incorrect, these are plausible actions based on actions to take if PORV is not capable of being manually cycled or if block valve is inoperable.

Learning Objective: Identify and Discuss the Technical Specifications associated with the following Reactor Coolant System components:
g. PORVs

(LP3339.01)

10CFR55.43 Statement met: (2) Facility operating limitations in the technical specifications and their bases.

77. 2007 ILT SRO 2
Consider the following Unit 1 conditions:

Unit 1 has sustained a complete loss of Main and Auxiliary Feedwater and CSP-C.1, "Inadequate Core Cooling", is now being performed.

The following conditions exist:

- Containment Pressure – 6 PSIG
- 'A' SG level – 32%
- 'B' SG level – 54%
- 'B' RCP Thermal Barrier is isolated.
- Core Exit Thermocouples (CETs) – 1205ºF and stable
- Both RCPs are stopped.
- All feed has been lost to both SGs.

Using the provided reference, which RCP(s) will the SRO direct to be started prior to proceeding to the next step? (Assume CETs do not change during performance of the step.)

A. Neither RCP

B. **ONLY** 'A' RCP

C. **ONLY** 'B' RCP

D. Both RCPs

Answer: C
New

K/A # and IR: 015.AA2.11 (3.8)

KA Statement: Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to jog RCPs during ICC (Inadequate Core Cooling)

References:
CSP-C.1, Inadequate Core Cooling and Background
CSP-C.1, step 27 provided to examinee.

Explanation:
A: Incorrect, 'B' Loop is available, since 'B' SG has sufficient level to support RCP starting.
B: Incorrect, 'A' Loop is not available due to low SG level for given containment conditions. A recent change to the requirements for Adverse Containment lowered this number from 10# to 5#. Thus, 'A' loop would have formerly been available. The 'B' thermal barrier is isolated, which could lead the examinee to erroneously conclude that 'B' RCP is not available to start.
C: Correct, 'B' RCP is available as explained above and 'B' SG has sufficient inventory to allow the pump to be started.

D: Incorrect, this answer would be correct except for the recently changed Adverse Containment value.

Learning Objective: Implement the CSPs to respond to plant conditions where the Core Cooling Status Tree is not satisfied.
(LP1997.010)

SRO Justification: The evaluation of EOP (CSP) steps and direction of equipment starting during their performance is an SRO function at PBNP.

78. 2007 ILT SRO 3
Consider the following Unit 1 conditions:

- Unit 1 was at 100% power.
- Both PZR Spray valves failed open.
- During the resulting pressure transient, the reactor failed to trip automatically or manually.
- Some time later, the PZR Spray valves went shut.
- The following data was recorded during the transient and is now being evaluated to determine if Core Safety Limits were violated.

Using reference provided, determine whether or not the Core Safety Limits (SL 2.1.1) were violated at Time 1 and/or Time 2.

A. Neither Time

B. Time 1 ONLY

C. Time 2 ONLY

D. Both Times 1 and 2

Answer: B
New

K/A # and IR: 027.2.2.22 (4.1)

KA Statement: Knowledge of limiting conditions for operations and safety limits (Pressurizer Pressure Control System Malfunction)

References:
TS 2.1.1, DNB Safety Limit
COLR Figure 1 (Provided)

Explanation:
A: Incorrect, SL was violated at time 1
B: Correct, Using figure 1 from the COLR, the 1775 line will be used when evaluating Time 1, since pressure was 1760 PSIG. When the power level and average temperature ((650+580)/2 = 615ºF) are plotted, the SL was violated. (Above and right of the 1775 line.
C: Incorrect, Using the 2425 PSIA line and plotting a power level of 30% and an average temperature of 650ºF, the SL was not violated at Time 2.
D: Incorrect, as noted in above discussion.

Learning Objective: State the following concerning Technical Specifications Safety Limits/Settings:
b. Parameters which must be monitored to ensure compliance
(LP3337.01)

10CFR55.43 Statement met: (2) Facility operating limitations in the technical specifications and their bases.

79. 2007 ILT SRO 4
Consider the following Unit 1 conditions:

- Unit 1 has sustained a steam line break inside containment on 'A' S/G.
- The 'A' Steam Line Non-Return valve and 'B' MSIV were reported to be stuck open.
- The crew is currently performing ECA-2.1, "Uncontrolled Depressurization Of Both Steam Generators".
- The crew has throttled AFW flow to 50 GPM to each SG to minimize the RCS cooldown.
- Safety Injection has **NOT** been terminated.
- RMS data is normal.

- The following conditions exist:

| **SG** | **Level** | **Pressure** |
|---|---|---|
| SG 'A' | 19% slowly lowering | 320 psig slowly lowering |
| SG 'B' | 31% slowly rising | 380 psig slowly rising |

Which of the following describes the required action and the reason for this action?

A. Continue with ECA-2.1, because Safety Injection termination is not complete.

B. Transition to EOP-2, "Faulted Steam Generator Isolation", because there is now an intact SG available.

C. Transition to EOP-3, "Steam Generator Tube Rupture", because there are indications of a tube rupture.

D. Transition to and complete CSP-H.1, "Loss Of Secondary Heat Sink", because there is a RED path condition on the Heat Sink Status Tree.

Answer: B
Bank: From INPO Bank, Beaver Valley, 12/02, 25026

K/A # and IR: W/E12.EA2.01 (4.0)

KA Statement: Ability to determine and interpret the following as they apply to the Uncontrolled Depressurization of all Steam Generators: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

References:
ECA-2.1, Uncontrolled Depressurization of Both SGs and Background
CSP-H.1, Loss of Secondary Heat Sink

Explanation:
A: Incorrect, It is plausible to remain in procedure in effect until completion, but ECA-2.1 Fold Out Page directs entry into EOP-2 upon rising pressure in a SG.
B: Correct, 'B' SG is now considered intact since pressure is now rising and EOP-2 should be entered.
C: Incorrect, Transition to EOP-3 would be inappropriate since a level rise would the expected result of ECA-2.1 actions to close the stuck open MSIV.

D: Incorrect, while the CSFST Red Path conditions for Heat Sink are met, AFW flow has been lowered under operator control and CSP-H.1 need not be performed per direction in the CSP.

Learning Objective: Given appropriate conditions/parameters or access to the Site Specific Simulator, Implement the following procedures for the specified conditions:
d. ECA-2.1 to respond to both Steam Generators being faulted.
(LP0465.008.d)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

80. 2007 ILT SRO 5
Consider the following plant conditions:

- Unit 1 is at 100% power.
- An instrument air leak has been identified in Unit 1 Turbine Hall.
- AOP-5B, "Loss of Instrument Air", has been entered.
- Instrument Air Header pressure has stabilized at 80 PSIG.
- C01 reports that Unit 1 'A' and 'B' SG levels are 42% and lowering slowly.
- Both MSIVs are open.

What actions should the OS1 direct? (EOP-0 is "Reactor Trip or Safety Injection".)

A. Continue to implement AOP-5B; if Unit 1 trips, implement EOP-0.

B. Trip Unit 1; discontinue AOP-5B actions until transition out of EOP-0.

C. Trip Unit 1; discontinue AOP-5B actions until EOP procedures are exited.

D. Trip Unit 1; perform AOP-5B in parallel after EOP-0 Immediate Actions are complete and verified.

Answer: D
Modified from IP2, 3/03, 23295

K/A # and IR: 065.2.4.49 (4.0)

KA Statement: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. (Loss of Instrument Air)

References:
AOP-5B, Loss of Instrument Air and Background
OM 3.7, AOP and EOP Procedure Sets Use and Adherence

Explanation:
A: Incorrect, SG levels are lowering due to a loss of Instrument Air which indicates the need for a reactor trip.
B: Incorrect, AOP-5B actions need to be performed in parallel as directed in AOP-5B. Recovery without sufficient IA is not preferred. This distractor is plausible as most AOPs are exited when the reactor is tripped. Additionally, CSFSTs are frequently implemented when the transition from EOP-0 is made.
C: Incorrect, AOP-5B should not be ignored until EOP set completion, as noted above.
D: Correct, per the guidance of AOP-5B, actions of the AOP are continued following the reactor trip and stabilization of the unit, which is defined as completion of Immediate Action steps of EOP-0.

Learning Objective: Given access to the Site Specific Simulator or specific plant conditions, Apply the appropriate guidance provided in the applicable AOPs for various system/component malfunctions. (LP2439.05)
10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

81. 2007 ILT SRO 6
Consider the following Unit 1 conditions:

- Unit developed an unisolable LOCA in the PAB.
- Unit was tripped one hour ago, 1A05 locked out upon trip.
- Procedure flowpath thus far has been EOP-0, "Reactor Trip or Safety Injection", to ECA-1.2, "LOCA Outside Containment", to ECA-1.1, "Loss of Containment Sump Recirculation".
- Crew is currently implementing ECA-1.1, Step 22 to “Check if SI Should be Terminated”.
- Following Plant Conditions now exist:

    - CETs – 530ºF and stable
    - RCS pressure – 1435 PSIG and stable
    - 1A05 is locked out.
    - CTMT pressure and radiation levels are normal.
    - RCPs are OFF.
    - Reactor Vessel level – 44 ft. and stable
    - RWST level – 85% and lowering slowly

Using the provided reference, what action(s) should be taken based on plant conditions?

A. Proceed to step 23 to secure SI pumps.

B. Establish required injection flow using the charging system.

C. Establish 225 GPM using an SI pump and secure remaining ECCS pump(s).

D. Establish 525 GPM using an SI pump and associated RHR pump.

Answer: C
New

K/A # and IR: W/E11.EA2.02 (4.2)

KA Statement: Ability to determine and interpret the following as they apply to the Loss of Emergency Coolant Recirculation: Adherence to appropriate procedures and operations within the limitations in the facility's license and amendments.

References:
ECA-1.1, Loss of Containment Sump Recirculation pages 13 and 14 and Figure 1
Steam Tables
(listed references provided to examinee)

Explanation:
A: Incorrect. Examinee must first determine subcooling using Steam Tables. If subcooling is improperly determined to be greater than 85ºF, then "A" would be correct.
B: Incorrect. This would be correct, but this is not possible since A and B Charging Pumps do not have power. Thus, when minimum required flow is determined (120 GPM) from Figure 1, the examinee must realize charging will be inadequate to provide this much flow.

C: Correct. Given the amount of minimum required flow and the procedure flowpath taken thus far, the examinee must realize the SI suction is from the RWST and that 225 GPM is the proper flow.
D: Incorrect. If SI was from RHR, this would be correct.
(note that for choices C and D, the specific trains of ECCS components are not mentioned to prevent giving assistance in eliminating distractor A)

Learning Objective: Given appropriate conditions/parameters or access to the Site Specific Simulator, Implement the following procedures for the specified conditions:
a. ECA-1.1 to respond to a loss of Containment Sump Recirculation.
(LP0465.008.a)

SRO Justification: Reading figures and determining procedure flowpath is a duty assigned to the SRO.

82. 2007 ILT SRO 7
Consider the following Unit 2 conditions:

- Unit is near EOL and power is being held at 90%.
- Rods are in AUTO with Control Band 'D' (CBD) at 200 steps.
- CBD begins to step out with no mismatch signal.
- Rods are taken to MANUAL and rod motion ceases.
- The following conditions now exist:

  - CBD Bank Demand position is now 222 Steps.
  - Bank D IRPIs indicate as follows:
    - Rod G3 – 206 Steps
    - Rod C7 – 222 Steps
    - Rod G11 – 210 Steps
    - Rod K7 – 222 Steps
  - Margin to $F^N_{delta\ H}$ is 0.98%.
  - Margin to $F_Q(Z)$ is 1.33%.
  - Reactor Engineering has determined that all CBD rods are free to move.
  - Sufficient time has passed to allow evaluation of rod positions.

Using the provided reference, which of the following Technical Specification Action Condition(s) (TSAC) should be entered?

A. 3.1.4.A Only

B. 3.1.4.B Only

C. 3.1.4.A and 3.1.4.B Only

D. 3.1.4.B and 3.1.4.D Only

Answer: B
New

K/A # and IR: 001.2.1.33 (4.0)

KA Statement: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (Continuous Rod Withdrawal)

References:
TS 3.1.4, Rod Group Alignment Limits (provided to examinee)
TS 3.1.4, Rod Group Alignment Limits Bases

Explanation:
A: Incorrect, rods are free to move, as stated in the stem, thus they are all operable.
B: Correct, Using FNH and FQZ numbers compared to Table 3.1.4-2, rods which are $\leq$ 13 steps misaligned meet alignment requirements. G3 is 16 steps off and G11 is 12 steps off. Thus G3 is the only misaligned rod and 3.1.4.B is the only applicable TSAC.
C: Incorrect, rods are free to move and are operable.

D: Incorrect, if both G3 and G11 were unacceptably misaligned, this would be correct.

Learning Objective: Identify and Discuss the Technical Specifications associated with the following Reactivity Control Systems:
d. Rod Group Alignment Limits
(LP3338.01)

10CFR55.43 Statement met: (2) Facility operating limitations in the technical specifications and their bases and (6) ... determination of various internal and external effects on core reactivity.

83. 2007 ILT SRO 8
After commencing a discharge of T-10A, 'A' Monitor Tank, RE-218, Waste Disposal System Liquid Monitor, goes into ALERT due to high radiation.

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

A. WL-18, Waste Liquid Overboard valve will automatically close. The OS will direct the PAB AO to secure the discharge lineup; the chemistry department will sample the 'A' MT and issue a new discharge permit if tank levels allow for release.

B. WL-18, Waste Liquid Overboard valve will automatically close. The OS will direct the PAB AO to isolate RE-218 and purge Rad Monitor for 5 minutes. If the alarm clears during the purge, direct the AO to continue the discharge. Otherwise, direct chemistry to resample the tank and continue the discharge after RE-218 ALERT 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 'A' MT 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 WL-18, Waste Liquid Overboard; direct chemistry to resample the tank and continue the discharge after adjusting RE-218 ALERT setpoint.

Answer: ~~A~~ C [Correct Answer changed from "A" to "C" based on Post-Examination comment]
Bank: From INPO Bank, Millstone, 7/04, 27129

K/A # and IR: 059.AA2.05 (3.9)

KA Statement: Ability to determine and interpret the following as they apply to the Accidental Liquid Radwaste Release: The occurrence of automatic safety actions as a result of a high PRM system signal.

References:
OI-140C, Standard Batch Release - Monitor Tanks
RAM 3.1.1, Restarting a Liquid Batch Release
RMSARB RE-218, Alarm Response for Waste Disposal System Liquid Monitor

Explanation:
A: Incorrect, the valve automatically closes on HIGH alarm, not alert. Remaining actions are correct. ~~Correct, valve automatically closes and the lineup is secured IAW OI-140. 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.~~ [Correct Answer changed from "A" to "C" based on Post-Examination comment]
B: Incorrect, WL-18 will not close. Also, there is no allowance for purging the radiation monitor to clear a high alarm.
C. Correct, WL-18 does not automatically shut. Discharge lineup is secured IAW OI-140. 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.remaining actions are correct.
Incorrect, WL-18 will not close. Also, there is no allowance for purging the radiation monitor to clear a high alarm. ~~Incorrect, WL-18 automatically shuts, remaining actions are correct.~~ [Correct Answer changed from “A” to “C” based on Post-Examination comment]
D: Incorrect, WL-18 does not automatically shut, remaining actions plausible since performance of these actions would allow for the continued release of the tank. A new discharge permit will be required.

Learning Objective: Describe the procedures which govern operations of the Liquid Waste Disposal System. (051.04.LP0063.04)
Identify and describe the causes of interlocks, permissives and automatic functions associated with operation of the RMS detectors, monitors and field units. (053.05.LP0286.02)

10CFR55.43 Statement met: (4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

84. 2007 ILT SRO 9

According to Technical Specification Bases, which of the following represents the **MINIMUM** equipment required to operate properly to ensure Containment design pressure and temperature limits are not exceeded during a Design Basis LOCA?

A. 2 Containment Spray pumps with 2 Accident fans

B. 2 Containment Spray pumps with 1 Accident fan

C. 1 Containment Spray pump with 2 Accident fans

D. 1 Containment Spray pump with 1 Accident fan

Answer: C
Modified from IP3, 12/03, 26722

K/A # and IR: 069.2.2.25 (3.7)

KA Statement: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits (Loss of CTMT Integrity)

References:
TS 3.6.6 Bases, Containment Spray and Cooling Systems

Explanation:
A: Incorrect, 1 Spray Pump and 2 Accident Fans are required per TS 3.6.6B
B: Incorrect, 1 Spray Pump and 2 Accident Fans are required per TS 3.6.6B
C: Correct
D: Incorrect, 1 Spray Pump and 2 Accident Fans are required per TS 3.6.6B

Learning Objective: Identify and Discuss the Technical Specifications associated with the following Containment components:
f. Containment Spray and Cooling Systems
(LP3342.01.f)

10CFR55.43 Statement met: (2) Facility operating limitations in the technical specifications and their bases.

85. 2007 ILT SRO 10
The following Unit 2 conditions exist:

-A Loss of Off Site power has occurred due to a seismic event.
-Diesel Generators have started and are supplying electrical power.
-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.
-RVLIS is available.

Which of the following describes the correct procedure flowpath?

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

B. Transition to EOP-0.2, "Natural Circulation Cooldown", and complete cool down 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.

Answer: D
Bank: From INPO Bank, Summer, 9/02, 24420

K/A # and IR: W/E09.EA2.01 (3.8)

KA Statement: Ability to determine and interpret the following as they apply to the Natural Circulation Operations: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

References:
EOP-0.3, Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS) Background
EOP-0.1, Reactor Trip Response
EOP-0.2, Natural Circulation Cooldown and Background

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-0.2
D: Correct, sequence is to perform EOP-0.2 steps then transition to EOP-0.3 for most rapid cooldown.

Learning Objective: Given access to the Site Specific Simulator, Implement the following procedures:

a. EOP-0.2 to cooldown the plant on natural circulation
b. EOP-0.3 to cooldown the RCS when voids are present in the upper head with RVLIS (LP0407.03)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

86. 2007 ILT SRO 11
Consider the following Unit 1 conditions:

- Reactor has tripped from 100% power.
- C01 is performing Immediate Actions of EOP-0, "Reactor Trip or Safety Injection" and is addressing step 4.
- C01 reports the following conditions:

  - None of the SI annunciators are LIT
  - PZR Pressure - 1825 PSIG and stable
  - Containment Pressure - 1 PSIG and stable
  - A and B Steam Line Pressures - 800 PSIG and stable
  - PZR level - 11% and rising slowly
  - RCS subcooling - 27ºF and stable

Which of the following indicates the appropriate response to the listed conditions?

A. Direct STA to monitor Status Trees and proceed to EOP-0.1, "Reactor Trip Response".

B. Direct C01 to manually initiate SI and Containment Isolation and continue to next step of EOP-0.

C. Direct C01 to manually initiate SI and Containment Isolation and transition to EOP-1, "Loss of Reactor or Secondary Coolant".

D. Direct C01 to trip both RCPs and continue to next step in EOP-0.

Answer: B
New

K/A # and IR: 013.2.4.49 (4.0)

KA Statement: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls (ESFAS)

References:
EOP-0, Reactor Trip or Safety Injection

Explanation:
A: Incorrect, subcooling is low and SI and CI are needed.
B: Correct, SI initiation criteria are met for subcooling.
C: Incorrect, Transition to EOP-1 will not be made for several more steps.
D: Incorrect, based on subcooling, part of RCP trip criteria is met, but the SI pumps are not yet running and this is not part of Immediate Actions of EOP-0. RCPs will be stopped given these conditions when Fold Out Page is reached.

Learning Objective: Recognize the existence of or the need for an SI Actuation (LP0405.07)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

87. 2007 ILT SRO 12
Consider the following Unit 1 conditions:

- A Large Break LOCA has occurred.
- RWST level is 5%.
- 'A' RHR train is in service.
- 'A' Containment Spray train is in service, receiving water from 'A' RHR Train.
- Containment pressure is 20 PSIG and lowering slowly.
- Containment Sump 'B' level is 60".
- Recirc Sump performance is being monitored IAW EOP-1, "Loss of Reactor or Secondary Coolant", Step 29 and flow has been stable for 30 minutes.
- 'A' Containment Spray and RHR pumps flow and discharge pressures begin to oscillate.

What is occurring and what action should be taken?

A. Lowering Containment pressure is causing flashing in 'A' Containment Spray and RHR pump suction lines, secure 'A' Containment Spray pump and monitor 'A' RHR pump for continued oscillation.

B. Sump 'B' strainers are beginning to clog, transition to ECA-1.3, "Containment Sump Blockage" to secure pumps and/or reduce recirculation flow as needed.

C. Pumps are cavitating due insufficient sump water level, transition to ECA-1.2, "LOCA Outside Containment" to provide makeup water for recirc.

D. Boiling is occurring in the RHR heat exchangers, transition to ECA-1.1, "Loss of Containment Sump Recirculation" to align more CCW flow to 'A' RHR HX.

Answer: B
New

K/A # and IR: 026.A2.07 (3.9)

KA Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of containment spray pump suction when in recirculation mode, possibly caused by clogged sump screen, pump inlet high temperature (exceeded cavitation, voiding), or sump level below cutoff (interlock) limit

References:
EOP-1, Loss of Reactor or Secondary Coolant and Background

Explanation:
A: Incorrect, 'A' spray train is in service which is lowering CTMT pressure, but line flashing would not be occurring due to the addition of 250,000+ gallons of cold RWST water.
B: Correct, with pressures oscillating, sump blockage is indicated and ECA-1.3 needs to be entered to address the problem.

C: Incorrect, there is adequate water in the sump (5') to maintain suction to running pumps.
D: Incorrect, since containment has been on recirc for 30 minutes, the CCW alignment is not inadequate. Additionally, ECA-1.1 does not address loss of CCW flow and AOP-9B would need to be utilized to address a CCW malfunction.

Learning Objective:
State the entry conditions and identify the major actions for the following Emergency Contingency Procedures:
c. ECA-1.3 to respond to containment sump blockage.
(LP0465.01)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

88. 2007 ILT SRO 13
Consider the following Unit 1 conditions:

- Unit 1 is at 80% power.
- P-28A, 'A' Main Feed pump has developed a significant bearing noise.
- Unit 1 has entered AOP-17A, "Rapid Power Reduction".

Who is to be notified **FIRST** IAW AOP-17A when lowering power on Unit 1?

A. Plant Manager

B. NRC Resident Inspector

C. Duty and Call Supervisor

D. Power System Supervisor

Answer: D
New

K/A # and IR: 059.2.4.30 (3.6)

KA Statement: Knowledge of which events related to system operations/status should be reported to outside agencies (Main Feedwater)

References:
AOP-17A, Rapid Power Reduction

Explanation:
A: Incorrect, PM should be notified, but is not required to be notified prior to lowering power.
B: Incorrect, Same as A
C: Incorrect, Same as A
D: Correct, AOP-17A requires notification of PSS when maneuvering the unit.

Learning Objective: Given access to the Site Specific Simulator or specific plant conditions, Apply the appropriate guidance provided in the applicable AOPs for various system/component malfunctions.
(LP2439.05)

SRO Justification: Offsite reporting is strictly an SRO function at PBNP

89. 2007 ILT SRO 14
Consider the following Unit 1 conditions:

- 1P-29, TDAFW pump is tagged out for maintenance.
- 'B' SG has faulted inside containment and has been isolated IAW EOP-2, "Faulted SG Isolation".
- 'B' SG has been determined to be dry.
- Containment Pressure is 14 PSIG and lowering slowly.
- 'A' SG level is 45% and rising slowly.
- P-38A, Train 'A' AFW pump is providing 220 GPM to 'A' SG.
- Control Room is performing EOP-1, "Loss of Reactor or Secondary Coolant".
- Control Air signal to AF-4012, P-38A Discharge Pressure Control valve is lost due to an I/P controller failure. (0 PSIG air signal to AF-4012)

What is the expected result of this failure and what actions are expected to be taken?

A. P-38A will trip on overcurrent. Transition to CSP-H.1, "Loss of Heat Sink", will be made to address loss of Heat Sink.

B. AF-4007, P-38A recirc valve will open fully but flow to 'A' SG will be lost. Transition to CSP-H.1, "Loss of Heat Sink", will be made to restore flow to SG.

C. Flow to 'A' SG will rise slightly. Continue in EOP-1 and dispatch AO to AFW room to control flow to 'A' SG.

D. Flow to 'A' SG will not change. Continue in EOP-1 and throttle AF-4023, P-38A to Unit 1 'A' SG if flow changes are needed.

Answer: A
New

K/A # and IR: 061.A2.07 (3.5)

KA Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Air or MOV failure

References:
M-217, Sh. 1, AFW Drawing
CSP-ST.0, CSF Status Trees
EOP-0, Reactor Trip or Safety Injection and Background

Explanation:
A: Correct, if air is lost to AF-4012, the valve fails full open to deliver water to the SG. This in turn will cause the pump to trip on overcurrent and necessitate an entry into CSP-H.1.
B: Incorrect, this is what would happen if AF-4012 failed full shut.
C: Incorrect, this is what would happen if AF-4012 failed to a gagged position, which is a plausible condition since other valves at the plant, such as CC-130, CCW to NRHX, fail

to a gagged position to prevent losing safety function.
D: Incorrect, this is what would happen if AF-4012 failed as-is, which is a plausible fail position since other AFW valves, such as the TDAFW pump outlets, fail as-is.

Learning Objective: Analyze the effects of component malfunctions on operation of the Auxiliary Feedwater System.
(LP0169.06)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

90. 2007 ILT SRO 15
Consider the following Unit 2 conditions:

- The following annunciators have been received:
  - C02F 1-5, “Unit 2 4.16 kV Bus Main or Tie Breaker Trip”
  - C02F 1-4, “Unit 2 4.16 kV Bus Under Voltage”
  - C02F 3-4, “4.16 kV Bus Lockout”
  - C02F 2-7, “Unit 2 480V Bus Under Voltage”
- G-03 and G-04 are both running unloaded.

Which procedures will be used to address this situation and what is their **PRIORITY**?

(AOP-18 is “Electrical System Malfunction”,
AOP-18A Unit 2 is “Train ‘A’ Equipment Operation”,
AOP-18B Unit 2 is “Train ‘B’ Equipment Operation”,
AOP-19A Unit 2 is “Train ‘A’ Safeguards Bus Restoration”,
AOP-19B Unit 2 is “Train ‘B’ Safeguards Bus Restoration”.)

A. AOP-18 is completed as the top priority.
   AOP-19A Unit 2 is next priority.

B. AOP-19B Unit 2 is completed as the top priority.
   AOP-18 is next priority.

C. AOP-18A Unit 2 is completed as the top priority.
   AOP-19B Unit 2 is next priority.

D. AOP-19B Unit 2 is completed as the top priority.
   AOP-18A Unit 2 is next priority.

Answer: C
New

K/A # and IR: 062.2.4.4 (4.3)

KA Statement: Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. (AC Electrical Distribution)

References:
AOP-18A, Train 'A' Equipment Operation
AOP-19B, Train 'B' Safeguards Bus Restoration and Background

Explanation:
A: Incorrect, given the conditions in the stem, 2A-06 is locked out. AOP-18 addresses non-vital low voltage conditions or X04 lockout. Thus, AOP-18 is not the proper procedure to enter.
B: Incorrect, AOP-19B will be used to restore power to the 'B' train buses, but 'A' train alignment is checked first.
C: Correct, AOP-18A is the first priority. If AOP-19B is entered first, the first step has the

operator check that the plant is stable using AOP-18A, then carry out actions in AOP-19B to restore 2A-06.
D: Incorrect, priorities are reversed.

Learning Objective: Given appropriate system/equipment conditions and indications, Diagnose malfunctions associated with the following systems:
b. Emergency Diesel Generators
(LP2440.02)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

91. 2007 ILT SRO 16
Consider the following Unit 2 conditions:

- A LOCA has occurred inside containment. All systems responded as required.
- The staff is presently at step 21 of EOP-1 "Loss of Reactor or Secondary Coolant" to "Check if RCS Cooldown and Depressurization is required."
- The following Unit 2 conditions now exist:

  - SI flow - 400 GPM and stable
  - RCS pressure - 1380 PSIG and stable
  - CETs - 500ºF and stable
  - Containment pressure - 3 PSIG and lowering
  - SG levels - both 60% and stable
  - SG pressures - both 675 PSIG and stable
  - Electrical bus alignment normal for unit post-trip conditions.
  - RWST level - 88% and decreasing slowly
  - RCPs have been stopped.

Based on these conditions, which procedure will be transitioned to from EOP-1?

A. EOP-0.2, "Natural Circulation Cooldown"

B. EOP-1.1, "SI Termination"

C. EOP-1.2, "Small Break LOCA Cooldown and Depressurization"

D. EOP-1.3, "Transfer to Containment Sump Recirculation - Low Head Injection"

Answer: C
Bank: From INPO Bank, Ginna, 4/04, 27340

K/A # and IR: 002.2.4.6 (4.0)

KA Statement: Knowledge of symptom-based EOP strategies. (Reactor Coolant)

References:
EOP-1, Loss of Reactor or Secondary Coolant
EOP-0.2, Natural Circulation Cooldown

Explanation:
A: Incorrect, EOP-0.2 is used for non-accident situations.
B: Incorrect, SI termination criteria are not met, RCS pressure is too low.
C: Correct, with pressure at 1380 PSIG, transition to EOP-1.2 is appropriate.
D: Incorrect, RWST level is at 88%, which is above EOP-1.3 transition requirement with no RHR flow.

Learning Objective:
Given appropriate conditions/parameters and access to the Site Specific Simulator, Implement the following procedures for the specified conditions:
a. EOP-1 to determine the proper recovery procedure for a loss of Primary or Secondary

Coolant.
(LP0435.10)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

92. 2007 ILT SRO 17
Consider the following Unit 1 conditions:

- Unit is at 100% power.
- N-41, Power Range NI has failed and has been removed from service IAW applicable procedures.
- N-43, Power Range NI now begins to drift low.
- I & C Personnel working on N-41 determine immediately that parts to repair the channels will not be available for 5 days.

Which of the following actions is the OS1 expected to direct?

A. Immediately trip Unit 1 and Enter EOP-0, "Reactor Trip or Safety Injection".

B. Shutdown Unit 1 IAW OP-3A, "Power Operation to Hot Standby".

C. Perform rapid load reduction using AOP-17A, "Rapid Power Reduction", until power is < P-8.

D. Remove N-43 from service and trip **all** N-43 bistables IAW applicable SOP-IC-001, "Removal of Safeguards Instrumentation".

Answer: B
New

K/A # and IR: 015.A2.02 (3.5)

KA Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the NIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty or erratic operation of detectors or compensating components

References:
TS 3.3.1, RPS Instrumentation and Bases
0-SOP-IC-002, TS LCO-Instrument Cross Reference
LCO 3.0.3

Explanation:
A: Incorrect, Plant is not in immediate danger, but cannot continue to operate with two NI channels out of service.
B: Correct, Three NI channels are required by Technical Specifications and reactor must be shutdown.
C: Incorrect, Unit may be ramped using AOP-17A if needed to meet TS time requirements, but stopping below P-8 would be inappropriate.
D: N-43 should be removed from service, but all bistables cannot be tripped without the Unit tripping.

Learning Objective: Given appropriate system/equipment conditions and indications, Diagnose various instrument failures based on Control Board indication, Respond to these failures IAW applicable procedure(s) to prevent protective actions and Return

associated Control System function(s) to normal.
(LP2445.01)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

93. 2007 ILT SRO 18
A fire is reported to the control room by an Office Assistant and verified by an Auxiliary Operator in the area of the Lube Oil Storage Room.

According to NP 1.9.14, "Fire Protection Organization," which of the following describes a responsibility of the Operating Supervisor (OS) regarding fire emergency response guidelines?

The OS should . . .

A. initiate the Emergency Plan.

B. relieve the Shift Manager who will proceed to the scene of the fire to direct activities.

C. contact the Two Creeks Volunteer Fire Department for assistance as soon as fire magnitude is known.

D. proceed to the scene to act as the fire brigade leader.

Answer: D
Bank: From INPO Bank, Point Beach, 2/02, 20686

K/A # and IR: 086.2.1.2 (4.0)

KA Statement: Knowledge of operator responsibilities during all modes of plant operation. (Fire Protection)

References:
NP 1.9.14, Fire Protection Organization

Explanation:
A: Incorrect, there are E-Plan consequences for plant fires, but the OS should proceed to be the Fire Brigade Leader.
B: Incorrect, SM comes to CR to relieve OS and direct plant activities from the CR.
C: Incorrect, contacting off-site fire department is plausible, but OS goes to fire scene.
D: Correct, OS proceeds to scene.

Learning Objective: Knowledge of operator responsibilities during all modes of plant operation. (SD86.1.2) Knowledge of facility protection requirements including fire brigade and portable fire fighting.
(SD86.4.26)

SRO Justification: At PBNP, only SRO licensed personnel fulfill the Fire Brigade Leader position. Control Room Command and Control responsibilities are specific to the SRO job position.

94. 2007 ILT SRO 19

Unit 1 is off-loading the core during a refueling outage with the following conditions:

- An attempt is made to place an irradiated fuel bundle in the upender inside containment.
- Another irradiated fuel bundle is already in the upender.
- Some damage has occurred to at least one of the bundles and the bundles are stuck in position.
- 16 industry experts (non-badged visitors) have been briefed by RP and need to be escorted to get a close-up view of conditions to provide recommendations.

What is the MINIMUM number of escorts required?

A. 1

B. 2

C. 4

D. 8

Answer: C
New

K/A # and IR: 2.1.13 (2.9)

KA Statement: Knowledge of facility requirements for controlling vital/controlled access.

References:
NP 1.7.1, Security Expectations

Explanation:
A: Incorrect, see C below. Plausible to have one escort for a group, in the past, one escort could theoretically escort as many persons as they could reasonably control.
B: Incorrect, see C below. Plausible to have one escort per group of 10 (non-vital area limit)
C: Correct, visitors will be entering containment, which is a VITAL AREA. Since there are 16 visitors, a minimum of four escorts will be required.
D: Incorrect, see C above. Plausible to have one escort for every two visitors in containment.

Learning Objective: Knowledge of facility requirements for controlling vital/controlled access.
(SD86.1.13)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

NP 1.7.1 dictates that the Work Supervisor makes the determination of number of escorts needed

4.3.1 The Work Supervisor

a. Determines number of escorts needed. Normal escort/visitor ratio is 1/5 for Vital Areas and 1/10 for non-Vital Areas. Heightened levels of plant security could impact escort/visitor ratio. (B-4)

b. Arranges for escort coverage. Visitor escort can be provided by anyone with an unescorted access picture badge. (B-5)

95. 2007 ILT SRO 20
The following conditions exist on Unit 2 near the beginning of an outage:

- Average Rx Coolant Temperature - 215° F
- Reactor Head Closure Bolts - three detensioned
- Surveillances in progress - None
- Control rod position - fully inserted

What is the reactor operating MODE?

A. MODE 3

B. MODE 4

C. MODE 5

D. MODE 6

Answer: D
New

K/A # and IR: 2.1.22 (3.3)

KA Statement: Ability to determine Mode of Operation.

References:
TS Table 1.1-1 "MODES"

Explanation:
A: Incorrect, MODE 3 if > 350ºF with head studs tensioned
B: Incorrect, MODE 4 between 200ºF and 350ºF with head studs tensioned
C: Incorrect, MODE 5 Below 200ºF with head studs tensioned
D: Correct, MODE 6 with at least 1 head stud detensioned

Learning Objective: State the definitions of TS section 1.1.
(LP3336.09)

10CFR55.43 Statement met: (2) Facility operating limitations in the technical specifications and their bases.

96. 2007 ILT SRO 21

When a modification, test, or experiment is proposed which may increase the probability of occurrence or consequences of an accident, the activity must be scrutinized using a multi-phase process.

Which part of the process **DETERMINES** whether PBNP must obtain NRC approval **PRIOR** to carrying out the modification, test or experiment?

A. 10CFR50.59 Pre-Screening

B. 10CFR50.59 Screening

C. 10CFR50.59 Evaluation

D. 10CFR50.59 Amendment

Answer: C
Bank: From INPO Bank, Point Beach, 7/05, 30363

K/A # and IR: 2.2.9 (3.3)

KA Statement: Knowledge of the process for determining if the proposed change, test or experiment increases the probability of occurrence or consequences of an accident during the change, test or experiment.

References:
NP 5.1.8, 10CFR50.59 Applicability, Screening and Evaluation

Explanation:
A: Incorrect, the pre-screening determines if 50.59 is applicable.
B: Incorrect, the screening determines if an evaluation must be done.
C: Correct, the evaluation process is where the determination is made regarding whether prior approval is required.
D: Incorrect, a license amendment may be required based on the outcome of this process, but the amendment is not part of the 10CFR50.59 evaluation.

Learning Objective: Knowledge of the process for determining if the proposed change, test or experiment increases the probability of occurrence or consequences of an accident during the change, test or experiment.
(SD86.2.09)

10CFR55.43 Statement met: (3) Facility licensee procedures required to obtain authority for design and operating changes in the facility.

97. 2007 ILT SRO 22
Given the following conditions on Unit 2:

- A LOCA outside containment occurred at 0130.
- A Site Area Emergency was declared at 0140.
- The broken line was manually isolated locally, but the operator performing the task was injured and cannot leave the area on his own.
- Initial dose estimates are 110 R/hr gamma.
- The rescue time for a 2-man team is estimated to be 10 minutes with a maximum of 15 minutes.

Under these circumstances, a rescue attempt…

A. by risk-informed volunteers may proceed **ONLY** with Emergency Director authorization.

B. is **NOT** allowed because whole body exposure would exceed the emergency limit.

C. may be made by qualified individuals selected and approved by the Reentry Team Coordinator.

D. may be made without special authorization since 10CFR20 exposure limits will **NOT** be exceeded.

Answer: A
Bank: From INPO Bank, Prairie Island, 9/03, 26167

K/A # and IR: 2.3.4 (3.1)

KA Statement: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

References:
EPIP 5.1, Personnel Emergency Dose Authorization

Explanation:
A: Correct, since a dose of 22.5 REM is possible and it is necessary to rescue the injured operator, it is acceptable for the Emergency Director to approve this dose to carry out the rescue. The rescuers must volunteer to receive the exposure.
B: Incorrect, attempt to save lives is allowed.
C: Incorrect, ED must approve the exposure.
D: Incorrect, normal dose limits will be exceeded.

Learning Objective: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.
(SD86.3.4)

10CFR55.43 Statement met: (4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

98. 2007 ILT SRO 23
Consider the following sequence of events related to releasing a Waste Gas Decay Tank:

- Gas Decay Tank was isolated at 1700 on June 1 for discharge chemistry sample.
- Chemistry completed sampling of tank at 2000 on June 1.
- Chemistry delivered the Discharge Permit to the Shift Manager, who approved the Permit at 0100 on June 2.
- It is now 0200 on June 2.

What is the LATEST time the discharge may start using the approved Discharge Permit?

A. 1700 on June 2

B. 2000 on June 2

C. 2359 on June 2

D. 0100 on June 3

Answer: B
New

K/A # and IR: 2.3.8 (3.2)

KA Statement: Knowledge of the process for performing a planned gaseous radioactive release.

References:
OP-9D, Discharge of Gas Decay Tank
CAMP 030, Manual Preparation of Batch Liquid and Gaseous Effluent Discharge Release Permits

Explanation:
A: Incorrect, tank release must start within 24 hours of the sample time
B: Correct, tank release must start within 24 hours of the sample time
C: Incorrect, plausible to require release to start within the calendar day of permit approval
D: Incorrect, plausible to require release to start within 24 hours of permit approval

Learning Objective: Knowledge of the process for performing a planned gaseous radioactive release.
(SD86.3.8)

10CFR55.43 Statement met: (4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

99. 2007 ILT SRO 24
Consider the following Unit 1 conditions:

- OP-3C, “Hot Standby to Cold Shutdown”, is in progress.
- RCS Temp - 345ºF and stable
- PZR level - 47% and stable on Cold Cal Instrument
- SI Accumulators have just been isolated.
- RCS Pressure - 940 PSIG.
- Pressurizer level begins to lower rapidly.
- SG Levels and Pressures are stable.
- SEP-2, Shutdown LOCA Analysis has been entered.

Transition from SEP-2 will be to what procedure?

A. EOP-0, "Reactor Trip or Safety Injection"

B. SEP-2.1, "Shutdown LOCA with RHR Aligned for Low Head Injection"

C. SEP-2.2, "Shutdown LOCA with RHR Aligned for Decay Heat Removal"

D. SEP-2.6, "Hot Shutdown LOCA"

Answer: B
New

K/A # and IR: 2.4.9 (3.9)

KA Statement: Knowledge of low power/shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

References:
SEP-2, Shutdown LOCA Analysis

Explanation:
A: Incorrect, since SI accumulators are isolated, EOP-0 is not used.
B: Correct, since RCS pressure is 940 PSIG, it may be inferred that RHR is aligned for low head injection vice DHR
C: Incorrect, RCS pressure is too high to be on DHR.
D: Incorrect, no such procedure.

Learning Objective: Knowledge of low power/shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.
(SD86.4.9)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

100. 2007 ILT SRO 25
Unit 1 is operating at power with the following conditions:

- Unit 1 is at 100% power.
- RCS pressure, temperature and PZR level - Normal
- 1RC-431, Pressurizer PORV, opens.

No relevant procedures are in use or have been referred to at this time.

What direction do you provide to the CO?

A. Direct CO to close PORV Block valve immediately.

B. Enter AOP-1A, "Reactor Coolant Leak", and direct CO to wait until appropriate step of AOP-1A is reached prior to closing PORV Block valve.

C. Direct CO to trip Unit 1 and initiate manual SI and Containment Isolation, carry out Immediate Action steps of EOP-0, "Reactor Trip or Safety Injection", then shut the PORV Block valve.

D. Direct CO to trip Unit 1 and carry out Immediate Action steps of EOP-0, "Reactor Trip or Safety Injection". PORV Block valve will be closed at appropriate step in EOP-0.

Answer: A
New

K/A # and IR: 2.4.49 (4.0)

KA Statement: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

References:
OM 3.7, AOP and EOP Procedure Sets Use and Adherence
AOP-1A, Reactor Coolant Leak

Explanation:
A: Correct, OM 3.7, AOP and EOP Procedure Use and Adherence allows taking of actions to place plant in a safe condition prior to reaching step in AOP or EOP if needed to place plant in a safe condition. Additionally, it may be inferred that PORV alarms would be received due to this failure and ARB actions would be used to shut the PORV. AOP-1A would then be entered to verify actions and place plant in a safe condition.
B: Incorrect, based on the immediate challenge to the plant of a failed open PORV, waiting to reach the step would be inappropriate.
C: Incorrect, Trip and SI would be premature if the transient can be controlled by simply closing the block valve.
D: Incorrect, same as C above.

Learning Objective: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
(SD86.4.49)

10CFR55.43 Statement met: (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

**POINT BEACH July 2007 NRC ILT Written Examination Answer Key**

- **Questions 1 through 75 are RO level questions.**
- **Questions 76 through 100 are SRO level questions.**

| Q# | Answer | Q# | Answer | Q# | Answer | Q# | Answer |
|---|---|---|---|---|---|---|---|
| 1 | D | 26 | C | 51 | D | 76 | B |
| 2 | D | 27 | C | 52 | B | 77 | C |
| 3 | B | 28 | B | 53 | D | 78 | B |
| 4 | C | 29 | A | 54 | B | 79 | B |
| 5 | D | 30 | A | 55 | A | 80 | D |
| 6 | C | 31 | B | 56 | D | 81 | C |
| 7 | A | 32 | C | 57 | D | 82 | B |
| 8 | C | 33 | D | 58 | B | 83 | C |
| 9 | A | 34 | A | 59 | A | 84 | C |
| 10 | A | 35 | A | 60 | C | 85 | D |
| 11 | C | 36 | D | 61 | B | 86 | B |
| 12 | C | 37 | B | 62 | D | 87 | B |
| 13 | D | 38 | C | 63 | C | 88 | D |
| 14 | C | 39 | C | 64 | C | 89 | A |
| 15 | D | 40 | C | 65 | D | 90 | C |
| 16 | B | 41 | A | 66 | D | 91 | C |
| 17 | C | 42 | C | 67 | A | 92 | B |
| 18 | C | 43 | B | 68 | D | 93 | D |
| 19 | C | 44 | C | 69 | C | 94 | C |
| 20 | A | 45 | B | 70 | B | 95 | D |
| 21 | D | 46 | C | 71 | C | 96 | C |
| 22 | A | 47 | D | 72 | D | 97 | A |
| 23 | A | 48 | C | 73 | C | 98 | B |
| 24 | B | 49 | B | 74 | B | 99 | B |
| 25 | C | 50 | B | 75 | D | 100 | A |