

Question # 001
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 003A2.02

Question:
Given the following:

- The reactor is at 7% power.
- Annunciator 47011-I, RXCP A #1 SEAL OUTLET TEMPERATURE HIGH is in alarm.
- RXCP A Bearing Water Temperature is at 240°F and increasing.
- Annunciator 47013-I, RXCP A SEAL LEAK OFF FLOW HIGH/LOW is in alarm.
- RXCP A Seal Leak Off flow is at 8.3 gpm and increasing.

Which ONE of the following describes the correct actions for the control room crew?

- a. Trip the Reactor, go to E-0, Rx Trip or Safety Injection, and then stop RXCP A.
- b. Go to N-O-04, 35% Power to Hot S/D Conditions, stop RXCP A when Hot Shutdown is achieved.
- c. Go to A-O-3, Rapid Power Reduction, stop RXCP A and be in Hot Shutdown within 2 hours.
- d. Go to A-RC-36C, Abnormal RXCP Operation, to remove RXCP A from service.

Answer

a.

Reference

RO2-01-LP36A, Rx Coolant Pumps

A-RC-36C, Abnormal RXCP operation

Annunciator 47011-I, RXCP A #1 Seal Outlet Temp High

CFR ID: CFR 55.41.5

Modified

Justification:

- a. Correct, because 47011-I says to trip Rx IF seal water temperature >235.
- b. Incorrect, because once RXCP seal temp and flow exceed setpoint the pump must be tripped. CANNOT have the CRD breakers closed if an RXCP breaker is OPEN.
- c. Incorrect, because once RXCP seal temp and flow exceed setpoint the pump must be tripped. CANNOT have the CRD breakers closed if an RXCP breaker is OPEN.
- d. Incorrect, because once RXCP seal temp and flow exceed setpoint the pump must be tripped. CANNOT have the CRD breakers closed if an RXCP breaker is OPEN.

Question # 2
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 004A4.07

Given the following:

- The plant is in COLD SHUTDOWN.
- Both Reactor Makeup Pumps are in AUTO with Reactor Makeup Pump A running.
- Boric Acid Transfer Pump A is in AUTO and FAST.
- Boric Acid Transfer Pump B is in PULLOUT.
- Blended makeup to the RWST is being performed with the Reactor Makeup Mode Selector in MANUAL.

What will occur if the Boric Acid Transfer Pump trips during this operation and NO operator action is taken?

RWST level will . . .

- a. stabilize and boron concentration will drop.
- b. stabilize and boron concentration will remain the same.
- c. continue to rise and boron concentration will drop.
- d. continue to rise and boron concentration will remain the same.

Answer

c.

Reference

RO2-05-LP035

N-CVC-35A, Rev. X

Alarm Response Sheet, 47044-L, Rev. A

OP XK100-36, Rev. AX

CFR ID: CFR 55.41.7

NEW

Justification:

For normal boration/dilution the flow deviation will close the appropriate valves (CVC-406 and CVC-408) to stop the makeup. During makeup to the RWST these valves are normal closed and not part of the flowpath.

- a. Incorrect. The RMW pump continues to send water to the RWST. Due to the time delay in sensing BA flow deviation (10 seconds), it may be considered that the boron concentration will decrease until the flow is completely stopped.
- b. Incorrect. The RMW pump continues to send water to the RWST so that level increases and the boron concentration decreases.
- c. Correct. The RMW pump continues to send water to the RWST and during that period the RWST is diluted.
- d. Incorrect. The RMW pump continues to send water to the RWST so that the boron

concentration decreases. There is an elevation difference between the Boric Acid Tanks, BA Transfer Pumps and blender. Elevation difference is from 626' to 590', not including the head in the Tanks. This gives a static pressure of about 15.6 psi at the blender. Could assume flow continues due to gravity drain, but not adequate to overcome RMW head.

Question # 3
 Exam Date 2004/11/15
 Facility 305
 Reactor Type PWR-WEC2
 Exam Level R
 K/A 004K4.04

Question

Reactor Makeup Mode Selector Switch is placed in the Alt. Dilute position and the following valves are in their expected positions for this condition.

- CVC- 403, Boric Acid Flow Control Valve;
- CVC- 406, Reactor Makeup Flow to VCT Stop Control Valve;
- CVC- 408, Reactor Makeup Flow to Charging Pumps Stop Control Valve;

With the dilution in progress, the CVC system loses Instrument Air.

Identify the positions for each of the valves prior to and after the loss of Instrument Air.

	Valves	CVC-403	CVC-406	CVC-408
a.	ALT Dilute:	Closed	Open	Open
	Loss of IA:	Closed	Open	Open
b.	ALT Dilute:	Closed	Open	Closed
	Loss of IA:	Open	Open	Open
c.	ALT Dilute:	Closed	Open	Open
	Loss of IA:	Open	Closed	Closed
d.	ALT Dilute:	Open	Open	Open
	Loss of IA:	Closed	Closed	Closed

Answer

c.

Reference

RO2-05-P, Chemical and Volume Control System

SD35

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, because this is the Alt. Dilute position and not proper failure positions for loss of IA.
- b. Incorrect, because this is the dilute position and not proper failure positions for loss of IA.
- c. Correct, because this is the Alt. Dilute position and the proper failure positions for loss of IA.
- d. Incorrect, because this is not the proper position and not proper failure positions for loss of IA.

Question # 4
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 004K5.04

Question

Which ONE of the following is the primary reason for maintaining a hydrogen cover gas in the VCT during normal power operations?

- a. Assure N-16 concentrations are ALARA.
- b. Maintain RCS pH within limits.
- c. Maintain conductivity within limits.
- d. Maintain oxygen concentration below upper limit.

Answer

d.

Reference

RO2-05-LP035, Chemical and Volume Control system

CFR ID: CFR 55.41.5

New

Justification:

- a. Incorrect, N-16 is a bi-product of the nuclear reaction not influenced by hydrogen cover gases.
- b. Incorrect, RCS pH is controlled by primary chemistry not with cover gases.
- c. Incorrect, conductivity is controlled by water quality efforts not cover gases.
- d. Correct, Hydrogen cover gases "scavenge" oxygen, thus lowering the oxygen concentration.

Question # 5
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 005AK3.02

Question

Given the following:

- Reactor power is at 90% with a power increase in progress using control rods.
- The operator determines that Control Bank D rod C-7 is not moving and IRPI indication is 191 steps.
- All other Bank D rods are at 204 steps.
- Reactor Engineering has now determined that C-7 is repaired.
- The Crew is performing A-CRD-49, Abnormal Rod Control System Operations.

Which ONE of the following describes how control rod C-7 will be realigned to control bank D and how the control bank insertion limit will change following the realignment?

- a. Control Bank D will be realigned to control rod C-7 and control bank D insertion limit will be higher.
- b. Control Bank D will be realigned to control rod C-7 and control bank D insertion limit will remain the same.
- c. Control rod C-7 will be realigned to Control Bank D and control bank D insertion limit will be lower.
- d. Control rod C-7 will be realigned to Control Bank D and control bank D insertion limit will remain the same.

Answer

d.

Reference

RO2-05-LP049, Control Rod Drive

RO4-06-SED01, Simulator

A-CRD-49 Attachment 'A'

CFR ID: CFR 55.41.5 / 41.10

Bank

Justification:

- a. Incorrect, the method of realignment is in correct but the change in insertion limit is also incorrect since the bank will be inserted to match C-7 position.
- b. Incorrect, the method of realignment is incorrect and the change in insertion limit is wrong since the bank will not move the insertion limit will not change.
- c. Incorrect, the method of realignment is correct and the change in insertion limit is wrong since the bank will not move the insertion limit will not change.
- d. Correct, Rod C-7 will be withdrawn to match the control bank D position, the bank will not move therefore the insertion limit will not change.

Question # 6
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 005K5.03

Question
Given the following:

- The plant is in Intermediate Shutdown.
- RXCP A is running.
- RHR train A has JUST been placed in service when the Reactor Operator notes source range counts start rising on an increasing trend.

Which ONE of the following describes the correct action?

- a. Commence a boration per E-CVC-35, Emergency Boration.
- b. Commence a boration per N-CVC-35A, Boron Concentration Control.
- c. Stop RHR train A, align and start RHR train B.
- d. Stop RHR train A, align RWST to charging pumps.

Answer

a.

Reference

SD 34 RHR

RO2-05-LP034

E-CVC-35, Emergency Boration

CFR ID: CFR 55.41.5

Modified

Justification:

- a. Correct, because E-CVC-35 provides guidance to immediately borate when uncontrolled +reactivity is inserted.
- b. Incorrect, because a normal boration will not inject enough negative reactivity.
- c. Incorrect, because swapping RHR will not add negative reactivity to the core.
- d. Incorrect, because the RWST is not the preferred lineup.

Question # 7
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 006A1.11

Question

Given the following:

- A SGTR has occurred on SG A.
- ES-3.1, Post SGTR Cooldown Using Backfill, is in progress.
- Ruptured SG level is 25%.
- RCS is at 390°F.
- RCS is at 400 psig.
- A cooldown is in progress using steam dumps to condenser.
- RXCP B is in service.

ES-3.1 step 11 requires a return to step 3 if RCS temperature is greater than 200°F. Step 3 requires the operator to ensure adequate shutdown margin.

Which ONE of the following identifies why it is necessary to reverify adequate shutdown margin at this point in the procedure?

- a. The RCS temperature change during cooldown will cause significant boron concentration changes due to PRZR outsurge.
- b. Charging to maintain PRZR level during cooldown will cause significant boron concentration changes.
- c. The secondary fluid in the ruptured SG will cause significant boron concentration changes.
- d. The auxiliary spray will cause significant RCS boron concentration changes.

Answer

c.

Reference

RO4-04-LP029, ES-3.1, Post-SGTR Cooldown using Backfill

IPEOP BKGD. Doc. ES-3.1 pages 15, 16, and 17 of 38

CFR ID: CFR 55.41.5

NEW

Justification:

- a. Incorrect, This is covered by CVCS and S/D procedure.
- b. Incorrect, CVCS maintains system boron concentration about the same level as you add inventory to the RCS.
- c. Correct, The excess secondary fill water that is not borated must be accounted for during the C/D and especially under 200 degrees.
- d. Incorrect, CVCS and system boron does not impact the RCS via aux spray in a dramatic way.

Question # 8
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 008AK1.01

Question
Given the following:

- The reactor is at 100% power.
- Initial RCS pressure is 2235 psig.
- The PRT initial pressure is 5 psig.
- PR-2A, Przr PORV, fails open 10% and cannot be closed or isolated.
- When RCS pressure reaches 1800 psig, PRT pressure is noted to be 75 psig.

Use Reference provided: Steam Tables.

As the RCS blows down from operating pressure to 1800 psig, Przr PORV tail pipe temperature will go from an initial temperature of ___(a)___ to a final temperature of ___(b)___.

- a. (a) 160°F ; (b) 320°F
- b. (a) 320°F ; (b) 230°F
- c. (a) 230°F ; (b) 320°F
- d. (a) 650°F ; (b) 620°F

Answer:

c.

Reference

O-FND-LP1.4.5

Steam Tables

CFR ID: CFR 55.41.8 / 41.10

NEW

Justification:

At 2235 psig (2250 psia), hg is 1117.7 BTU/lb; At 5 psig (20 psia), hg is 1156.3 BTU/lb. Due to isenthalpic throttling, Przr PORV tailpipe temp would then read saturation temperature at 5 psig or 227.96°F.

At 1800 psig (1815 psia), hg is 1151.1 BTU/lb; At 75 psig (90 psia), hg is 1185.3 BTU/lb. Przr PORV tailpipe temp would read saturation temperature at 75 psig or 320.28°F. This may also be determined using Mollier Chart.

- a. Incorrect, the temperature is incorrect for the expected conditions in the tailpipe.
- b. Incorrect, the temperature is incorrect for the expected conditions in the tailpipe.
- c. Correct, since it relieves to the PRT, the pressure will identify the 230 degree and once the RCS reaches 1800 psig then the curve indicates 320 degrees.
- d. Incorrect, these temperatures are saturation at normal and 1800 psig conditions.

Question # 9
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 008K1.02

Question
Given the following:

- The Reactor is at 100% power.
- 2:15:00 CC Surge Tank level is 50%.
- 2:15:40 Annunciator 47024-H, CC Surge Tank LVL High/Low alarm actuated.
- 2:16:00 DW-161 valve is Full OPEN.
- 2:16:30 Annunciator 47045-M, Waste Disposal Abnormal alarm actuated.
- 2:17:00 CC Surge Tank Level is 37% and lowering.

The NAO reports that the Waste Disposal Abnormal alarm is from the Sludge Interceptor Tank High Level local alarm.

Letdown outlet Temperature (TI-130) is normal and steady at 120°F.
VCT outlet Temp (TI-140) has risen to 125°F.

Use Reference provided: Operator Aid # 89-7.

Which ONE of the following components has experienced a severed Component Cooling Water supply line?

- a. Excess Letdown Heat Exchanger.
- b. Letdown Heat Exchanger.
- c. Safety Injection Pump Seal Cooler.
- d. Seal Water Heat Exchanger.

Answer

d.

Reference

RO2-01-LP031

A-CC-31 step 11

SD 31

CFR ID: CFR 55.41.2 to 41.9

New

Justification:

- a. Incorrect, HX flow rate is 120 -140 gpm, may or may not be in service, however it is in the RB so any leakage would be seen in the containment sump.
- b. Incorrect, 6" supply line for up to 700 gpm flow much larger than this 150 gpm leak and the letdown temperature is normal.
- c. Incorrect, CC flow to both SI Pump Seal Coolers is only 23 - 27 gpm not 150 gpm. Annunciator 47022-I would be in alarm. VCT temperature is unaffected.
- d. Correct, 150 gpm 2" supply line, leakage to Sludge Interceptor Tank and with no cooling

water RCS temperature would increase VCT outlet Temperature, makeup capabilities with DW-161 is 50 gpm.

Question # 10
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 009EA2.39

Question

Which ONE of the following explains why it is preferable to leave the RXCPs running during a small break LOCA if the RCS subcooling requirement for the RXCP trip criteria on the Quick Reference Foldout is met but there is NO SI flow?

- a. To provide heat removal through the break and the S/Gs.
- b. To ensure no void formation in the vessel head area.
- c. To limit single phase inventory loss out of the break.
- d. To prevent boron stratification in the core.

Answer

a.

Reference

RO4-04-LP002

E-0, Bkgd. pg 32 of 51

CFR ID: CFR 55.43.5

Bank

Justification:

- a. Correct, because the pumps will pump inventory and continue to provide core cooling.
- b. Incorrect, because even with force flow and or two phase flow, voids may form in the head based on the size of the leak.
- c. Incorrect, because the two phase mixture will continue to exit the vessel.
- d. Incorrect, because boron stratification is not the overriding concern for a small break LOCA.

Question # 11
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 010K3.01

Question

Given the following:

- Pressurizer Pressure Control is selected to the normal alignment (2-3 position).
- Pressurizer pressure is 2230 psig and rising.
- The variable heaters are energized.
- The spray valves are closed.
- HC-431K, Przr Spray Control Master Controller, fails to a constant output equivalent to 2230 psig.

Which ONE of the following describes the response of the pressure control system if the operator takes NO further action?

- a. Pressure will rise until PR-2A, Przr PORV, and PR-2B, Przr PORV, open to control pressure.
- b. Pressure will rise until PR-2B, Przr PORV, opens to control pressure.
- c. Pressure will rise until the spray valves open to control pressure.
- d. Pressure will cycle on the variable heaters at a higher setpoint.

Answer

b.

Reference

RO2-05-LP36C

SD 36 pg 35 of 48

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, because PR-2A, Przr PORV, continues to receive a constant input and therefore remains closed.
- b. Correct, because PR-2B, Przr PORV, receives input from PT 323 which is seeing the actual pressure rise.
- c. Incorrect, because the spray valves remain closed because their input is not changing from the master controller and is below the spray open setpoint.
- d. Incorrect, because the input to the variable heaters is constant at a value less than their shutoff point.

Question # 12
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 011EA1.04

Question

Following a steam break inside containment, the Internal Containment Spray System actuated. Containment pressure has been reduced to 3.5 psig.

The following signals have been reset:

- Safety Injection.
- Containment Isolation.
- Internal Containment Spray.

Several minutes after securing Internal Containment Spray, containment pressure increased to 25 psig due to a subsequent large break LOCA.

Which ONE of the following describes the expected response of the Internal Containment Spray System?

- a. Both pumps will automatically start and the discharge valves will automatically open.
- b. Both pumps will automatically start, but the discharge valves must be manually opened.
- c. Both pumps must be manually started, but the discharge valves will automatically open.
- d. Both pumps must be manually started and the discharge valves must be manually opened.

Answer

a.

Reference

RO4-04-LP022

SD 23 (ICS) pgs 8,9

SD 33 (SI) pgs 11,12

E-1604 ICS

E-1635 SI Sequencer

E-0, Reactor Trip or Safety Injection Step 8

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Correct, the ICS system independently will auto re-actuate even after it is reset. SI will not automatically re-actuate once it has been reset.
- b. Incorrect, the automatic re-actuation will affect all ICS components.
- c. Incorrect, the automatic re-actuation will affect all ICS components.
- d. Incorrect, the automatic re-actuation will affect all ICS components.

Question # 13
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 011EK2.02

Question
Given the following:

- A large break LOCA occurred 45 minutes ago.
- All ECCS and ESF equipment functioned as expected.
- All the steps of ES-1.3, Transfer to Containment Sump Recirculation, have been completed.
- RCS pressure is 25 psig.
- Containment pressure is 3.2 psig and slowly decreasing.
- Containment radiation is 1.0E+0 R/hr.
- RWST level reads 3%.
- FI-928, RHR Pump Flow Indication, reads 1500 gpm.
- All required systems have been aligned for recirculation.

What is the status of the ECCS pumps at the current time?

- | | | |
|----|---|---|
| a. | RHR Pump A stopped
SI Pump A stopped
ICS Pump A stopped | RHR Pump B running
SI Pump B stopped
ICS Pump B stopped |
| b. | RHR Pump A running
SI Pump A running
ICS Pump A running | RHR Pump B stopped
SI Pump B stopped
ICS Pump B stopped |
| c. | RHR Pump A running
SI Pump A running
ICS Pump A stopped | RHR Pump B running
SI Pump B stopped
ICS Pump B stopped |
| d. | RHR Pump A stopped
SI Pump A stopped
ICS Pump A stopped | RHR Pump B running
SI Pump B stopped
ICS Pump B running |

Answer

a.

Reference

RO4-04-LP021

RO2-05-LP034.002

SD 34 pg 6 of 27

ES-1.3, Transfer to Containment Sump Recirculation

CFR ID: CFR 55.41.7

New

Justification:

- a. Correct. Train B is aligned for recirculation and with RCS pressure <150 psig the SI Pump is not restarted. Train A is Standby Train. Containment conditions do not require ICS operation.

- b. Incorrect. The Train A pumps would have been stopped when RWST level fell below 4%.
- c. Incorrect. The Train A pumps would have been stopped when RWST level fell below 4%.
- d. Incorrect. Train B is aligned properly and with RCS pressure <150 psig the SI Pump is not restarted. Train A would be started, and aligned for Containment Spray from the Containment Sump B if containment pressure or radiation conditions required ICS operation.

Question # 14
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 012K6.10

Question

The plant was operating at 18% power when an event occurred.

The operator then noted the following:

- Tavg - 548°F and decreasing rapidly.
- Main Turbine - Latched.
- Main Feedwater Control Valves, FW-7A/B - Open.
- Steam Dumps - NOT Armed.
- Annunciator 47012-K, RXCP B BREAKER OPEN, - LIT.
- Annunciator 47012-M, RCS LOOP B FLOW LOW, - LIT.
- Annunciator 77032-D, SINGLE LOOP LOW FLOW REACTOR TRIP, - LIT.
- Reactor Trip Breakers green light - LIT.

Which ONE of the following permissive circuits has failed as indicated by this event?

- a. P-2 circuit
- b. P-4 circuit
- c. P-8 circuit
- d. P-13 circuit

Answer

b.

Reference

RO2-05-LP472

SD 47

XK100-144

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, prohibits auto rod withdrawal at < 15% turbine power.
- b. Correct, main feedwater valves are open with low Tavg and turbine is NOT tripped. This is not expected if P-4 functions correctly
- c. Incorrect, does not meet any criteria for P-8. P-8 is "single loop low flow" trip interlock. However this can be considered since the RXCP trip would not have caused a reactor trip at given power.
- d. Incorrect, does not meet any criteria for P-13. P-13 is turbine power > 10% and feeds into the "at-power" trips interlock.

Question # 15
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 013.K2.01

Question
Given the following:

- Steam Generator A narrow range level is 2% and lowering.
- Steam Generator A pressure is 250 psig and lowering.
- Containment pressure is 5.1 psig and lowering.
- 4160 kV Bus 5 voltage meter indicates zero volts.

Which ONE of the following identifies the status of the Emergency Core Cooling System (ECCS) equipment ?

- a. All ECCS equipment is operating.
- b. None of the ECCS equipment is operating.
- c. Only Train A ECCS equipment is operating.
- d. Only Train B ECCS equipment is operating.

Answer

d.

Reference

RO2-05-LP033

SD 39

CFR ID: CFR 55.41.7

Modified

Justification:

- a. Incorrect, Bus 5 will de-energize all train 'A' equipment.
- b. Incorrect, Bus 5 will de-energize all train 'A' equipment, Bus 6 will energize all train 'B' ECCS equipment.
- c. Incorrect, Bus 5 will de-energize all train 'A' equipment, Bus 6 will energize all train 'B' ECCS equipment.
- d. Correct, Bus 5 will de-energize all train 'A' equipment and Bus 6 will energize all train 'B' ECCS equipment.

Question # 16
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 013K6.01

Question
Given the following:

- The reactor is at 100% power.
- PT-947, Containment Pressure Channel IV (Yellow), has failed high.
- A-MI-87, Bistable Tripping for Failed Reactor Protection or Safeguards Inst., Removal From Service, has been completed for PT-947.

Which ONE of the following identifies the effect(s) of a subsequent failure high for PT-950, Containment Pressure Channel IV (Yellow)?

- a. A Main Steamline Actuation signal is generated.
- b. A Containment Spray Actuation signal is generated.
- c. None. However if an additional channel fails, either Safety Injection actuation OR Main Steamline actuation will occur, AND, depending on the failed channel, Containment Spray actuation will occur.
- d. None. However if an additional channel fails, in all cases, Safety Injection actuation, Main Steamline actuation AND Containment Spray actuation will occur.

Answer

c.

Reference

RO2-05-LP055

A-MI-87, Rev. P, page 10

E-1609, Rev. Z

E-1604, Rev. W

E-1627, Rev. AF

E-1635, Rev. Q

CFR ID: CFR 55.41.7

New

Justification:

Failed Channel PT-947 tripped bistables are:

Hi S.A.L. (SI actuation)

Hi Cont Spray (Containment Spray Actuation)

Failed Channel PT-950 bistables that would trip on failure are:

Hi S.A.L. (Steamline Isolation actuation)

Hi Cont Spray (Containment Spray Actuation)

- a. Incorrect. The failed channel PT-950 is the only affected input for the 2 of 3 logic.
- b. Incorrect. These conditions for Contain Spray actuation requires 3 of 3 logic for the selected set of 2 inputs being made. The current condition is 2 of 3.
- c. Correct. Depending on the channel, either 2/3 logic for SI will be made (with PT-947)

OR the 2/3 logic for Main Steamline Isolation will be made (with PT-950). Containment Spray will occur only if the additional failed channel is PT-945 or PT-496, making up the required 3/3 input logic.

- d. Incorrect. Containment Spray will occur only if the additional failed channel is PT-945 or PT-496, making up the required 3/3 input logic.

Question # 17
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 014A4.01

Question

Given the following:

- Operators are preparing for a reactor startup.
- All shutdown banks are FULLY WITHDRAWN.
- All control banks are FULLY INSERTED.
- At this point in the startup, the Rod Control System Start Up Reset pushbutton is pressed in error.

Which ONE of the following describes the required action for this condition?

- a. Reset the Rod Control Urgent Failure.
- b. Restore the shutdown group step counters to 226 steps.
- c. Restore the bank overlap unit to 226 steps.
- d. Reinsert all shutdown banks.

Answer

b.

Reference

RO2-05-LP049, CRD Pg. 22 of 48; pg. 43 of 48; I.6

N-CRD-49B, Reactor Startup

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, if all conditions are cleared then you can reset the urgent failure alarm.
- b. Correct, all group step counters, including those for the Shutdown Banks, are reset to 0 by the reset switch.
- c. Incorrect, bank overlap counters are at 0 because the control rods are fully inserted.
- d. Incorrect, This will cause the Group Step counters for the selected shutdown bank to cycle down - 999, 998, etc.

Question # 18
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 022AG2.1.32

Question
Given the following:

- Auto Makeup had been lost due to Boric Acid Flow Totalizer failure.
- I&C has repaired the totalizer and a functional test is ready to be performed.

Which ONE of the following identifies the required flowpath for retest of the Reactor Makeup System in MANUAL?

Flow is aligned through

- a. CVC-406/CV31094, BA Blender to VCT, to the VCT.
- b. LD-27/CV31096, VCT/Holdup Tank Divert valve, to the in-service Holdup Tank.
- c. CVC-712A/CV31106, BAT A Recirc Control, or CVC-712B/CV31107, BAT B Recirc Control, to the Boric Acid Tank(s).
- d. CVC-410, Blended Makeup to Alternate Services Isolation, and CVC-412, Blender Makeup to Refueling Water Storage Tank Isolation, to the RWST.

Answer

d.

Reference

RO2-05-LP035

OPERXK 100-18 [LD-10]

N-CVC-35A L&P 2.4

CFR ID: CFR 55.41.10

NEW

Justification:

- a. Incorrect, no flow to the VCT while testing.
- b. Incorrect, does not physically complete the flow path to the holdup tank.
- c. Incorrect, does not align to the Boric Acid Tanks for this test.
- d. Correct, the L&P identifies that flow shall be to the SFP, RWST, or holdup tanks.

Question # 19
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 022G2.1.10

Question

With the plant at 100% power, which ONE of the following conditions does NOT require immediate entry into the Standard Shutdown Sequence?

- a. Containment Fan Coil Units A and C are declared inoperable.
- b. Containment Fan Coil Unit B and Containment Spray Pump A are declared inoperable.
- c. Containment Fan Coil Units A and D, and Containment Spray Pump A are declared inoperable.
- d. Containment Spray Pumps A and B are declared inoperable.

Answer

b.

Reference

RO2-04-LP018

RO2-01-LP023

T.S. 3.3.c.1.A

CFR ID: CFR 55.43.1

New

Justification:

Tech Spec allows the following equipment out of service:

- One containment fan coil unit train may be out of service for 7 days provided the other train is operable (CFCU A & B are Train A ,and CFCU C & D are Train B)
- One containment spray train may be out of service for 72 hours provided the opposite containment spray train remains operable.
- The same train CFCU and containment spray trains may be out of service for 72 hours provided their opposite CFCU and containment trains remain operable.

- a. Incorrect. Both trains of CFCUs are inoperable and requires entry into Standard Shutdown Sequence.
- b. Correct. A Train A CFCU and Train A containment spray system are inoperable. This is a 72-hour LCO.
- c. Incorrect. Both trains of CFCUs and Train A containment spray are inoperable and requires entry into Standard Shutdown Sequence.
- d. Incorrect. Both trains containment spray are inoperable and requires entry into Standard Shutdown Sequence.

Question # 20
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 025AA2.07

Question

Given the following:

- RCS temperature is 120°F.
- Reactor Vessel head is removed.
- Both RHR Pumps are in operation for cooling.
- RHR-8A, RHR Flow Control Hx A Outl, is set to 80% (20% open).
- RHR-8B, RHR Flow Control Hx B Outl, is set to 82% (18% open).
- RHR-101, RHR Heat Exchanger bypass is set to 14% (14% open).
- Total RHR flow is 2800 gpm.
- Refueling Level has been stabilized at 10.2% following RCS drain down.

Which ONE of the following identifies the consequence of RHR-8A failing full OPEN under these conditions?

- a. Letdown flow will be lost.
- b. RHR Pump A will trip on overcurrent.
- c. RCS inventory will be lost due to lifting of RHR-33-1, LTOP relief valve.
- d. The RHR Pumps will cavitate due to vortexing at the RCS loop suction.

Answer

d.

Reference

RO2-05-LP034

N-RHR-34C, Rev. M

CFR ID: CFR 55.43.5

New

Justification:

- a. Incorrect, letdown flow may decrease somewhat as LD-10 throttles closed to maintain RCS pressure, and with the Letdown Orifice Isolation valves open, letdown flow would not be completely lost.
- b. Incorrect, RHR Pump amps may fluctuate due to cavitation, but an overcurrent trip will not occur.
- c. Incorrect, RCS pressure is expected to decrease slightly as the RCS cooldown rate increased due to increased flow through RHR Hx A. LD-10 will respond in AUTO to attempt to maintain RCS pressure.
- d. Correct. With RCS level at mid-loop and RHR flow exceeding 3000 gpm (~3800 gpm) it is extremely likely that cavitation of the RHR will occur due to air entrainment.

Question # 21
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 026A1.01

Question
Given the following:

- A Reactor Trip/Safety Injection has occurred due to a LOCA.
- Containment pressure is 21 psig and rising.
- A loss of offsite power occurs.
- Immediately following the loss of offsite power, annunciator 47021-F, CONTAINMENT SPRAY ACTUATED, alarms.

Which ONE of the following identifies when the Containment Spray pumps will start?

- a. Immediately when the respective Safeguards Bus is energized from its DG.
- b. Approximately 15 seconds after the respective Safeguards Bus is energized from its DG.
- c. Approximately 60 seconds after the respective Safeguards Bus is energized from its DG.
- d. Only when the operator has pressed both Containment Spray Actuation pushbuttons.

Answer

b.

Reference

RO2-05-LP42B

RO2-05-LP055

Alarm Response Sheet 47021-F Rev. A

System Description 42, Rev. 2, 3.8.10

E-1637, Rev. Y

CFR ID: CFR 55.41.5

New

Justification:

- a. Incorrect. This is the case if the Safeguards Bus is powered from offsite source. The Containment Spray Pump will start as soon as pressure rises above actuation setpoint (Condition such as TAT lockout and Bus 5 power source switches to RAT).
- b. Correct. When powered from the DG, Containment Spray Pumps are started on Step 3 of the sequencer (normally 15 seconds with maximum of 20 seconds)
- c. Incorrect. This represents the time at which the SI sequencer reaches its final step. (Step 10)
- d. Incorrect. This presents the situation similar to a loss of offsite power after SI is reset. Manual actuation is not required.

Question # 22
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 026AK3.03

Question

Given the following:

- The reactor is at 40% power.
- Component Cooling Water pump B is running.
- A loss of off-site power occurs simultaneously with an SI signal.
- Both diesel generators have started and their output breakers have closed on their respective buses.

Which ONE of the following describes the response of the Component Cooling Water pump B breaker?

The breaker will immediately OPEN, and then it will auto CLOSE when....

- a. the discharge header pressure decreases to 35 psig.
- b. sequenced from the Safety Injection sequencer.
- c. sequenced from the Blackout sequencer.
- d. the anti-pump circuit is manually cleared.

Answer

b.

Reference:

RO2-01-LP031

SD-42 sections 3.8.6,9,10,11

E-3106

E-2001

E-1634, 1635, 1636

CFR ID: CFR 55.41.7

Modified

Justification:

- a. Incorrect, the discharge header start circuit is removed with an SI signal.
- b. Correct, the breaker will open on loss of power and then the SI sequencer will close the breaker once it reaches that sequence. With a simultaneous actuation of blackout and SI, the SI sequencer is the controlling component.
- c. Incorrect, with a simultaneous actuation of blackout and SI, the SI sequencer is the controlling component.
- d. Incorrect, the anti-pump circuit is not actuated and it will not auto close the breaker when cleared.

Question # 23
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 027AK3.03

Question

Given the following:

- A tube rupture has been identified on SG A.
- The operating crew has entered E-3, Steam Generator Tube Rupture.
- Operators are preparing to depressurize the RCS to minimize ruptured SG break flow.
- Przr level is 13%.
- A failure in Przr Spray Control has resulted in normal spray being unavailable to depressurize the RCS.

Of the remaining methods for depressurizing the RCS, which ONE of the following identifies the reason for using a pressurizer PORV?

- a. Contain RCS inventory loss to the PRT.
- b. Minimize upper head region voiding.
- c. Prevent pressurizer spray nozzle failure.
- d. Increase Safety Injection flow.

Answer

c.

Reference

RO2-05-LP36C

RO2-05-LP472

E-3, Steam Generator Tube Rupture

CFR ID: CFR 55.41.5 / 41.10

New

Justification:

The available methods for depressurizing the RCS are:

1) Open one Przr PORV

2) Use Aux Spray (from CVCS). This is not a choice if letdown is NOT in service. Since Przr level is less than 17% the RCS letdown isolation valves and Letdown Orifice Isolation valves cannot be opened.

- a. Incorrect. The inventory loss may or may not rupture the PRT rupture disc depending on the pressure and conditions.
- b. Incorrect. The voiding conditions in the head is much more likely with the rapid depressurization possible with the PORV.
- c. Correct. The auxiliary spray will not be cooled by the letdown heat exchanger and therefore could result in thermal stressed to the spray nozzle. In addition, the rate of pressure decrease is limited with the auxiliary sprays so the pressure decrease may not be rapid enough for the conditions.

- d. Incorrect. The pressure decrease will result in increase flow capabilities for the SI but that is not the reason for using the PORV to depressurize the RCS.

Question # 24
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 029EA1.13

Question
Given the following:

- The reactor is tripped.
- The main turbine did not trip automatically.
- The main turbine did not trip when the Turbine Trip pushbutton was depressed in accordance with FR-S.1, Response to Nuclear Power Generation/ATWS.

Which ONE of the following is the NEXT action the operator is required to take?

- a. Place both EHC pumps control switches in Pullout.
- b. Trip the turbine locally at the front standard.
- c. Manually run back the turbine.
- d. Shut the MSIVs.

Answer

c.

Reference

RO4-04-LP008

FR-S.1, Response to Nuclear Power Generator/ATWS

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, also in Contingency Actions step 2, but only occurs if runback doesn't work (Step 2b).
- b. Incorrect, because it is a local action if Control Room actions fail, step 10b Contingency Actions.
- c. Correct, per Contingency Actions FR-S.1 step 2a.
- d. Incorrect, also in Contingency Actions step 2, but only occurs if runback doesn't work (step 2c).

Question # 25
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 029K1.02

Question

Given the following:

- A Containment Purge is in progress.
- The following radiation monitors are in service:
 - R-11, Containment System Vent Activity Air Monitor.
 - R-12, Containment System Vent Air Monitor.

R-11 and R-12 both indicate HIGH alarm.

Which ONE of the following Containment Purge Supply and Exhaust Duct Valves receive a high radiation closure signal?

- a. RBV- 1, Cntmt Purge / Vent Supply Valve A.
RBV- 2, Cntmt Purge / Vent Supply Valve B.
RBV- 5, Cntmt Purge / Vent Exhaust Damper.
- b. RBV- 1, Cntmt Purge / Vent Supply Valve A.
RBV- 4, Cntmt Purge / Vent Exhaust Valve A.
RBV- 5, Cntmt Purge / Vent Exhaust Damper.
- c. RBV- 2, Cntmt Purge / Vent Supply Valve B.
RBV- 3, Cntmt Purge / Vent Exhaust Valve B.
RBV- 5, Cntmt Purge / Vent Exhaust Damper.
- d. RBV- 2, Cntmt Purge / Vent Supply Valve B.
RBV- 4, Cntmt Purge / Vent Exhaust Valve A.
RBV- 5, Cntmt Purge / Vent Exhaust Damper.

Answer

c.

Reference

RO2-04-LP018 pgs. 16 and 48

SD-45, Radiation Monitoring, R-11,12, and 21, section 3.3.2 and 3.3.3

CFR ID: CFR 55.41.2 to 41.9

NEW

Justification:

- a. Incorrect, this is cross train.
- b. Incorrect, this is the combination for R-21.
- c. Correct, this is the combination that either R-11 or R-12 isolate.
- d. Incorrect, this is cross train.

Question # 26
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 034K4.01

Question
Given the following:

During refueling operations, you are placing a fuel assembly into the core when the crane hoist stops. The Z-Z axis tape indicates the fuel assembly is NOT fully lowered into the core.

Which ONE of the following lights should be LIT on the control console?

- a. Gripper Up Diseng
- b. Slack Cable
- c. Gripper Tube Down
- d. Overload

Answer

b.

Reference

RO2-01-LP053

SD-053

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, when 12" withdrawn into the mast.
- b. Correct, weight setpoint indicates < 150 pounds.
- c. Incorrect, crane mast is fully down in the core or Transfer System Basket.
- d. Incorrect, overload weight > 150 pounds.

Question # 27
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 035K1.09

Question
Given the following:

- The reactor is at 50% power.
- Rod control is in MANUAL.
- Turbine control is in IMP-IN.
- S/G B PORV fails OPEN.

Which ONE of the following describes the resulting steady-state conditions? (Assume no reactor trip or operator action and turbine power remains constant)

- a. Final T_{avg} < initial T_{avg} and final reactor power > initial reactor power.
- b. Final T_{avg} < initial T_{avg} and final reactor power = initial reactor power.
- c. Final T_{avg} = initial T_{avg} and final reactor power > initial reactor power.
- d. Final T_{avg} = initial T_{avg} and final reactor power = initial reactor power.

Answer

a.

Reference

RO2-05-LP06B

RO2-05-LP049

0-FND-LP2.2.2

CFR ID: CFR 55.41.2 to 41.9

NEW

Justification:

- a. Correct steam loss through PORV causes T_{avg} decrease which adds positive reactivity which causes power to rise. T_{avg} will remain less than initial T_{avg} because some of the reactivity is used to overcome power defect associated with power rise.
- b. Incorrect, conflicts with the above correct answer.
- c. Incorrect, conflicts with the above correct answer.
- d. Incorrect, conflicts with the above correct answer.

Question # 28
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 037AK3.07

Question

Given the following:

- A tube leak of approximately 30 gpm has been identified on SG B.
- The operating crew has entered E-0-14, Steam Generator Tube Leak.
- Operators have completed Step 34 of E-0-14, and have isolated feed flow to SG B.

Which ONE of the following identifies the reason for maintaining SG B level above the top of the U-Tubes?

- a. To ensure that the pressure and temperature limits of the SG shell are maintained.
- b. To prevent a rapid depressurization of the SG during RCS cooldown.
- c. To prevent SG overflow.
- d. To prevent thermal shock to the tubes during RCS cooldown.

Answer

b.

Reference

RO2-05-LP06B

E-0-14 Step 34 to 35 Caution and Note

CFR ID: CFR 55.41.5 / 41.10

NEW

Justification:

- a. Incorrect, in that these limits apply to CSD conditions.
- b. Correct, because the insulating layer of water above the tubesheet helps trap pressure in the S/G and minimize tube d/p during cooldown.
- c. Incorrect, because level control is not an issue.
- d. Incorrect, because there is no sudden introduction of cold water after the level is attained.

Question # 29
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 039A1.03

Question
Given the following:

- Startup in progress.
- At 1310 the operators crack open MS-2A, S/G A MSIV Bypass Valve, and MS-2B, S/G B MSIV Bypass Valve, to warm the main steam lines.

Which ONE of the following indicates the actions that should be taken by the operators and why?

- a. Leave MSIV bypass valves open; these indications are expected during this evolution.
- b. Close the MSIV bypass valves; main steam line heat-up limit was exceeded.
- c. Close the MSIV bypass valves; both RCS cooldown limits and main steam line heat-up limits were exceeded.
- d. Leave MSIV bypass valves open; neither RCS cooldown limits nor main steam line heat-up limits were exceeded.

Answer

b.

Reference

RO2-02-LP06A

RO2-01-LP362

N-MS-06, section 4.1.2

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, RCS cooldown limit of 100°F/hr was not exceeded and these are not the expected conditions for this evolution.
- b. Correct, main steam line limit of less than or equal to 100°F/hr was exceeded.
- c. Incorrect, RCS cooldown limit of 100°F/hr was not exceeded; main steam line limit of 100°F/hr was exceeded.
- d. Incorrect, RCS cooldown limit of 100°F/hr was not exceeded; main steam line limit of less than or equal to 100°F/hr was exceeded.
N-MS-06 step 2.b identifies MS limit of < 100°F/hr
RD 11.1.1 identifies RCS limit of <100°F/hr

Question # 30
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 040AG2.4.6

Question

Given the following:

- The plant was at 100% power.
- A main steam line break occurred in the Turbine Building.
- Operators were unable to close the MSIVs and transitioned to ECA-2.1, Uncontrolled Depressurization of Both Steam Generators.
- MSIV B is closed locally.
- The operating crew is performing the IPEOP step to check for secondary radiation levels.
- The NCO reports the SG B pressure is rising slowly.

Which ONE of the following actions should be performed?

- a. Transition to E-2, Faulted SG Isolation.
- b. Transition to ES-1.1, SI Termination.
- c. Remain in ECA-2.1 until RHR is in service.
- d. Remain in ECA-2.1 until SI is terminated.

Answer

a.

Reference

RO4-04-LP014

ECA-2 QRF

CFR ID: CFR 55.41.10

NEW

Justification:

- a. Correct, with no SI termination in progress the crew should transition to E-2, Faulted SG Isolation.
- b. Incorrect, examinee may misinterpret step action and select the normal SI termination procedure vs. ECA-2.1.
- c. Incorrect, examinee may select to stay in ECA-2.1 until complete which is after RHR is placed in service.
- d. Incorrect, ECA-2 QRF states that if any intact S/G is restored during SI termination steps that transition to E-2 should be delayed until SI is terminated.

Question # 31
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 045A3.05

Question
Given the following:

- The plant is at 100% power.
- Turbine EHC control is in IMP OUT.
- Turbine is NOT on VPL.
- VPL indication is set to the top of scale (> 100%).

Which ONE of the following describes the turbine control system while in IMP OUT mode?

- a. Control valve position is adjusted to maintain generator load constant and will NOT respond to changes in system frequency.
- b. Control valve position is adjusted to maintain generator load constant and will respond to changes in system frequency.
- c. Maintains control valves at a set reference position and will NOT respond to changes in system frequency.
- d. Maintains control valves at a set reference position but will respond to changes in system frequency.

Answer

d.

Reference

RO2-02-LP54A

RO2-05-LP54B

SD 54

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, in the IMP OUT mode governor valves adjust to maintain load and system frequency.
- b. Incorrect, in the IMP OUT mode governor valves adjust to maintain load and system frequency.
- c. Incorrect, governor valves are set at a reference set in by the operator, but WILL change in response to system frequency changes.
- d. Correct, governor valves are set at a reference set in by the operator and WILL change in response to system frequency changes.

Question # 32
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 051AA2.02

Question
Given the following:

- The plant was operating at 100% power.
- Condenser vacuum is degrading.
- The Turbine is being unloaded at a rate of 3%/min.
- Annunciator 47051-W, CONDENSER VACUUM LO, has just alarmed.

Use Reference provided: Figure 1, Operating Regions Based on Condenser Back Pressure. If vacuum stabilizes at its current value and the power backdown is stopped at 210 MWe, what is the required operator response in accordance with E-AR-09, Loss of Condenser Vacuum?

- a. The operator must immediately trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- b. The operator has 10 minutes to restore vacuum or trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- c. The operator must immediately runback the turbine to < 23 MWe.
- d. The operator has 10 minutes to reduce load to < 23 MWe or trip the reactor and go to E-0, Reactor Trip or Safety Injection.

Answer

a.

Reference

RO2-02-LP003

E-AR-09, Loss of Condenser Vacuum

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Correct, the unit is in the DO NOT OPERATE region and must trip the RX.
- b. Incorrect, the unit is in the DO NOT OPERATE region and must trip the RX.
- c. Incorrect, the unit is in the DO NOT OPERATE region and must trip the RX.
- d. Incorrect, the unit is in the DO NOT OPERATE region and must trip the RX.

Question # 33
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 054AG2.4.48

Question

Given the following:

- The plant is at 45% power.
- Feedwater Pump A is in service.
- Feedwater Pump B is in PULLOUT.
- FI-465, Steam Flow Channel II(White), has failed high.
- A-MI-87, Bistable Tripping for Failed Reactor Protection or Safeguards Inst., Removal From Service, has been completed for FI-465.

Due to maintenance activities a lockout occurs for BOTH Bus 1-1 and Bus 1-2.

Which ONE of the following identifies when the motor-driven AFW pumps start?

- a. Immediately, due to both Feedwater Pump breakers open.
- b. Immediately due to undervoltage signal on Bus 1-1 and Bus 1-2.
- c. Not until indicated level in SG A falls below 25.5%, with SG B level 22%.
- d. Not until indicated level for either SG falls below 17%.

Answer

a.

Reference

RO2-02-LP05B

Annunciator Response Sheets:

47061-A, Rev. B

47061-B, Rev. B

47081-A, Rev. Orig.

47081-B, Rev. Orig

Logic E-1624, Rev. Z

CFR ID: CFR 55.43.5

New

Justification:

- a. Correct. Trip of both FW Pumps will cause the motor-drive AFW Pumps to start. Lockout on Bus 1 or 2 will trip the Feeder Breakers for that Bus.
- b. Incorrect. The turbine driven AFW pump starts on undervoltage signal for both Bus 1 and 2. An undervoltage signal for Bus 1 or Bus 2 alone does not trip the Feeder Breakers on the Bus.
- c. Incorrect. With SG A Steam Flow channel reading > SG A Feed flow channel by at least 0.87×10^6 lbs/hr, then the reactor trip signal would be generated when SG A level fell below 25.5%.
- d. Incorrect. This is the normal reactor trip setpoint and also the normal AFW actuation setpoint. If the loss of FW condition resulted from other than the listed fault (so that FW

Pumps did not trip), this would be the expected indication.

Question # 34
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 055EK3.02

Question

Given the following:

- A Loss of All AC Power has occurred.
- A controlled depressurization of the S/Gs has been initiated as directed in ECA-0.0, Loss of All AC Power.

What is the basis for maintaining RCS Cold Leg temperatures above 334°F during the depressurization?

- a. To prevent challenging the Integrity Critical Safety Function.
- b. To prevent exceeding the Technical Specification cooldown limit.
- c. To prevent introduction of nitrogen from the SI Accumulators into the RCS.
- d. To prevent creating a void in the reactor vessel head.

Answer

a.

Reference

RO4-04-LP040

ECA-0.0, Rev. Y Step 26d

IPEOP BKGD ECA-0.0, Rev N.4.Step 26

CFR ID: CFR 55.41.5 /41.10

Bank

Justification:

- a. Correct, per the background document for ECA-0.0 step 26 the temperature monitoring ensures that the depressurization does not impose a challenge to the Integrity Critical Safety Function (PTS).
- b. Incorrect, this is not an identified concern in a loss of all AC power.
- c. Incorrect, this is a concern if temperature and pressure are reduced further below the conditions identified in the procedure step.
- d. Incorrect, this is not an identified concern in the background document for this condition.

Question # 35
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 056AK1.01

Question
Given the following:

- Reactor Trip has occurred due to a Loss of Offsite Power.
- Natural Circulation has been established and verified.
- Pressurizer level is 40%.
- Steam Generator A pressure is 995 psig.
- Steam Generator B pressure is 1005 psig.
- RCS Subcooling margin indicates 87°F.

Use Reference provided: Steam Tables.

Which ONE of the following indicates the RCS loops wide range cold leg temperature band?

- a. 483 - 487°F
- b. 544 - 548°F
- c. 550 - 554°F
- d. 570 - 574°F

Answer

b.

Reference

RO4-04-LP006

ES-0.2 NC Cooldown

CFR ID: CFR 55.41.8 / 41.10

NEW

Justification:

- a. Incorrect, this is T_{avg} for 100% power minus the 87 degrees SCM.
- b. Correct, $T_c = T_{sat}$ for secondary (995 psig = 1010 psia; 1005psig = 1020 psia) therefore 995 T_{sat} is 544 and T_{sat} 1005 is 548.
- c. Incorrect, these would relate to safeties lifting and the pressure is not that high.
- d. Incorrect, this is T_{avg} at 100% but with a LOOP this is plausible.

Question # 36
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 056G2.4.45

Question
Given the following:

- The plant is at 55% power.
- Condensate Pump A white light is ON.
- Two main feedwater pumps are operating.
- Annunciator 47063-P, FEEDWATER BYPASS ALERT is in alarm.
- C-13, LP Feedwater Heater Bypass Valve, is OPEN.
- Main feedwater pump suction pressure is 270 psig.

Which ONE of the following describes the action to be taken in response to the given plant conditions?

- a. Reset the overcurrent trip of Condensate Pump A by positioning its control switch to STOP/AUTO.
- b. Verify safe turbine operation per N-TB-54, Figure 4, Operating Regions Based on Condenser Backpressure.
- c. Verify Feedwater Pump A trip and monitor feedwater pump suction pressure.
- d. Raise Heater Drain Pump speeds to restore feedwater pump suction pressure.

Answer

c.

Reference:

RO2-02-LP003

47063-P Alarm Response Sheet

A-CD-03, Condensate System Abnormal Operation

CFR ID: CFR 55.43.5

Bank

Justification:

- a. Incorrect. Placing the control switch to the START/AUTO position will not reset the OC relay. No direction for this action is given A-CD-03 "Condensate System Abnormal Operation." Plausible because Pump handswitches are normally placed in the lock out position after a pump trip.
- b. Incorrect. Turbine operation is not affected for this situation. No change in condenser back pressure has been stated in the stem. Plausible because Condenser back pressure could change for some condensate/feedwater alignments.
- c. Correct. As stated in A-CD-03 "Condensate System Abnormal Operation," FWP suction must be >260 psig or Turbine load must be reduced.
- d. Incorrect. FWP pressure is currently > pressure (260 psig) listed in A-CD-03 "Condensate System Abnormal Operation." Plausible because Heater Drain Pumps are variable speed and raising the speed would increase their discharge pressure.

Question # 37
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 056K1.03

Question
Given the following:

- The reactor is at 48% power.
- Feedwater Pumps A and B are running.
- Hotwell Recirculation to the CSTs is in progress per N-CD-03, Condensate System.
- MU-2A, Condensate Makeup Control Station Inlet, is closed.
- MU-2B, Cond Emergency Makeup Control Station Inlet, is closed.
- C-404, Condensate Dump to CST, is open one turn.
- Then, C-401/CV-31011, Condenser Dump Valve, OPENS and sticks OPEN.

Which ONE of the following running pump combinations would be the INITIAL indication of this plant condition after the first interlock setpoint is reached?

- a. Feedwater Pump A and Condensate Pump A.
- b. Feedwater Pump B and Condensate Pump B.
- c. Feedwater Pump A and Condensate Pump B.
- d. Feedwater Pump B and Condensate Pump A.

Answer

c.

Reference

RO2-02-LP05A

SD 05A

SD 03

N-CD-03, Rev. P

Drawing OPERM-204, Rev. HJ

CFR ID: CFR 55.41.7

NEW

Justification:

Condensate Pump B will trip if hotwell level falls below 14% and Condensate Pump A will trip if hotwell level falls below 5%. A trip of either Condensate pump with both FW Pumps running will cause a trip of FW Pump A. With the lineup as give flow will be directed from the hotwell to the CST and hotwell level will decrease.

- a. Incorrect, the FWP A trips first.
- b. Incorrect, the CDP B trips first.
- c. Correct, the CDP B trips first, then FWP A.
- d. Incorrect, the FWP A trips first.

Question # 38
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 057AA2.18

Question
Given the following:

- The reactor is at 8% power.
- G-1, Generator #1 Main Breaker, has just been closed.
- BRA-113, Instrument Bus I (Red), supply breaker trips.

Which ONE of the following is the FIRST indication the operator would see for this failure?

- a. Reactor Trip Breakers open.
- b. Generator Field Breaker opens.
- c. LD-2 and LD-3, Letdown Isolations, close.
- d. FW-10A and FW-10B, Main Feedwater Control S/G A and S/G B Bypasses, close.

Answer

a.

Reference

RO2-03-LP038

SD-038

SD-48

E-845

E-2039

XK-100-554

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Correct. Loss of power from Instr. Bus I will cause N-35 Intermediate Range NIS to trip. This will generate a reactor trip, opening both reactor trip breakers.
- b. Incorrect. The Generator Field Breaker will trip after the output breaker G-1 trips. G-1 will open 25 seconds after the turbine trip signal is generated from the reactor trip signal.
- c. Incorrect. Pressurizer level instrument LT-426 will fail to ZERO. However it is not usually selected for control or protection input (Channel 2-3 is the normal alignment). However, if it were selected as the control channel: 1. If in 2-1 position, the failure would close LD-3 only AND 2. If in 1-3 position, the failure would close LD-2 only.
- d. Incorrect. If FW-10A/B were in MAN, they are unaffected. If they were in AUTO, then LI-461, as controlling channel for SG A level, will fail low and FW-10A should attempt to open to re-establish desired level. Both FW-10A and FW-10B will close on Low Tavg after the trip breakers open.

Question # 39
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 059K3.03

Question
Given the following:

- The plant is at 60% power.
- All systems are in their normal alignment.
- LT-461, S/G A level channel I (Red), fails low.
- Assume NO operator action and NO protection system actuation.

Which ONE of the following describes the response for S/G A?

- a. S/G level will continuously decrease.
- b. S/G level will decrease initially, then return to the level setpoint.
- c. S/G level will continuously increase.
- d. S/G level will increase initially, then return to the level setpoint.

Answer

c.

Reference

RO2-02-LP05A

SD 5A

XK100-152 Feedwater Control and Isolation Logic

CFR ID: CFR 55.41.7

Justification:

The SGWLC at KNPP is a level dominant system.

- a. Incorrect. With the controlling channel failed low demand will be to increase SG A level so FW -7A valve will open and SG A level will rise (until turbine trip on high-high level). This selection would be correct for the level channel failing high.
- b. Incorrect. SG levels will rise not return to program level. This would be expected for a failure low of the SG A controlling Steam Flow channel.
- c. Correct. With the controlling channel failed low demand will be to increase SG A level so FW -7A valve will open and SG A level will rise (until turbine trip on high-high level).
- d. Incorrect. SG levels will rise not return to program level. This would be expected for a failure low of the SG A controlling Feed Flow channel.

Question # 40
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 059K4.19

Question
Given the following:

- The reactor is tripped.
- Main Feedwater is Isolated.
- Both Main Feedwater pumps are tripped.

Which ONE of the following conditions will result in the plant indications observed above?

- a. ONE Steam Generator level greater than 67% on 2 or more detectors.
- b. AMSAC Train B signal is inadvertently actuated.
- c. Pressurizer pressure less than 1815 psig on 2 or more channels.
- d. RCS Tavg less than 562°F on 2 or more channels.

Answer

c.

Reference

RO2-02-LP05A

E-1625 Integrated Logic Diagram- Feedwater System

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, this does generate a signal to close the FW valves, however this is only for the specific S/G train that this level will affect the respective FW valves.
- b. Incorrect, this does NOT generate a signal to close the FW valves.
- c. Correct, this does generate a signal to close the FW valves (SI actuates at 1815 psig).
- d. Incorrect, this does not generate a signal to close the FW valves, coincident with the Reactor trip the temp is too high to close the FW valves.

Question # 41
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 061A1.04

Question

Given the following:

- A plant heatup is in progress in accordance with N-O-01, Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition.
- Pressurizer pressure is 1800 psig and slowly rising.
- Both RXCPs are running.
- CCW supply temperature to the RXCPs is 103°F and stable.
- RCS Tavg is 500°F and slowly rising.
- SG pressures are 695 psig each and slowly rising.
- Shutdown Banks are withdrawn.
- CST level is 7% and slowly lowering.

Which ONE of the following identifies the appropriate action for the operating crew?

- a. Trip the reactor and then stop both RXCPs.
- b. Stop the running AFW Pump.
- c. Reduce RCS temperature to less than 350°F.
- d. Reduce Pressurizer pressure to less than 1000 psig.

Answer

b.

Reference

RO4-02-LPD11

N-FW-05B

CFR ID: CFR 55.41.5

NEW

Justification:

- a. Incorrect, Steady state CCW supply temperature to the RXCPs should not exceed 105°F when RCS temperature is > 400°F. If CCW supply temperature reaches 120°F, the RXCPs shall be tripped.
- b. Correct, If CST is supplying AFW Pumps, stop AFW Pumps at 8% CST level.
- c. Incorrect, No condition exists that requires RCS cooldown to 350°F. If RCS temperature is > 350°F and CST level is less than Tech Spec Minimum [this condition does exist], reactor operation may continue for up to 48 hours. If CST levels not restored, then 1 hour action - Achieve and maintain RCS temperature < 350°F within 12 hours.
- d. Incorrect, No condition exists for reducing RCS pressure to 1000 psig. This is the normal pressure plateau for establishing ECCS (SI) equipment lineup.

Question # 42
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 061K5.01

Question
Given the following:

- The reactor tripped from 100% power.
- The plant has stabilized in Hot Shutdown.
- SG A pressure is 850 psig.
- SG B pressure is 950 psig.
- Both motor-driven AFW pumps are running with their headers inter-tied (AFW-10A, AFW Train A Crossover Valve, and AFW-10B, AFW Train B Crossover Valve, are open).
- AFW-2A, AFW Flow Control AFWP A, and AFW-2B, AFW Flow Control AFWP B, are throttled to 50% open.
- The steam dumps are currently closed.

Which ONE of the following describes the status of heat transfer from the RCS to the secondary?

- a. SG A heat transfer rate is higher since more AFW flow is directed to SG A.
- b. The heat transfer rate will be the same in both SGs since AFW flow rates are equal and the change in enthalpy (hfg) is the same.
- c. SG B heat transfer rate is higher since AFW flow rates are equal and the change in enthalpy (hfg) is larger.
- d. SG B heat transfer rate is higher since more AFW flow is directed to SG B.

Answer

a.

Reference

RO2-02-LP05B

SD-05B

O-FND-LP2.3.4

CFR ID: CFR 55.41.5

NEW

Justification:

- a. Correct. With SG A pressure lower more AFW flow from AFW Pump A and B are directed to SG A.
- b. Incorrect. Since the headers are cross-tied, the lower pressure in SG A results in more AFW flow to SG A irrespective of AFW-2A/B position. The hfg is higher for SG A at the lower pressure (Approximate SG A hfg (at 850 psia) is 679.5 BTU/lb while SG B hfg (at 950 psia) is 660.0 BTU/lb)
- c. Incorrect. Since the headers are cross-tied, the lower pressure in SG A results in more AFW flow to SG A irrespective of AFW-2A/B position. The hfg is higher for SG A at the lower pressure (Approximate SG A hfg (at 850 psia) is 679.5 BTU/lb while SG B hfg (at

- d. 950 psia) is 660.0 BTU/lb)
Incorrect. AFW flow to SG B is lower due to the SG B pressure.

Question # 43
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 062A3.05

Question

Given the following sequence of events:

- A small break LOCA occurred which resulted in a Reactor Trip and SI.
- The SI signal was reset during the performance of E-1, Loss of Reactor or Secondary Coolant.
- A loss of offsite power occurred and the diesel generators loaded as designed.

Assuming no operator actions, which ONE of the following would be the status of the loads on the 4160V Emergency AC Bus?

- a. All equipment powered from the Emergency AC Bus with the control board switch in automatic will be restarted.
- b. No 4160V Emergency AC Bus loads are automatically restarted.
- c. Equipment normally started during a loss of offsite power will be automatically restarted; SI and RHR pumps remain OFF.
- d. All equipment that was operating prior to the loss of offsite power will be automatically restarted; All running ESF equipment will be reenergized.

Answer

c.

Reference

RO2-03-LP039

SD-39

ECA-0.0, Loss of All AC Power

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, most equipment needs to be positioned to start.
- b. Incorrect, some loads that are vital will auto start when the bus is re-energized.
- c. Correct, with the SI reset only the auto loads will restart.
- d. Incorrect, with the SI reset the SI loads will not restart and not all loads will restart.

Question # 44
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 062G2.4.24

Question
Given the following:

- Turbine Bldg SW Selector switch is in the 1B position.
- An SI signal has been generated.
- During the performance of E-0, Reactor Trip or Safety Injection, a loss of all AC power occurred.
- DG A was manually started and aligned to supply Bus 5, 5 minutes following the loss of power.
- Bus 6 remains deenergized.
- All required equipment was loaded onto Bus 5.
- Service Water Header A pressure is 97 psig.

NOTE:

SW-4A, SW Header A To Turbine Bldg Hdr.
SW-4B, SW Header B To Turbine Bldg Hdr.

When performing step 23 of ES-1.1, SI Termination, which ONE of the following occurs when the operator presses the Turb Bldg SW ESF Isol reset pushbutton?

- a. SW-4A and SW-4B will open.
- b. SW-4A will open and SW-4B will remain closed.
- c. SW-4B will open and SW-4A will remain closed.
- d. SW-4A and SW-4B will remain closed.

Answer

d.

Reference

RO2-02-LP002

SD 02

ES-1.1, SI Termination

CFR ID: CFR 55.41.7

Bank

Justification:

With an SI the SW ESF Isol signal will close the valve selected to feed the Turbine Bldg header non-ESF loads (SW-4A or SW-4B), if a low pressure at SW pump discharge is sensed on the same train. SO In 1B position SW B header goes below pressure setpoint when the loss of all AC occurs. When DG A is loaded, SW Train A Pumps start and repressurize SW Train A header only. (SW-3A closed). SW Train B remains depressurized. Depressing the RESET pushbutton will NOT allow the valve SW-4B to open since it is selected.

- a. Incorrect, loss of power both valves will remain closed.

- b. Incorrect, loss of power both valves will remain closed.
- c. Incorrect, loss of power both valves will remain closed.
- d. Correct, loss of power both valves will remain closed.

Question # 45
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 063K3.02

Question
Given the following:

- The plant is at 100% power.
- Safeguards Train A, DC Power has failed.

Which ONE of the following describes the response of AFW Pump A to a safeguards actuation?

- a. Pump starts and supplies water to S/G A.
- b. Pump starts and supplies water to both S/Gs.
- c. Pump starts but trips on low lube oil pressure.
- d. Pump will NOT auto start.

Answer

d.

Reference

RO2-03-LP038

E-EDC-38A, Loss of A Train Safeguards DC Power

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, no DC control power to breaker.
- b. Incorrect, no DC control power to breaker.
- c. Incorrect, no DC control power to breaker.
- d. Correct, no DC control power to breaker.

Question # 46
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 064K2.03

Question
Given the following:

- The plant is at 100% power.
- Both Diesel Generators are in standby.
- Annunciator 47093-A, DIESEL GEN A CONTROL VOLT LOW, alarms.

Which ONE of the following is the appropriate operator response for the given plant conditions?

- a. Raise Bus 1-5 voltage.
- b. Check BRA-104 for proper operation.
- c. Select the local panel Manual/Off/Auto voltage mode control switch to Auto.
- d. Press the Emergency Shutdown Voltage Reset pushbutton.

Answer

b.

Reference

RO2-03-LP42A

E-EDC-38A, Loss of A Train Safeguards DC Power

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, because the alarm identifies a loss of control power (125 VDC).
- b. Correct, because BRA-104 supplies the DG control power, this is what feeds the alarm (85%) of 125 VDC.
- c. Incorrect, because this places the control room and local station in automatic voltage control.
- d. Incorrect, because this will clear the Excitation Volt Deenergized alarm 47094-A.

Question # 47
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 065AK3.03

Question
Given the following:

- The plant is at 100% power.
- Instrument air to RBV-150D, Containment Fan Coil Unit D Emergency Discharge Damper, has been isolated due to a leak.
- RBV-150D has failed OPEN due to the loss of Instrument Air.

Which ONE of the following identifies the specific equipment that must be monitored for overheating?

- a. RXCP A.
- b. RXCP B.
- c. Containment Fan Coil Unit B.
- d. Containment Fan Coil Unit D.

Answer

a.

Reference

RO2-02-LP001

RO2-04-LP018.002, 1.

SD-01

OPERM 602

E-AS-01, Loss of Instrument Air

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Correct, because RBV-150D is the flow path for cooling air to the RXCP.
- b. Incorrect, because the damper is NOT the flow path for cooling air to the RXCP B.
- c. Incorrect, because the damper is NOT the flow path for the Contmt Fan Coil Unit. CFCU does have a damper RBV-100AB (Disch to Refueling Floor) which if closed and CFCU A running could cause a concern with CFCU B no flow.
- d. Incorrect, because the damper is NOT the flow path for the Contmt Fan Coil Unit. FCU does does not have a damper closure position that would affect it unless CFCU C was running, its normal damper RBV-100CD (Disch to Refueling Floor) was closed and CFCU C was operating at a higher pressure than FCU D. In this case CD-34189, FCU D Disch Backdraft Damper may be closed, resulting in concern. Please note that CFCUs C & D share the same type discharge path that is mentioned in "C" above. In this case it is CFCU C that has the damper RBV-100CD.

Question # 48
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 068AK3.18

Question

Which ONE of the following actions must be taken prior to evacuating the Control Room in accordance with E-O-6, Fire in Alternate Fire Zone?

- a. Manually start at least one (1) AFWP.
- b. Trip both RXCPs and place in pullout.
- c. Initiate manual Safety Injection.
- d. Start both diesel generators.

Answer

b.

Reference

RO2-05-LP087

E-O-06, Fire in Alternate Fire Zone

CFR ID: CFR 55.41.5 / 41.10

Modified

Justification:

- a. Incorrect, because AFWP's are not manually actuated for this scenario.
- b. Correct, step (5) identifies stopping the RXCPs and placing in pullout.
- c. Incorrect, SI is not actuated.
- d. Incorrect, the EDG are removed from service (placed in pullout).

Question # 49
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 068K1.07

Question

Which ONE of the following drains to the Laundry and Hot Shower Tanks in the Liquid Waste Processing System (LWP)?

- a. The Sludge Interceptor Tank.
- b. The Respirator Cleaning Room drains.
- c. The Waste Holdup Tank.
- d. The Sample Sink and Hot Laboratory drains.

Answer

b.

Reference

AOI-82-LP32A

SD 32A

CFR ID: CFR 55.41.2 to 41.9

NEW

Justification:

- a. Incorrect, this tank is where the Laundry tanks drain.
- b. Correct, this is a normal source to the Laundry tanks.
- c. Incorrect, this tank is where the Sludge tank drains.
- d. Incorrect, these drain into the Waste Holdup Tank.

Question # 50
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 069AK2.03

Question

Given the following:

- The plant is in refueling operations.
- The first fuel assembly is being withdrawn from the core into the mast.
- The equipment hatch is closed, however both personnel airlock doors are open.

Which ONE of the following identifies the maximum time limit allowed per Technical Specifications to close at least one personnel air lock door?

- a. 10 minutes.
- b. 15 minutes.
- c. 30 minutes.
- d. 60 minutes.

Answer

c.

Reference

RO2-04-LP056

N-CCI-56

T.S. 1.g.3 & 3.8.a.1.a

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, 30 minutes is allowed in the refueling mode.
- b. Incorrect, 30 minutes is allowed in the refueling mode.
- c. Correct, 30 minutes is allowed in the refueling mode.
- d. Incorrect, 30 minutes is allowed in the refueling mode.

Question # 51
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 071A3.03

Question
Given the following:

A planned release of radioactive gas is in progress from Gas Decay Tank C.

Which ONE of the following radiation monitoring channels in HIGH alarm will result in an automatic termination of the release in progress?

- a. R-12, Containment Vent & Purge gaseous Monitor.
- b. R-13, Aux Bldg Vent Monitor.
- c. R-18, Waste Disposal System Effluent Monitor.
- d. R-21, Containment System Vent Activity Monitor.

Answer

b.

Reference

RO2-01-LP045

A-RM-45, Abnormal Radiation Monitoring System

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, closes Containment Purge Valves.
- b. Correct, closes WG-36.
- c. Incorrect, closes liquid waste discharge to circ water system.
- d. Incorrect, closes Containment Purge Valves.

Question # 52
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 072.A1.01

Question
Given the following:

- The plant is at 100% power.
- Increasing radiation levels are noted on R-13 and R-14, Aux Building Ventilation Exhaust Radiation Monitors.
- A few minutes later, R-4, Charging Pump Room Area Monitor, alarms.

Which ONE of the following malfunctions would be indicative of these conditions ?

- a. Charging Pump relief valve lifting.
- b. Steam Generator Blowdown tank leak.
- c. Leak in the Waste Gas Decay Tank Valve Gallery.
- d. Leak in the Boric Acid Pump Valve Manifold.

Answer

c.

Reference

RO2-01-LP045

XK100-36

A204

A206

CFR ID: CFR 55.41.5

Bank

Justification:

- a. Incorrect, the charging pump relief valve goes to the VCT so the Area monitor R-4 would not detect this occurrence.
- b. Incorrect, the SG Blowdown tank is in the mezzanine so R-4 would not respond to this.
- c. Correct, the Waste Gas Decay tanks are in the vicinity of area monitor R-4 so it will alarm if one of the tanks started to leak.
- d. Incorrect, the Boric Acid Transfer Pumps are on the 606' level so R-4 would not respond to a leak there.

Question # 53
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 073A2.01

Question

Given the following:

- The plant is at 100% power.
- While performing electrical work, a breaker was inadvertently opened on BRB-113, Instrument Bus II (White).

Which ONE of the following identifies both the component response the operator will observe, and the Alarm Response Sheet the operator will use for this event?

- a. Loss of R-15, Condenser Air Ejector Radiation Monitor, has caused BT-2A, S/G Blowdown and Sample Valve, to close. Alarm Response Sheet for annunciator 47015-B, RAD MONITOR POWER SUPPLY FAILURE, will direct the operator actions.
- b. Loss of R-15, Condenser Air Ejector Radiation Monitor, has caused ACC-3A, Non-Accident Fresh Air Damper, to close. Alarm Response Sheet for annunciator 47013-B, RAD MONITOR FAILURE, will direct the operator actions.
- c. Loss of R-21, Containment System Vent Activity Monitor, has caused TAV-12, Cntmt Purge/Vent Supply, to close. Alarm Response Sheet for annunciator 47015-B, RAD MONITOR POWER SUPPLY FAILURE, will direct the operator actions.
- d. Loss of R-21, Containment System Vent Activity Monitor, has caused RBV-5, Cntmt Purge/Vent Exhaust, to close. Alarm Response Sheet for annunciator 47013-A, RAD MONITOR SAMPLING FLOW HIGH/LOW, will direct the operator actions.

Answer

a.

Reference

RO2-01-LP045

A-RM-45, Abnormal Radiation Monitoring System

SD 45

47013-B

47015-B

CFR ID: CFR 55.41.5

NEW

Justification:

BRB-113 Ckt. #7 is the power supply the Train B process radiation monitors.

R-15 is Train B. R-21 is Train A

- a. Correct. R-15 fails high (ALARM actuated). BT-2A will get a closed signal. 47015-B provides the appropriate directions.
- b. Incorrect. Although R-15 fails high, ACC-3A does not get a closed signal. 47013-B would be in alarm, and also provides appropriate direction.

- c. Incorrect. R-21 is not affected, since it is fed from BRA-114 ckt #14, which is an A train power supply. 47015-B provides the appropriate directions.
- d. Incorrect. R-21 is not affected, since it is fed from BRA-114 ckt #14, which is an A train power supply. 47013-A does not provide the correct response if R-21 has failed.

Question # 54
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 075A4.01

Question

Given the following:

- Service Water is operating with SW Pump 1A1, 1A2 and SW Pump 1B1 running.
- The Service Water headers are currently split (SW-3A, Service Water Header A Isolation, and SW-3B, Service Water Header B Isolation, are closed).
- PI-41503, and PI-41506, Service Water discharge header A and B pressures read 108 psig and 106 psig, respectively.

Use Reference provided: Service Water Pump Flow Curves.

Which ONE of the following identifies the status of the Service Water Pump(s) with regard to pump minimum flow requirements?

- a. All SW Pumps fail to meet their required minimum flow.
- b. SW Pumps 1A1 and 1A2 fail to meet their required minimum flow.
- c. SW Pump 1B1 fails to meet its required minimum flow.
- d. All SW Pump flows meet their required minimum flow.

Answer:

b.

Reference:

N-SW-02, Service Water System

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, 1B1 has > 1800 gpm @ 106 psig.
- b. Correct, 1A1, 1A2 combined has 2400 gpm @ 108 psig with both pumps running which is < 3600 gpm required flow.
- c. Incorrect, 1B1 has > 1800 gpm @ 106 psig.
- d. Incorrect, 1B1 has > 1800 gpm @ 106 psig.

Question # 55
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 076K1.05

Question
Given the following:

- Diesel Generator A is running in parallel with Bus 1-5.
- Power is lost to SV-33033, the solenoid valve associated with SW-301A, Service Water from D/G A Heat Exchanger.

Which ONE of the following identifies how this affects the operation of the Diesel Generator?

- a. It trips immediately due to low raw water pressure.
- b. It trips after a few minutes due to low jacket water pressure.
- c. It continues to run with normal jacket water temperature.
- d. It continues to run but jacket water temperature will be higher than normal.

Answer

c.

Reference:

RO2-03-LP42A

E-1633

CFR ID: CFR55.41.2 to 55.41.9

Bank

Justification:

- a. Incorrect. If Service water is lost a low RAW WATER PRESSURE alarm is actuated on the DG Control & Excitation Cabinet Panel. There is no trip associated with this condition
- b. Incorrect. The valve fails open and the Jacket Water system is a closed system with an expansion tank. Jacket Water pressure is unaffected.
- c. Correct. SW-301A opens when the D/G starts. The valve also fails open on loss of air, or loss of power to the solenoid. So valve does not change position with the D/G running.
- d. Incorrect. Since the valve is normally open when the DG is running and fails open due to the given condition, the DG parameters will remain unchanged.

Question # 56
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 076K2.08

Question

Which ONE of the following identifies the power supplies for SW-903A, Cntmt Fan Coil Unit A SW Return Isolation, and SW-903B, Cntmt Fan Coil Unit B SW Return Isolation?

- | | SW-903A | SW-903B |
|----|-----------|-----------|
| a. | MCC 1-52A | MCC 1-62A |
| b. | MCC 1-52E | MCC 1-52E |
| c. | MCC 1-62E | MCC 1-62E |
| d. | MCC 1-62A | MCC 1-52A |

Answer

b.

Reference

RO2-02-LP002

SD 02

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, this is the power supply for SW-10A/B.
- b. Correct, they are both on the same MCC (1-52E).
- c. Incorrect, the 903C/D valves are powered from MCC (1-62E).
- d. Incorrect, this is just a reverse of the A answer.

Question # 57
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 078G2.4.11

Question

Procedure A-AS-01, Abnormal Station and Instrument Air System Operation, contains the following NOTE:

"Switching Failure light is ON for any of these conditions"

Which ONE of the following does NOT actuate the switching failure light for Instrument Air Dryer 1C?

- a. Inlet Transfer Valve fails to respond to timer signal.
- b. Instrument Air Dryer Bypass Valve fails to open.
- c. Purge Exhaust Valve fails to respond to timer signal.
- d. Either tower fails to repressurize.

Answer

b.

Reference

RO2-02-LP001

A-AS-01 NOTE: prior to step 4.5

CFR ID: CFR 55.41.7

NEW

Justification:

- a. Incorrect, this is covered in the note prior to step 4.5.
- b. Correct, this is not listed as an input to the light in the NOTE, it is covered in the automatic actions for step 3.1.3.
- c. Incorrect, this is covered in the note prior to step 4.5.
- d. Incorrect, this is covered in the note prior to step 4.5.

Question # 58
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 079K4.01

Question

The Station Air Headers will be FULLY isolated from the Instrument Air System via SA-200, Station Air Header Isol, and SA-400, Station Air Header Isol, when pressure drops below a specific setpoint.

Which ONE of the following identifies the isolation setpoint?

- a. 95 psig.
- b. 90 psig.
- c. 80 psig.
- d. 75 psig.

Answer

b.

Reference

RO2-02-LP001

A-AS-01, Abnormal Station and Instrument Air System Operation

CFR ID: CFR 55.41.7

Modified

Justification:

- a. Incorrect, this corresponds to the throttled setpoint for where the valves start to close.
- b. Correct, this corresponds to the point where both SA-200 and SA-400 valves are to be fully closed.
- c. Incorrect, this corresponds to a low pressure condition on the system.
- d. Incorrect, this is low enough to enter the loss of IA procedure but the valves will be closed.

Question # 59
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 103A2.03

Question
Given the following:

- The plant has experienced a Safety Injection.
- The crew is performing step 11 of E-0, Rx Trip or Safety Injection, when the NCO notes that Containment Pressure is 12 psig and stable, and Containment Isolation has not actuated.
- MSIVs are open.

Which ONE of the following describes the action(s) required per procedure?

- a. Manually actuate either Containment Isolation pushbutton (A or B), the MSIVs will close automatically on the manual Containment Isolation .
- b. Manually actuate either Containment Isolation pushbutton (A or B), and manually close the MSIVs.
- c. Manually actuate both Containment Isolation pushbuttons (A and B), the MSIVs will close automatically on the manual Containment Isolation .
- d. Manually actuate both Containment Isolation pushbuttons (A and B), and do not close the MSIVs.

Answer

d.

Reference

RO2-04-LP056

E-1636

E-0, Reactor Trip or Safety Injection

SD 45

CFR ID: CFR 55.41.5

Modified

Justification:

- a. Incorrect, because CCI manual actuation required BOTH switches actuated simultaneously and MSIVs only isolate as a result of input from Containment Pressure instruments.
- b. Incorrect, because CCI manual actuation required BOTH switches actuated simultaneously and MSIVs only isolate as a result of input from Containment Pressure instruments.
- c. Incorrect, because CCI manual actuation required BOTH switches actuated simultaneously and MSIVs only isolate as a result of input from Containment Pressure instruments.
- d. Correct, because both switches are actuated, the MSIVs only isolate as a result of input from Containment Pressure instruments (>17 psig).

Question # 60
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.1.2

Question

Which ONE of the following statements is the correct response if a Limiting Condition for Operation (LCO) cannot be met and no ACTION statement exists for the specific circumstance?

- a. Within one hour action must be initiated to place the unit in a MODE in which the LCO does not apply.
- b. Within two hours action must be initiated to place the unit in a MODE in which the LCO does not apply.
- c. The unit should be tripped and stabilized in HOT STANDBY.
- d. The unit should be tripped and stabilized in HOT SHUTDOWN.

Answer

a.

Reference

ROI-01-LPTS2

T.S. 3.0 (c)

CFR ID: CFR 55.41.10

NEW

Justification:

- a. Correct, when a LIMITING CONDITION FOR OPERATION is not met, and a plant shutdown is required except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply.
- b. Incorrect, the one hour time limit applies.
- c. Incorrect, the one hour time limit applies no Rx trip is required.
- d. Incorrect, the one hour time limit applies no Rx trip is required.

Question # 61
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.1.3

Question

Which of the following actions are REQUIRED of the oncoming NCOs as part of the turnover procedure?

1. Review the Priority One Workarounds.
2. Review the Control Room Log.
3. Review the Boric Acid Heat Tracing for alarms.
4. Review the Temporary Change Log Book.

- a. 1 and 2
- b. 2 and 3
- c. 1, 2 and 3
- d. 2, 3, and 4

Answer

b.

Reference

RO4-01-LPA09

GNP-03.17.07-1 Watchstanding Principles page 3

CFR ID: CFR 55.41.10

NEW

Justification:

- a. Incorrect, the Priority One Workarounds is an item on the Pre-Shift Brief Checklist that is covered by the shift manager after the turnover is complete.
- b. Correct, the CR Log review and Boric Acid Heat Tracing for alarms is on Turnover Sheet for review.
- c. Incorrect, the Priority One Workarounds is an item on the Pre-Shift Brief Checklist that is covered by the shift manager after the turnover is complete.
- d. Incorrect, Temporary Change Log Book is not part of Turnover Sheet.

Question # 62
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.1.32

Question

Given the following:

- A LOCA has occurred.
- Venting and filtration of containment atmosphere through the shield building vent to control the hydrogen concentration is about to commence.

Which ONE of the following identifies the limiting factor in setting the containment atmosphere release flow rate?

- a. The capability of the Shield Building Ventilation system to maintain a negative pressure in the Shield Building Annulus with respect to the Auxiliary Building.
- b. The capability of the Shield Building Ventilation system to maintain a negative pressure in the Shield Building Annulus with respect to the outside atmosphere.
- c. The capability of the Aux Building Special Ventilation system to maintain a negative pressure in the Auxiliary Building with respect to the outside atmosphere.
- d. The capability of the Aux Building Special Ventilation system to maintain a negative pressure in the Auxiliary Building with respect to the Shield Building Annulus.

Answer

a.

Reference

RO2-04-LP024

N-RBV-18C caution prior to step 4.1.6.7.d.4

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Correct, ensures any containment leakage is processed by the filtered ventilation system.
- b. Incorrect, must be to the Aux Building for processed ventilation system.
- c. Incorrect, does not effect the special ventilation system.
- d. Incorrect, does not effect the special ventilation system.

Question # 63
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.2.12

Question

What is the current requirement for performing SP 36-082, Reactor Coolant System Leak Rate Check?

In accordance with Operations Department Instructions, SP 36-082 is normally performed _____, and in accordance with Technical Specifications SP-36-082 is required to be performed at least _____.

- a. shiftly daily.
- b. daily daily.
- c. daily weekly.
- d. twice a week weekly.

Answer

c.

Reference

RO4-01-LPA06

SP 36-082, Rev. AD

Operations Department Instruction, SP 36-082 dated October 1, 2003.

CFR ID: CFR 55.41.10

NEW

Justification:

- a. Incorrect, The normal performance is on night shift daily, and Tech Spec is weekly.
- b. Incorrect, Tech Spec requirement is weekly.
- c. Correct, The ODI states the leak rate is to be performed on night shift daily unless the plant conditions do not allow (Shift Manager waives). The Tech Spec requirement remained weekly.
- d. Incorrect, The ODI states the SP is to be performed each day on night shift unless the plant conditions do not allow.

Question # 64
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.2.13

Question
Given the following:

- A Tagout is being removed that includes CVC-204A, 1A RXCP Seal Supply Throttle Valve.
- The valve was tagged in the CLOSED position.
- The restoration position of CVC-204A is throttled 1/4 turn open.

Which ONE of the following identifies the requirement for restoration of CVC-204A?

- a. Independent Verification is required, ensure CVC-204A is fully closed and then open the valve 1/4 turn.
- b. Independent Verification is required, fully open CVC-204A counting the number of turns and then restore to 1/4 turn open.
- c. Concurrent Verification is required, ensure CVC-204A is fully closed and then open the valve 1/4 turn.
- d. Concurrent Verification is required, fully open CVC-204A counting the number of turns and then restore to 1/4 turn open.

Answer

c.

Reference

RO4-01-LPA09

GNP-03.03.01, Rev. K, 6.7.10.1

GNP-03.09.01, Rev. A, 6.3.2.4

CFR ID: CFR 55.41.10

NEW

Justification:

- a. Incorrect, requires concurrent verification.
- b. Incorrect, requires concurrent verification.
- c. Correct, concurrent verification and observe the valve fully closed and then positioned to specific throttled position.
- d. Incorrect, concurrent verification and observe the valve fully closed and then positioned to specific throttled position.

Question # 65
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.3.1

Question

Given the following:

- The plant is in the REFUELING Mode.
- The area around the Regen Heat Exchanger has the following radiation level readings:
 - 2500 mR/hr on contact to piping, and 1200 mR/hr @ 30 cm, general area.
- No enclosure exists around the Regen Heat Exchanger..

Which ONE of the following describes the required radiological postings?

- a. The area shall be roped off and posted as a High Radiation Area with a flashing light.
- b. The area shall be roped off and posted as a High Radiation Area without a flashing light.
- c. No posting is required as long as Containment is posted as a High Radiation Area.
- d. Containment shall be posted as a Very High Radiation Area.

Answer

a.

Reference

RO4-01-LPA13

HP-01.019

T.S. 6.13.b

CFR ID: CFR 55.41.12

Bank

Justification:

- a. Correct, must have a flashing light.
- b. Incorrect, must have a flashing light.
- c. Incorrect, dose rate that high must be posted.
- d. Incorrect, dose rate that high must be posted.

Question # 66
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.3.4

Question

Which ONE of the following describes when a Specific Radiation Work Permit would be used?

- a. Issued for jobs of a non-repetitive nature and is valid only during the time stated for completion of the job.
- b. Issued for jobs of a repetitive nature and is valid for extended periods of time subject to periodic review.
- c. Issued for jobs where job conditions are likely to change abruptly.
- d. Issued for jobs where entry into an area exceeding 10 Rem/hr general area is required.

Answer

a.

Reference

RO4-01-LPA04

NAD-08.03, Radiation Work Permit, Rev. G, Page 1

CFR ID: CFR 55.43.4

Bank

Justification:

- a. Correct, this identifies a Specific RWP.
- b. Incorrect, this identifies a General RWP.
- c. Incorrect, not for abrupt changes.
- d. Incorrect, this identifies a Special RWP.

Question # 67
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.3.9

Question

Given the following:

- The reactor is in Cold Shutdown.
- A containment purge using the 36" RBV valves is being initiated.
- Containment pressure is 1.8 psi.

Which ONE of the following requirements and/or limitations apply during this evolution?

- a. A gaseous discharge permit is required.
- b. At least one train of Auxiliary Building Ventilation System shall be in operation.
- c. Notification of the NRC is required.
- d. A Containment Purge Exhaust Fan must be started prior to a Containment Vent Exhaust Fan.

Answer

a.

Reference

RO4-01-LPA01

N-RBV-18B (2.7.1)

CFR ID: CFR 55.43.4

Bank

Justification:

- a. Correct, > 1.5 psi needs a gas discharge permit.
- b. Incorrect, this is required if using the 2" post-LOCA lines.
- c. Incorrect, only if you open the 36" purge valves while critical.
- d. Incorrect, this is not a limitation to purge the RB.

Question # 68
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.4.1

Question
Given the following:

- The plant is at 100% power.
- A total loss of 4160V power occurs.

Which ONE of the following describes the correct procedure and immediate operator action?

- a. E-0, Rx Trip or Safety Injection, ensure Rx is tripped by all Rod bottom lights lit.
- b. ECA-0.0, Loss of All AC Power, ensure Rx tripped by neutron flux decreasing.
- c. ES-0.1, Reactor Trip Response, when SI is NOT required.
- d. ECA-0.0, Loss of All AC Power, ensure Rx tripped by all Rod bottom lights lit.

Answer

b.

Reference

RO4-04-LP040

ECA-0.0, Loss of All AC Power

CFR ID: CFR 55.41.10

Bank

Justification:

- a. Incorrect, because rod bottom lights will not have power.
- b. Correct, because emergency procedures can be entered directly from a Loss of All AC power and NIs will still be powered from battery via inverter.
- c. Incorrect, because ES-0.1 is entered from E-0 when SI is not required.
- d. Incorrect, because rod bottom lights will not have power.

Question # 69
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A 2.4.11

Question
Given the following:

- The plant is at 100% power.

Which ONE of the following conditions would require at least four core exit thermocouples per quadrant to be OPERABLE?

- a. Dropped Rod from Control Bank D Group.
- b. Two Rod Position Indicators in Control Bank A out of service.
- c. Power Range NI Channel N42 upper detector out of service.
- d. Only one movable detector in each quadrant is operable.

Answer

c.

Reference

RO2-05-LP048

A-NI-48, Rev. S, step 2, 4.3.1.c

Technical Specifications 3.11.c

CFR ID: CFR 55.41.10

Bank

Justification:

- a. Incorrect, does not impact or identify dropped rods.
- b. Incorrect, does not impact or identify misaligned rods.
- c. Correct, with PR out of service and >85% power.
- d. Incorrect, does not impact incore movable detectors.

Question # 70
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A W/E03.EK2.2

Question

Given the following:

- The plant has tripped due to a total loss of off-site power.
- During the trip, a Pressurizer PORV fails open and cannot be isolated.
- All other equipment and systems are functioning normally.

Which ONE of the following statements accurately describes these plant conditions?

- a. Core cooling will be re-established once the cold leg accumulators begin injecting flow.
- b. The RCS will continue to void, decay heat will be removed by reflux cooling.
- c. The combination of SI/break flow, auxiliary feedwater, and/or steaming paths will be sufficient to remove decay heat.
- d. Flow out the PORV will result in transfer of inventory from the RWST to the containment sump, with core cooling being established via sump recirculation with the RHR pumps, within ONE hour of the event.

Answer

c.

Reference

RO4-04-LP018

ECA-0.0, Loss of All AC Power Bkgd. pg 32 of 148

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, cold leg accumulators will be a temporary flow and a stuck open PORV will take a very long time to reduce pressure below the injection setpoint.
- b. Incorrect, decay heat can be removed with the secondary.
- c. Correct, decay heat can be removed with the secondary heat transfer paths and via the PORV path. These combine to provide adequate heat removal.
- d. Incorrect, sump recirculation cooling is for a Large Break, a stuck PORV is a small break.

Question # 71
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A W/E05.EA1.3

Question

Given the following:

- The plant is operating at 100% power.
- Total loss of feedwater occurs and operators implement FR-H.1, Loss of Secondary Heat Sink.
- No means of feedwater addition is available and the operators have initiated bleed and feed.
- Manual Safety Injection was initiated.
- When the operator attempted to open the pressurizer PORVs, PR-2A, Przr PORV, failed to open.

Which ONE of the following describes the correct operator mitigation strategy to respond to this problem?

- a. Stop ONE Safety Injection Pump to reduce loss of inventory through the PORV.
- b. Close any open Przr PORV to conserve RCS inventory and return to the steps to re-establish Main Feedwater.
- c. Open all RCS high point vents since ONE pressurizer PORV may not be sufficient to maintain adequate RCS bleed flow.
- d. Verify PR-2B, Przr PORV, and its block valve open to reduce RCS pressure since ONE pressurizer PORV provides adequate heat removal capacity for a loss of heat sink.

Answer

c.

Reference

RO4-04-LP018

FR-H.1 Step 19 contingency action a.

FR-H.1 Bkgd Doc step 19 basis (page 54)

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Incorrect, one PORV is not sufficient to provide adequate heat removal, stopping one SI pump has no affect on the relief capabilities of the PORV.
- b. Incorrect, you are required to go to feed and bleed when conditions require.
- c. Correct, increases the bleed path capability and reduce pressure to ensure the core remains cooled.
- d. Incorrect, more bleed path capacity is needed to ensure pressure reduction and cooling capability, not less injection.

Question # 72
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A W/E08.G2.4.18

Question

Given the following:

- Step 1 of FR-P.1, Pressurized Thermal Shock, has the operator check that RCS pressure is greater than 150 psig.

Which ONE of the following identifies the reason for checking the RCS pressure?

- a. Preventing implementation of actions in FR-P.1 if a large break LOCA has occurred.
- b. Ensuring adequate low head safety injection cooling prior to isolating SI Pumps.
- c. Determining if the accumulators may be isolated, allowing depressurization of the RCS.
- d. Ensuring RHR system is in service to provide adequate mixing in the cold leg downcomer region.

Answer

a.

Reference

RO4-04-LP016

FR-P.1, Response to Imminent Pressurized Thermal Shock Condition

CFR ID: CFR 55.41.10

Bank

Justification:

- a. Correct, ensures no LBLOCA has occurred.
- b. Incorrect, low pressure/temperature concern not PTS.
- c. Incorrect, low pressure/temperature concern not PTS.
- d. Incorrect, low pressure/temperature concern not PTS.

Question # 73
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A W/E10.EA2.2

Question

Which ONE of the following sets describes the MAXIMUM cooldown rates in the RCS cold legs that apply for a cooldown from normal operating temperature for the RCS in the following procedures?

ES-0.2, Natural Circulation Cooldown.

ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel.

- | | ES-0.2 | ES-0.3 |
|----|----------------|----------------|
| a. | 25°F per hour | 25°F per hour |
| b. | 25°F per hour | 100°F per hour |
| c. | 100°F per hour | 25°F per hour |
| d. | 100°F per hour | 100°F per hour |

Answer

b.

Reference

RO4-04-LP007

ES-0.2, Natural Circulation Cooldown.

ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel.

CFR ID: CFR 55.43.5

NEW

Justification:

- Incorrect. ES-0.3 allows the higher cooldown rate due to the conditions that require entry into the procedure and expected upper head void formation.
- Correct. The higher cooldown rate is allow in ES-0.3 since the purpose of the procedure is to cooldown faster allowing for bubble growth.
- Incorrect, ES-0.2 precludes any upper head void formation for conditions allowing the cooldown so that hte lower cooldown rate is required. ES-0.3 allows the higher cooldown rate due to the conditions that require entry into the procedure and expected upper head void formation..
- Incorrect, ES-0.2 precludes any upper head void formation for conditions allowing the cooldown so that the lower cooldown rate is required.

Question # 74
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A W/E11.EA1.3

Question
Given the following:

- At 0600, a LOCA outside containment resulted in a Reactor Trip and Safety Injection.
- At 1200, the crew transitioned to ECA-1.1, Loss of Emergency Coolant Recirculation, due to inadequate Sump B level.
- SI Pump A was then secured.
- SI Termination criteria has NOT been met.
- At 1500 (present time), SI Pump B flow is locally throttled to 50 gpm.

Use Reference provided: Figure ECA-1.1-1 Required SI Flowrate VS Time After Trip.

Which ONE of the following choices describes the correct course of action?

- a. SI Pump B flow should be increased by 50 gpm.
- b. SI Pump A should be manually started with a flowrate of 130 gpm.
- c. SI Pump B flow should be increased by 80 gpm.
- d. SI Pump A should be manually started with a flowrate of 100 gpm.

Answer

a.

Reference

RO4-04-LP022

ECA-1.1, Loss of Emergency Coolant Recirculation

CFR ID: CFR 55.41.7

Bank

Justification:

- a. Correct, total flow required is 100 gpm, B is at 50 therefore increase by 50.
- b. Incorrect, this requires restarting of A pump which is not necessary with B running. ECA-1.1 step 11 had previously established only one SI should be running.
- c. Incorrect, this would be greater than the required flow per the curve.
- d. Incorrect, this requires restarting of A pump which is not necessary with B running. ECA-1.1 step 11 had previously established only one SI should be running.

Question # 75
Exam Date 2004/11/15
Facility 305
Reactor Type PWR-WEC2
Exam Level R
K/A W/E13.EK3.2

Question
Given the following:

During the performance of FR-H.2, Response to Steam Generator Overpressure, operators are directed to verify T-hot less than 540°F if initial attempts to depressurize the SG(s) is unsuccessful.

Which ONE of the following is the bases for this verification?

- a. Ensures that the SG level instruments will be within the required accuracy during the depressurization.
- b. Ensures that the SG pressure conditions will allow a minimum of 200 gpm AFW flow.
- c. Ensures RCS saturation pressure is below shutoff head of SI Pumps in the event SGs become a heat SOURCE instead of a heat SINK.
- d. Ensures high RCS temperature is NOT the cause for the SG overpressure.

Answer

d.

Reference

RO4-04-LP036

FR-H.2, Response to Steam Generator Overpressure

CFR ID: CFR 55.41.5 / 41.10

Bank

Justification:

- a. Incorrect, SG levels are not a concern at this point in procedure.
- b. Incorrect, SG pressure will not impede AFW flow.
- c. Incorrect, SI pumps have adequate shutoff head.
- d. Correct, identifies the conditions where the SG could not be overpressurized due to the saturation conditions.