Question 1

Complete the following statements with regards to RCP seal injection.

1. During normal at power RCP operation, the Number 1 RCP seal receives __(1)__ gpm seal injection flow.

2. Seal Injection flow to the RCPs __(2)__ on a safety injection signal..

   A. (1) 3
      (2) isolates

   B. (1) 3
      (2) does NOT isolate

   C. (1) 5
      (2) isolates

   D. (1) 5
      (2) does NOT isolate

Question 2

Unit 1 plant conditions:

- Reactor startup in progress
- Reactor power = 10^3 cps stable (subcritical)
- A malfunction in 1-TV- 4646, LTDN HX CCW RET TEMP CTRL VLV reduces cooling water flow to the Letdown Heat Exchanger.

Based on the above conditions, complete the following statements:

1. Count rate will ____(1)____ due to the temperature change.

2. The temperature setpoint when Letdown Demineralizers will be automatically bypassed is____(2)____ °F.

   A. (1) increase
      (2) 125

   B. (1) increase
      (2) 135

   C. (1) decrease
      (2) 125

   D. (1) decrease
      (2) 135

Question 3

Complete the following statements regarding RHR system relief valves with RHR in shutdown cooling operation.

____(1)____ relief valves are allowed to be substituted for PRZR PORVs for LTOP protection and would be____(2)____ with RCS pressure at 435 psig.

A. (1) RHR pump suction
   (2) open

B. (1) RHR pump suction
   (2) closed

C. (1) RHR Cold Leg Injection
   (2) open

D. (1) RHR Cold Leg Injection
   (2) closed

Question 4

On Unit 2 during a design basis LOCA, which ONE of the following correctly describes how the CCW to RHR Heat Exchanger isolation valves will be positioned in order to prevent exceeding the CCW system design temperature during a design basis LOCA? (Assume all automatic valve movements are complete).

A. CCW Inlet Isolation valves 2CC-0109 and 2CC-0157 are closed and CCW Outlet Isolation valves 2-HV-4572 and 2-HV-4573 are full open.

B. CCW Inlet Isolation valves 2CC-0109 and 2CC-0157 are throttled to allow 40% flow and CCW Outlet Isolation valves 2-HV-4572 and 2-HV-4573 are throttled to allow 40% flow.

C. CCW Inlet Isolation valves 2CC-0109 and 2CC-0157 are closed and CCW Outlet Isolation valves 2-HV-4572 and 2-HV-4573 are throttled to allow 40% flow.

D. CCW Inlet Isolation valves 2CC-0109 and 2CC-0157 are throttled to allow 40% flow and CCW Outlet Isolation valves 2-HV-4572 and 2-HV-4573 are full open.

Question 5

Unit 1 plant conditions:

- Reactor power = 100%
- CCP 1-01 is operating
- SBLOCA occurs
- RCS pressure = 1700 psig decreasing
- SI Train A failed to actuate

Based on the above conditions, complete the following statements with regards to the Chemical & Volume Control System:

1. CCP 1-01 ____(1)____ be operating with its suction from the RWST.

2. RCP seal return will be directed to the ___(2)____.

A. (1) will
   (2) VCT

B. (1) will
   (2) PRT

C. (1) will NOT
   (2) VCT

D. (1) will NOT
   (2) PRT

Question 6

Unit 1 plant conditions:

- Reactor power = 100%
- A PRZR Safety valve has been leaking by its seat
- PRT temperature = 120°F

Based on the above conditions, complete the following statements:

1. At the current temperature, the PRT ___(1)____ maintaining its design capability to absorb the heat from a Relief/Safety valve discharge.

2. It order to cool the PRT, the RCDT system pumps water ___(2)____.

   A. (1) is
      (2) through a U-tube heat exchanger in the lower part of the PRT

   B. (1) is
      (2) directly into the PRT vapor space through spray nozzles

   C. (1) is NOT
      (2) through a U-tube heat exchanger in the lower part of the PRT

   D. (1) is NOT
      (2) directly into the PRT vapor space through spray nozzles

Question 7

Unit 1 plant conditions:

- Reactor power = 100%
- PRT level is increasing slowly
- PRT temperature = 102°F increasing slowly
- ABN-103, Excessive Reactor Coolant Leakage is in progress
- RCS leakage through a leaking PRZR safety valve is determined to be 160 gallons per day

Based on the above conditions, complete the following statements:

1. PRZR level indication should be ___(1)____.

2. Based on the amount of leakage through the safety valve, ABN-103 ___(2)____ require the plant to be shutdown due to being greater than Technical Specification limits.

A. (1) decreasing
   (2) does

B. (1) decreasing
   (2) does NOT

C. (1) remaining constant
   (2) does

D. (1) remaining constant
   (2) does NOT

Question 8

Unit 1 plant conditions:

- Reactor power = 50%
- The air line to CCW valve 1-TV-4646, LTDN HX CCW RET TEMP CTRL VLV severs resulting in a loss of air to the valve

Based on the above conditions, complete the following statement:

The Manual/Auto station (1-TK-130, Letdown Heat Exchanger Temperature Controller) located on CB-06 will indicate 1-TV-4646 demanded position being ___(1)____ with actual CCW flow being ___(2)____.

A. (1) 100%
   (2) at maximum

B. (1) 100%
   (2) at minimum

C. (1) 0%
   (2) at maximum

D. (1) 0%
   (2) at minimum

Question 9

Which ONE of the following is correct regarding the limitations associated with starting CCW pumps in accordance with SOP-502A, Component Cooling Water System?

A. A CCW pump may have 2 starting attempts from ambient temperature without a delay in between. After that, there should be at least a 45 minute delay between additional starting attempts.

B. If a CCW pump doesn't start initially when at ambient temperature, there should be at least a 15 minute delay between any additional starting attempts.

C. A CCW pump may have 2 starting attempts from operating temperature without a delay in between. After that, there has to be a minimum of a 15 minute delay between additional starting attempts.

D. If a CCW pump doesn't start initially when at operating temperature, there should be at least a 45 minute delay between any additional starting attempts.

Question 10

Unit 1 initial conditions:

- Reactor power = 80%
- RCS pressure is at setpoint
- PRZR PRESS CTRL CHAN SELECT (1/1-PS-455F) on 1-CB-05, is selected to 455/456
- Both PRZR PORVs are in AUTO
- Pressurizer Pressure Transmitter PT-456 fails HIGH

Based on the above conditions complete the following statement:

____(1)____ pressurizer spray valve will open and the reactor ____(2)____ trip on low RCS pressure. (Assume no operator action.)

A. (1) One
   (2) will

B. (1) One
   (2) will NOT

C. (1) Neither
   (2) will

D. (1) Neither
   (2) will NOT

Question 11

Unit 1 plant conditions:

- Reactor power was reduced from 100% to 60%
- Pressurizer Spray valves modulated open during the transient but did not close until PRZR pressure decreased to 2215 psig.
- PRZR level = 52%
- RCS Tave is on program

Based on the above conditions;

A. PRZR level is above program level and backup pressurizer heaters should be ON.

B. PRZR level is above program level and backup pressurizer heaters should be OFF.

C. PRZR level is at program level and backup pressurizer heaters should be ON.

D. PRZR level is at program level and backup pressurizer heaters should be OFF.

Question 12

Unit 1 plant conditions:

- Reactor power = 45%
- A fault in the RPS circuitry occurs that affects the Bistables for the “Reactor Coolant Low Flow Trip” for ONE Reactor Coolant Loop
- A trip signal for Low Flow in that Reactor Coolant Loop is initiated and processed by the RPS system

Based on the above plant conditions, complete the following statements:

1. For the fault to cause a Reactor Coolant Low Flow Trip signal, the associated Bistables would have ____(1)____.

2. The reactor ____(2)____ trip.

   A. (1) energized
      (2) would

   B. (1) energized
      (2) would NOT

   C. (1) de-energized
      (2) would

   D. (1) de-energized
      (2) would NOT

Question 13

Unit 1 plant conditions:

- Reactor power = 50%
- Tave on one RCS loop has failed low
- While investigating the failed instrument, maintenance inadvertently trips the reactor

Based on the above conditions, complete the following statements:

1. One additional Loop Tave signal below setpoint __(1)__ required to initiate a Feedwater isolation signal.

2. If a Feedwater Isolation occurs on low Loop Tave, the MFW pumps __(2)__ trip.

A. (1) is
   (2) will

B. (1) is
   (2) will NOT

C. (1) is NOT
   (2) will

D. (1) is NOT
   (2) will NOT

Question 14

Unit 1 plant conditions:

0800:

- Reactor power = 100%
- Main Steam pressure = 950 psig decreasing
- Reactor was manually tripped
- EOP-0.0A REACTOR TRIP OR SAFETY INJECTION has been initiated

0801:

- Main Steam pressure = 800 psig decreasing

0802:

- Main Steam pressure = 700 psig decreasing

0803:

- Main Steam pressure = 600 psig decreasing

0804:

- SG 1-01 Steam pressure = 550 psig decreasing
- Transition to EOP-2.0A, Faulted Steam Generator Isolation is made

1. The earliest time at which the Main Steam Isolation signal would have actuated is ____(1)____.

2. EOP-0.0A ____(2)____ direct AFW to be throttled prior to transfer to EOP-2.0A

A. (1) 0801
   (2) does

B. (1) 0801
   (2) does NOT

C. (1) 0803
   (2) does

D. (1) 0803
   (2) does NOT

Question 15

Unit 1 initial plant conditions:

- Reactor power = 100%
- Containment Air Cooling and Recirculation Fans switches are in AUTO

Current plant conditions

- A manual SI was initiated due to an RCS leak
- Containment Air Cooling and Recirculation Fans tripped

Based on the above plant conditions, complete the following statements:

1. If either Containment Air Cooling and Recirculation Fan switch were rotated to the START position, the fan ___(1)____ start.

2. If control were transferred to the Remote Shutdown Panel, the fans ___(2)____ be started with the SI signal still present.

   A. (1) would
      (2) could

   B. (1) would
      (2) could NOT

   C. (1) would NOT
      (2) could

   D. (1) would NOT
      (2) could NOT

Question 16

Unit 1 has experienced a LOCA with containment pressure trending up as follows:

0800 = 3.0 psig
0801 = 6.0 psig
0802 = 10 psig
0804 = 16 psig
0806 = 20 psig

Based on the above information, which of the above times is the earliest time that:

1. The Containment Spray Pumps will have an automatic start signal?

2. The Containment Spray Heat Exchanger Outlet valves (HV-4776 & HV-4777) will have an open signal?

(Consider operation based only on actuation from containment pressure)

A. (1) 0800
   (2) 0804

B. (1) 0800
   (2) 0806

C. (1) 0801
   (2) 0804

D. (1) 0801
   (2) 0806

Question 17

Unit 1 plant conditions:

0800:

- Reactor is shutdown
- RCS Cooldown is in progress
- Tave = 550°F

0830:

- Steam Dump valves have been closed
- Tave = 490°F

Based on the above plant conditions, complete the following:

1. During the cooldown, the limit on the cooldown rate is based on limiting stress on the ____(1)____ reactor vessel wall.

2. At 0830, the cooldown rate limit ____(2)____ been violated.

A. (1) inner
   (2) has NOT

B. (1) inner
   (2) has

C. (1) outer
   (2) has NOT

D. (1) outer
   (2) has

Question 18

Unit 2 plant conditions:

- Reactor power = 60%
- SG NR levels = 65% increasing slowly

1. Based on the above conditions, SG levels are ____(1)____.

2. A Steam line break at this power level would result in a ____(2)____ cool down than the same break at 100% power.

A. (1) moving closer to their setpoint
   (2) larger

B. (1) moving closer to their setpoint
   (2) smaller

C. (1) moving farther away from their setpoint
   (2) larger

D. (1) moving farther away from their setpoint
   (2) smaller

Question 19

Unit 1 plant conditions:

- Reactor power = 45%
- The running Main Feedwater pump trips
- Motor Driven Aux FW Pump 1-01 fails to start

Based on the above conditions, complete the following statements:

1. The Turbine Driven Aux FW Pump will automatically start ____(1)____.

2. If the Turbine Driven Aux FW Pump fails to start and the operating Motor Driven Aux FW Pump is cross-connected to supply all 4 SGs, total flow shall be limited to ____(2)____ gpm to prevent a run-out condition.

   A. (1) when ONE Steam Generator NR level reaches its LOW-LOW setpoint
      (2) 700 gpm

   B. (1) when ONE Steam Generator NR level reaches its LOW-LOW setpoint
      (2) 800 gpm

   C. (1) ONLY when TWO Steam Generator NR levels reach their LOW-LOW setpoint
      (2) 700 gpm

   D. (1) ONLY when TWO Steam Generator NR levels reach their LOW-LOW setpoint
      (2) 800 gpm

Question 20

Which ONE of the following is correct regarding the power supply to Ventilation Chiller X-01 and Ventilation Chiller X-06?

A. 1EA1
   XA1

B. 2EA1
   XA1

C. 1EA1
   1EA2

D. 2EA1
   1EA2

Question 21

The Unit 1 Main Turbine Emergency Lube Oil Pump is powered from DC bus _____.

A. 1ED1

B. 1ED2

C. 1D1

D. 1D2

Question 22

Unit 1 plant conditions:

- A Small Break LOCA occurs
- SI initiates
- 1EA1 and 1EA2 are energized
- Both DGs started and are running unloaded
- Annunciator DG 1 TRBL comes into alarm
- An operator reports to the control room that the TRIP VIBRATION and LOW LEVEL JACKET WATER alarms are in on DG 1 with sporadic jacket water pressure and two cylinders indicating lower temperatures than the remaining cylinders.

Based on the above conditions, complete the following statements:

1. DG 1 vibration _____ if an 86-2 lockout were to occur on 1EA1.

2. Per the TRIP VIBRATION alarm response, the local operator is to _____.

A. (1) increases
(2) notify the Control Room to ensure that DG 1 is tripped

B. (1) increases
(2) immediately place the Master Switch to LOCAL, then place the local Emergency Stop/Start switch to STOP

C. (1) decreases
(2) notify the Control Room to ensure that DG 1 is tripped

D. (1) decreases
(2) immediately place the Master Switch to LOCAL, then place the local Emergency Stop/Start switch to STOP

Question 23

DG 1-01 has been paralleled to 1EA1 for surveillance testing. While this surveillance is being performed, which ONE of the following is correct?

DG 1-01 will be operating in...

A. ... Isochronous mode and reactive load (VARs) will be determined by the voltage on the grid.

B. ... Isochronous mode and reactive load (VARs) will be determined by the loads on its associated bus.

C. ... Speed Droop mode and with speed droop set at 3%, DG speed will run 3% lower than rated speed regardless of load.

D. ... Speed Droop mode and with speed droop set at 3%, the DG will run slower than rated speed up to a maximum of 3% at full load.

Question 24

Unit 1 plant conditions:

- Reactor power = 3%
- It is reported that data used for CHANNEL CALIBRATION for all four Control Room Radiation monitors was incorrect which has resulted in all four monitors being declared INOPERABLE

Based on the above conditions, which ONE of the following actions is required In accordance with TS 3.3.7, Control Room Emergency Filtration System (CREFS) Actuation Instrumentation?

A. Secure the Control Room makeup air supply fan from BOTH air intakes OR place ONE CREFS train in emergency recirculation mode immediately.

B. Secure the Control Room makeup air supply fan from BOTH air intakes OR place BOTH CREFS trains in emergency recirculation mode immediately.

C. Place ONE CREFS trains in emergency recirculation mode immediately AND make preparations to shutdown within one hour and be in Mode 3 within 7 hours in accordance with TS LCO 3.0.3.

D. Place BOTH CREFS trains in emergency recirculation mode immediately AND make preparations to shutdown within one hour and be in Mode 3 within 7 hours in accordance with TS LCO 3.0.3.

Question 25

Unit 2 plant conditions:

- Reactor power = 100%
- CCWP 1-01 is operating
- A tube in the CCW HX ruptures

Based on the above conditions, which ONE of the following is correct if CCW Surge Tank level on the side with the operating CCW pump has decreased to 50%?

A. Train A and Train B Safeguards loops and the Non-Safeguards loop are still in service.

B. The Train A Safeguards loop has isolated but Train B Safeguards loop and the Non-Safeguards loop are still in service.

C. The Non-Safeguards loop has isolated but Train A and Train B Safeguards loops are still in service.

D. Train A and Train B Safeguards loops AND the Non-Safeguards loop have isolated.

Question 26

Unit plant conditions:

0800:

- Reactor power = 50%
- Unit Instrument Air Compressor 1-01 is in Lead
- Unit Instrument Air Compressor 1-02 is in Backup
- Common Instrument Air Compressor X-01 has been lined up to Unit 1 as the Standby IA Compressor
- IA pressure = 98 psig decreasing
- Crew has entered ABN-301, Instrument Air System Malfunction

0804:

- Instrument air pressure = 48 psig decreasing

Based on the above plant conditions, complete the following statements:

1. At 0800, the Common (Standby) Instrument Air compressor X-01 _____ have automatically started.

2. At 0804, ABN-301 ____(2)____ direct the reactor to be tripped.

   A. (1) should
      (2) does

   B. (1) should
      (2) does NOT

   C. (1) should NOT
      (2) does

   D. (1) should NOT
      (2) does NOT

Question 27

Given the following conditions:

- A Containment Phase A isolation has occurred.
- Multiple Phase A isolation air operated valves (AOV) did not automatically close.
- A NEO has been dispatched to locally close these AOVs.

Complete the following statements regarding containment isolation valves.

1. Most Containment Phase A isolation AOVs are locally closed by ____(1)____.

2. During a LOCA, Containment isolation requires____(2)____ to be closed for each Phase A isolation penetration.

A. (1) manual override (handwheel)
   (2) two valves

B. (1) manual override (handwheel)
   (2) one valve

C. (1) isolating the air supply and venting the regulator
   (2) two valves

D. (1) isolating the air supply and venting the regulator
   (2) one valve

Question 28

Unit 1 plant conditions:

- Large Break LOCA has just occurred
- Containment pressure = 23 psig increasing
- Phase B Containment Isolation has not occurred

Based on the above conditions, complete the following statements:

1. ____(1)____ PHASE B MAN ACT hand switch(es) has(have) to be taken to ACT at either location to initiate BOTH trains Phase B equipment.

2. If ONE train of Containment Spray fails to actuate, containment pressure and temperature ____(2)____remain below its designed limits.

   A. (1) Only one
      (2) will

   B. (1) Only one
      (2) will NOT

   C. (1) Both
      (2) will

   D. (1) Both
      (2) will NOT

Question 29

Unit 1 plant conditions:

- Reactor startup is in progress
- Reactor power = 10^3 cps
- Control Rod Bank C (CBC) is at 105 steps

Which ONE of the following states the reason for control rod bank overlap, and based on the above conditions, the status of Control Rod Bank D (CBD)?

A. Control Rod “Bank Overlap” is designed to provide more uniform rates of reactivity insertion and withdrawal and currently, CBD has started to withdraw.

B. Control Rod “Bank Overlap” is designed to provide more uniform rates of reactivity insertion and withdrawal but currently, CBD is still fully inserted.

C. Control Rod “Bank Overlap” is designed to ensure radial flux distribution does not exceed limits and currently, CBD has started to withdraw.

D. Control Rod “Bank Overlap” is designed to ensure radial flux distribution does not exceed limits but currently, CBD is still fully inserted.

Question 30

Which ONE of the following is correct regarding the power supply to Pressurizer Heaters?

Pressurizer control group heaters (Group C) are supplied from:

A. 480 VAC 1EB1 and can be operated from the Remote Shutdown Panel.

B. 480 VAC 1EB1 and can NOT be operated from the Remote Shutdown Panel.

C. 480 VAC 1B1 and can be operated from the Remote Shutdown Panel.

D. 480 VAC 1B1 and can NOT be operated from the Remote Shutdown Panel.

Question 31

Unit 1 plant conditions:
0800

- Reactor startup is in progress.
- CBD position:
  - DRPI = 40 steps
  - Bank Demand Position Indication System = 40 steps

0830

- CBD position:
  - DRPI = 48 steps
  - Bank Demand Position Indication System = 54 steps

Based on the above conditions, at 0830 the plant computer will display CBD position as __(1)__ steps withdrawn and if the reactor were to subsequently trip, it would display __(2)__ steps withdrawn.

A. (1) 48 steps
   (2) 0 steps

B. (1) 48 steps
   (2) 48 steps

C. (1) 54 steps
   (2) 0 steps

D. (1) 54 steps
   (2) 54steps

Question 32

Unit 1 plant conditions:
0800

- Reactor startup is in progress
- Source Range Detectors N-31 and N-32 indicate 10^{3} cps
- Intermediate Range Detector N-35 is reading 10^{-9} amps and is declared INOPERABLE
- Intermediate Range Detector N-36 is reading 10^{-11} amps
- The Reactor startup is halted at the current reactor power level.

0920

- I & C maintenance places the Intermediate Range Detector N-35 LEVEL TRIP switch in BYPASS and removes the instrument power fuses for Intermediate Range Detector N-35 to calibrate the detector.

Based on the above plant conditions, complete the following statements:

1. By 0900, Technical Specifications require ___(1)____.

2. At 0920, the reactor ___(2)____ automatically trip.

   A. (1) the P-6 interlock is verified in its required state.
      (2) will

   B. (1) the P-6 interlock is verified in its required state.
      (2) will NOT

   C. (1) the P-10 interlock is verified in its required state.
      (2) will

   D. (1) the P-10 interlock is verified in its required state.
      (2) will NOT

Question 33

Unit 1 plant conditions:

- Small break LOCA has occurred inside containment
- Core exit thermocouples = 760°F increasing
- NO RVLIS lights are lit

Based on the above conditions plant conditions, complete the following statements:

1. Current conditions ____(1)____ indicate that at least a portion of the fuel is uncovered.

2. Review of Critical Safety Function status trees will determine that ____(2)____is required to be entered.

   A. (1) do
      (2) FRC-0.1A RESPONSE TO INADEQUATE CORE COOLING

   B. (1) do
      (2) FRC-0.2A RESPONSE TO DEGRADED CORE COOLING

   C. (1) do NOT
      (2) FRC-0.1A RESPONSE TO INADEQUATE CORE COOLING

   D. (1) do NOT
      (2) FRC-0.2A RESPONSE TO DEGRADED CORE COOLING

Question 34

Complete the following statements regarding the Containment Preaccess Filtration Trains:

1. The Containment Preaccess Filtration Trains are started from 1-CB-03 ONLY during ____(1)____ conditions to remove airborne reactivity from the containment.

2. Containment Preaccess Filtration Fan 11 is started. The following indication is observed after taking 1-HS-5429 to START:
   - 1-ZL-5429A, PREAC FILT FN 11 FILT OUT DMPR, Green Light DARK and Red Light LIT.
   - 1-ZL-5429B, PREAC FILT FN 11 FILT IN DMPR, Green Light LIT and Red Light DARK.

   Which ONE of the following alarms will annunciate within 35 seconds?

   A. (1) accident (LOCA)
      (2) 1-ALB-3A, Window 3.3, CNTMT PREACC FN 11 ΔP LO

   B. (1) accident (LOCA)
      (2) 1-ALB-3A, Window 2.1, CNTMT FN MASTER TRIP

   C. (1) non-accident
      (2) 1-ALB-3A, Window 3.3, CNTMT PREACC FN 11 ΔP LO

   D. (1) non-accident
      (2) 1-ALB-3A, Window 2.1, CNTMT FN MASTER TRIP

Question 35

Which ONE of the following correctly answers the following statement with regards to the design of the Spent Fuel Pool (SFP) Cooling system?

The SFP system return line terminates ____(1)____ above the spent fuel but has a siphon break at____(2)____ below normal to prevent draining the pool in the event of a line break.

A. (1) 6 ft
   (2) 1 ft

B. (1) 19 ft
   (2) 1 ft

C. (1) 6 ft
   (2) 2 ft

D. (1) 19 ft
   (2) 2 ft

Question 36

Unit 1 plant conditions:

- The reactor has been shut down due to a SGTR on SG 1-01
- EOP-3.0A, STEAM GENERATOR TUBE RUPTURE has been entered
- Atmospheric Relief Valve 1-PV-2325 setpoint has been adjusted per EOP-3.0A
- SG 1-01 Steam pressure = 1085 psig increasing

Based on the above plant conditions, the pressure increase in SG 1-01 should _____.

A. slow down at 1125 psig as 1-PV-2325 starts to open and stop completely as it opens more due to accumulation

B. stop at 1125 psig as 1-PV-2325 opens completely

C. slow down at 1160 psig as 1-PV-2325 starts to open and stop completely as it opens more due to accumulation

D. stop at 1160 psig as 1-PV-2325 opens completely

Question 37

Unit 1 initial conditions;

- Reactor power = 40%
- The main turbine is inadvertently tripped while conducting training in the Control Room

Based on the above plant conditions, which ONE of the following states how the Main Generator and the reactor will respond?

A. The reactor will NOT trip and the Generator output breakers will trip 30 seconds later.

B. The reactor will trip and the Generator output breakers will trip 30 seconds later.

C. The reactor will NOT trip and the Generator output breakers will trip immediately.

D. The reactor will trip and the Generator output breakers will trip immediately.

Question 38

Unit 2 plant conditions:

- Reactor power = 100%
- An alarm is received on the Fire Detection main control panel due to activation of the Unit 2 Cable Spreading Room Fire Suppression System
- A Nuclear Equipment Operator in the Cable Spreading Room at the time reports that there is no evidence of a fire and depresses the “ABORT” pushbutton

Based on the above conditions, complete the following statements:

1. What is the minimum number of fire detectors that would have to fail to cause the system to activate?

2. If the “ABORT” button is released, what is the status of the system?

   A. (1) ONE
      (2) The system is locked out until the signal is reset

   B. (1) ONE
      (2) The system will initiate if 60 seconds has elapsed since the activation

   C. (1) TWO
      (2) The system is locked out until the signal is reset

   D. (1) TWO
      (2) The system will initiate if 60 seconds has elapsed since the activation

Question 39

Unit 1 sequence of events:

- Reactor power = 100%
- Running MFW Pumps trip
- The reactor tripped
- The crew enters EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION
- The Balance of Plant Operator attempts to trip the Main Turbine using the Turbine Trip pushbutton
- The Main Turbine fails to trip

Based on the above plant conditions, the next action directed by EOP-0.0A is to ____(1)____ and the reason for this action is to ____(2)____.

A. (1) close ALL Main Steam Isolation Valves
   (2) prevent steaming the SGs dry

B. (1) close ALL Main Steam Isolation Valves
   (2) prevent an excessive RCS cooldown

C. (1) pull-out ALL EHC fluid pumps
   (2) prevent steaming the SGs dry

D. (1) pull-out ALL EHC fluid pumps
   (2) prevent an excessive RCS cooldown

Question 40

Unit 1 plant conditions:

- Reactor power = 100%
- RCS pressure is at setpoint
- PRZR PRESS CTRL CHAN SELECT (1-PS-455F) on 1-CB-05, is selected to 455/456
- PRZR PORV PCV-455A fails open due to a failed PRZR pressure transmitter
- ABN-705 PRESSURIZER PRESSSURE MALFUNCTION is entered

Based on the above conditions answer the following questions:

1. In accordance with ABN-705, the operator should next close 1-PCV-455A and ___(1)___.

2. When Switch 1-PS-455F is repositioned, the failed signal will be replaced with a signal from ____(2)____?

   A. (1) if it closes, leave its block valve open
      (2) PT-457

   B. (1) if it closes, leave its block valve open
      (2) PT-458

   C. (1) close its block valve regardless of PORV position
      (2) PT-457

   D. (1) close its block valve regardless of PORV position
      (2) PT-458

Question 41

During a large break LOCA, when the Containment Spray system heat exchanger outlet valves open, which ONE of the following is correct regarding the addition of chemicals to the fluid stream?

A. Sodium Hydroxide (NaOH) is added in order to minimize Hydrogen production from the corrosion of containment materials.

B. Sodium Hydroxide (NaOH) is added in order to minimize caustic stress corrosion of stainless steel components.

C. Lithium Hydroxide (LiOH) is added in order to minimize Hydrogen production from the corrosion of containment materials.

D. Lithium Hydroxide (LiOH) is added in order to minimize caustic stress corrosion of stainless steel components.

Question 42

Unit 1 plant conditions:

- Reactor power = 49%
- RC LOOP 1, 1 OF 3 FLO LO (5A-1.3) in alarm
  - 1-FI-414, RCP LOOP 1 FLO CHAN I indicates 80% and lowering
  - 1-FI-415, RCP LOOP 1 FLO CHAN II indicates 80% and lowering
  - 1-FI-416, RCP LOOP 1 FLO CHAN III indicates 80% and lowering
- Reactor trip has not occurred
- RCP 1-01 trip has not occurred

Based on the above conditions, which ONE of the following is correct?

1. Expected operator response is to ___(1)___.

2. The reason for the correct trip sequence is ___(2)___ .

A. (1) trip the reactor, then trip RCP 1-01
   (2) to address an automatic trip failure

B. (1) trip the reactor, then trip RCP 1-01
   (2) to ensure fuel KW/FT is not exceeded

C. (1) trip RCP 1-01, then trip the reactor
   (2) to address an automatic trip failure

D. (1) trip RCP 1-01, then trip the reactor
   (2) to ensure fuel KW/FT is not exceeded

Question 43

Unit 1 initial plant conditions:

- Reactor power = 100%
- ANY RCP SEAL WTR INJ FLO LO (5A-1.6) is in alarm
- RCP SEAL WTR INJ FILT 1 ΔP HI (5A-2.6) is in alarm
- Seal injection flow = 0 gpm
- ABN-101, REACTOR COOLANT PUMP TRIP/MALFUNCTION has been initiated
- CCW Thermal Barrier heat exchanger flow indicates 30 gpm

Based on the above plant conditions, complete the following statements;

1. RCPs ____(1)____ required to be tripped.

2. Seal injection is isolated in order to prevent thermal shock to the seals which could directly result in ____(2)____.

   A. (1) are
      (2) excessive RCS leakage

   B. (1) are
      (2) voiding the CCW system

   C. (1) are NOT
      (2) excessive RCS leakage

   D. (1) are NOT
      (2) voiding the CCW system

Question 44

Unit 1 plant conditions:

- Reactor power = 50%
- The thermal barrier for RCP 1 develops a leak

Based on the above conditions, complete the following statements:

1. The lowest thermal barrier return flow rate which will cause a CCW isolation from the RCP(s) is ____(1)____.

2. When the isolation setpoint is reached, ____(2)____.

A. (1) 60 gpm
(2) the individual pump isolation valve and the outside containment isolation valve will close

B. (1) 60 gpm
(2) ONLY the inside containment isolation valve will close

C. (1) 70 gpm
(2) the individual pump isolation valve and the outside containment isolation valve will close

D. (1) 70 gpm
(2) ONLY the inside containment isolation valve will close

Question 45

Unit 1 plant conditions:

- 1/1-PS-455F, PRZR PRESS CTRL CHAN SELECT is in the 455/456 position.
- 1-PI-455A, PRZR PRESS CHAN I fails low.

Which of the following describes the reason that 1-PK-455A, PRZR MASTER PRESS CTRL is placed in MANUAL in accordance with ABN-705, Pressurizer Pressure Malfunction, prior to selecting the alternate channel on 1/1-PS-455F?

A. A PRZR PRESS LO Reactor Trip could occur.

B. A PRZR PRESS HI Reactor Trip could occur.

C. 1-PCV-455A, PRZR PORV could open.

D. 1-PCV-456, PRZR PORV could open.

Question 46

Unit 1 plant conditions:

- SGTR has occurred on SG 1-01
- EOP-3.0A has been completed
- Plant staff has determined to use blowdown as the Post-SGTR Cooldown method
- EOS-3.2A, POST-SGTR COOLDOWN USING BLOWDOWN has been entered

In accordance with EOS-3.2A, blowdown is established by throttling open 1-PK-5180, SG BLDN HX OUT PRESS CTRL which is located on ____(1)____ and if RCS pressure is currently 380 psig, the blowdown ____(2)____be stopped.

A. (1) CB-08
   (2) may

B. (1) CB-08
   (2) may NOT

C. (1) the SG Blowdown Control Panel
   (2) may

D. (1) the SG Blowdown Control Panel
   (2) may NOT

Question 47

Initial plant conditions on Unit 1:

- Reactor power = 100%
- A main steam line break occurs inside containment
- Main Steam Isolation Valves will not close from the control room
- An operator is dispatched to locally close the MSIVs per EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION

Current plant conditions:

- Crew has transitioned to ECA-2.1A, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS
- All SG NR levels = approximately 5%

Based on the above plant conditions, complete the following statements regarding AFW flow to the SGs in accordance with ECA-2.1A.

1. A minimum of ____(1)____ must be maintained to prevent SG tube dryout.

2. This feed rate ____(2)____ be reduced if RCS cooldown rate exceeds 100°F/hr.

A. (1) 100 gpm per SG
   (2) must

B. (1) 100 gpm per SG
   (2) must NOT

C. (1) 460 gpm total SG flow
   (2) must

D. (1) 460 gpm total SG flow
   (2) must NOT

Question 48

Unit 1 plant conditions:

- Reactor power = 45%
- The air line to 1-FCV-530, Feedwater Control Valve to SG 1-03 is severed

1. The Main Control Board feedwater flow recorder (1-FR-0530) trend is ____(1)____.

2. The reactor ____(2)____ trip due to SG level.

Assume no operator action.

A. (1) decreasing
   (2) will

B. (1) decreasing
   (2) will NOT

C. (1) increasing
   (2) will

D. (1) increasing
   (2) will NOT

Question 49

A fire occurs in the 138 KV switchyard resulting in the breakers that supply power to the site tripping.

Based on the above event, which ONE of the following is correct?

A. Unit 2 lost its normal offsite power supply. Units 1 and 2 meet the LCO action statement entry requirements for TS 3.8.1

B. Unit 1 lost its normal offsite power supply. Units 1 and 2 meet the LCO action statement entry requirements for TS 3.8.1

C. Unit 2 lost its normal offsite power supply. ONLY Unit 2 meets the LCO action statement entry requirements for TS 3.8.1

D. Unit 1 lost its normal offsite power supply. ONLY Unit 1 meets the LCO action statement entry requirements for TS 3.8.1

Question 50

Unit 2 plant conditions:

- Reactor power = 80%
- 2-LK-459 PRZR Level Selector Switch is selected to 459/460
- 2PC2 de-energizes

Based on the above conditions, complete the following statements with regard to the effect of the loss of power:

1. ____(1)____ will close, isolating letdown.

2. Pressurizer reference level will ____(2)____.

   A. (1) Level Control Valve LCV-459
      (2) increase

   B. (1) Level Control Valve LCV-459
      (2) decrease

   C. (1) Level Control Valve LCV-460
      (2) increase

   D. (1) Level Control Valve LCV-460
      (2) decrease

Question 51

Unit 1 plant conditions:

- Reactor power = 50%
- BC1ED1-1 is in service `
- An operator reports that BC1ED1-1's DC Voltmeter indicates 125 VDC

Based on the above plant conditions, which ONE of the following is correct

A. Voltage is reading too low and BC1ED1-2 should be placed in service. BC1ED1-2 should be placed service before BC1ED1-1 is removed from service.

B. Voltage is reading too low and BC1ED1-2 should be placed in service. BC1ED1-2 cannot be placed service before BC1ED1-1 is removed from service.

C. Voltage is reading correctly and BC1ED1-1 can remain in service. If it were desirable to swap battery chargers, BC1ED1-2 should be placed in service first, then BC1ED1-1 could be taken out of service.

D. Voltage is reading correctly and BC1ED1-1 can remain in service. If it were desirable to swap battery chargers, BC1ED1-1 would have to be taken out of service first, then BC1ED1-2 could be placed in service.

Question 52

Unit 1 plant conditions:

- Reactor power = 100%
- SSW Pump 1-01 is operating
- CCW Pump 1-01 is operating
- Train B CCW heat exchanger was removed from service due to a tube leak

In order to return the Train B CCW heat exchanger to service, complete the following statements:

1. The ____(1)____ side of the Train B CCW heat exchanger should be filled, vented and pressurized prior to starting the Train B SSW pump.

2. The above recovery action prevents ____(2)____.

A. (1) shell
   (2) release of hydrazine to the safe shutdown impoundment

B. (1) shell
   (2) chloride infusion if a tube leak exists

C. (1) tube
   (2) release of hydrazine to the safe shutdown impoundment

D. (1) tube
   (2) chloride infusion if a tube leak exists

Question 53

Unit 1 plant conditions:

- Reactor Power = 100%
- RCP 1 Seal Water Injection Valve 1-8351A ruptures
- The check valve in the line between the valve and the RCP does not seat properly
- The leak is approximately 150 gpm

Based on the above plant conditions, which ONE of the following is correct assuming no operator actions?

A. Safety Injection will occur due to High containment pressure and when initiated, CCP flow will be limited by CCP Flow Control Valve 1-FCV-0121.

B. Safety Injection will occur due to High containment pressure and when initiated, CCP flow will NOT be limited by CCP Flow Control Valve 1-FCV-0121.

C. Safety Injection will occur due to Low RCS pressure and when initiated, CCP flow will be limited by CCP Flow Control Valve 1-FCV-0121.

D. Safety Injection will occur due to Low RCS pressure and when initiated, CCP flow will NOT be limited by CCP Flow Control Valve 1-FCV-0121.

Question 54

Unit 1 initial plant conditions:

- Reactor power = 100%
- A Large Break LOCA occurs

Current plant conditions:

- Both CCW pumps trip
- Crew transitions to ECA 1.1A, LOSS OF EMERGENCY COOLANT RECIRCULATION
- Containment pressure = 20 psig
- RWST level = 16%

Based on current plant conditions, complete the following statements:

1. Upon entry into ECA 1.1A, there are ____(1)____ Containment Spray Pumps spraying into containment.

2. ECA1.1A directs ____(2)____Containment Spray Pumps.

A. (1) four
   (2) stopping 2

B. (1) four
   (2) stopping 4

C. (1) 0
   (2) starting 2

D. (1) 0
   (2) starting 4

Question 55

Unit 1 plant conditions:

- Reactor power = 100%
- A loss of all feedwater occurs
- FRH-0.1A, RESPONSE TO LOSS OF SECONDARY HEAT SINK has been initiated
- FRH-0.1A is directing alignment of the Condensate system to feed SGs.

Which ONE of the following is correct when referring to reducing SG pressure per the FRH-0.1A and its bases?

A. All 4 SG pressures should be reduced at a rate only limited by exceeding a 100°F per hour cooldown rate.

B. All 4 SG pressures should be reduced at a rate limited only by that necessary to avoid main steam isolation.

C. Only 1 to 2 SG pressures should be reduced at a rate only limited by exceeding a 100°F per hour cooldown rate.

D. Only 1 to 2 SG pressures should be reduced at a rate limited only by that necessary to avoid main steam isolation.

Question 56

Unit 1 plant conditions:

- Reactor power = 75%
- A Grid Disturbance is occurring
- A computer alarm is received for Main Generator Volts/Hz
- ABN-601, RESPONSE TO A 138/345 KV SYSTEM MALFUNCTION has been initiated

Based on the above plant conditions, complete the following statement:

If grid frequency ____(1)____, ABN-601 directs starting the DGs and divorcing the safeguards busses from the grid.

A. > 60.6 Hz for greater than 9 minutes

B. > 60.4 Hz for greater than 2 minutes

C. < 59.4 Hz for greater than 2 minutes

D. < 59.6 Hz for greater than 9 minutes

Question 57

Unit 1 plant conditions:

- Reactor power = 80%
- Control rods are moving out in response to low Tave
- ANY ROD AT BOT alarms
- DRPI ROD DEV alarms
- 1 bank CBD rod bottom light is lit
- CONTROL ROD CTRL URGENT FAIL alarms
- ABN-712, ROD CONTROL SYSTEM MALFUNCTION is entered
- Control rods are placed in MANUAL

Based on the above plant conditions, complete the following statements:

1. The malfunction/failure would impose a rod ____(1)____in the rod control system.

2. With the control rods in MANUAL, control rods ____(2)____.

A. (1) stop
   (2) CANNOT be moved in either direction

B. (1) stop
   (2) can be inserted but not withdrawn

C. (1) inhibit
   (2) CANNOT be moved in either direction

D. (1) inhibit
   (2) can be inserted but not withdrawn

Question 58

Unit 1 plant conditions:

- Reactor power = 80%
- The main turbine trips
- The reactor fails to automatically or manually trip from the control room
- FRS-0.1A, RESPONSE TO NUCLEAR POWER GENERATION / ATWT has been initiated
- CCP-1-01 is operating

Based on the above plant conditions, which ONE of the following is correct regarding the initiation of emergency boration per FRS-0.1A?

A. If charging flow is < 30 gpm, the PD pump will be started to ensure the minimum amount of charging flow is established.

B. Charging pump suction will be shifted to RWST if at least 30 gpm emergency boration flow cannot be established to ensure the maximum rate of boron addition to the RCS.

C. If charging flow is > 30 gpm, only one CCP will be used for emergency boration due to delivering adequate flow.

D. Charging pump suction will be shifted to RWST, then the CCP High Head injection valves will always be opened to ensure the maximum rate of boron addition to the RCS.

Question 59

Unit 2 plant conditions:

- Reactor power = 12%
- CCP 2-01 is operating
- Air to 2-FCV-121 CENTRIFUGAL CHARGING PUMP FLOW CONTROL VALVE is lost

Based on the above plant conditions, complete the following statement:

Charging flow indication in the Control Room will ____(1)____ which will require 2-HCV-0182 RCP SEAL WATER PRESSURE CONTROL VALVE to be ____(2)____ in order to maintain the correct amount of seal water flow to the RCPs.

A. (1) increase
   (2) throttled open

B. (1) increase
   (2) throttled closed

C. (1) decrease to 55 gpm
   (2) throttled open

D. (1) decreased to 55 gpm
   (2) throttled closed

Question 60

Unit 1 plant conditions:

- A normal shutdown for refueling is in progress
- Intermediate Range detectors decrease but P-6 fails to de-energize as expected
- ABN-701, SOURCE RANGE INSTRUMENT MALFUNCTION is initiated

Based on the above plant conditions, complete the following statements:

1. This could be the result of the IR detector being ____(1)____.

2. ABN-701 will direct the operator to re-energize the SR detectors by placing the ____(2)____.

   A. (1) undercompensated
      (2) SR RX TRIP RESET/BLK switches to the RESET position on CB-07

   B. (1) overcompensated
      (2) SR RX TRIP RESET/BLK switches to the RESET position on CB-07

   C. (1) undercompensated
      (2) HIGH FLUX AT SHUTDOWN switch to NORMAL on the SOURCE RANGE DRAWER

   D. (1) overcompensated
      (2) HIGH FLUX AT SHUTDOWN switch to NORMAL on the SOURCE RANGE DRAWER

Question 61

Unit 1 plant conditions:

- Waste Monitor Tank (WMT) 1 is to be discharged to U1 CW system
- All approvals and samples have been attained
- The discharge is started and flow throttled to 120 gpm

Based on the above plant conditions, which ONE of the following describes the expected system operation?

A. The initial flow rate is within STA-603, CONTROL OF STATION RADIOACTIVE EFFLUENTS limits and if the associated radiation monitor reaches the high alarm setpoint, LWPS DISCHARGE ISOLATION VALVE X-RV-5253 will close to isolate the release.

B. The initial flow rate is within STA-603, CONTROL OF STATION RADIOACTIVE EFFLUENTS limits and if the associated radiation monitor reaches the high alarm setpoint, PLANT DISCHARGE TO CIRC WATER ISOLATION VALVE, 1-HV-WM181 will close to isolate the release.

C. The initial flow rate is NOT within STA-603, CONTROL OF STATION RADIOACTIVE EFFLUENTS limits and if the associated radiation monitor reaches the high alarm setpoint, LWPS DISCHARGE ISOLATION VALVE X-RV-5253 will close to isolate the release.

D. The initial flow rate is NOT within STA-603, CONTROL OF STATION RADIOACTIVE EFFLUENTS limits and if the associated radiation monitor reaches the high alarm setpoint, PLANT DISCHARGE TO CIRC WATER ISOLATION VALVE, 1-HV-WM181 will close to isolate the release.

Question 62

Unit 2 initial plant conditions:

- SBLOCA occurs
- CCP-2-01 fails to start
- CCP-2-02 trips
- RCPs are NOT operating
- FRC-0.1A, RESPONSE TO INADEQUATE CORE COOLING is in progress
- Core exit TCs > 1200 ^{O}F
- Containment pressure = 6 psig increasing

Current plant conditions:

- ALL SG NR Levels = 45% and stable
- Core exit TCs = 850 ^{O}F stable
- RWST level = 35%

Based on current plant conditions, which ONE of the following is correct?

A. The crew should Go To EOS-1.3A, TRANSFER TO COLD LEG RECIRCULATION

B. AFW flow should be increased to all SGs

C. ONE RCP should be started

D. Rx Vessel Head vents should be opened

Question 63

Unit 1 plant conditions:

- A RCP has a catastrophic failure resulting in a LOCA with multiple pieces of equipment damaged
- Containment spray pumps do not operate
- Containment sump level is increasing
- Containment parameters
  - Containment pressure = 16 psig
  - Containment sump level = 819 ft
- Evaluation of Critical Safety Function Status Tree entry conditions is in progress

Based on the above conditions, which ONE of the following is correct?

A. GO TO FRZ-0.1A RESPONSE TO HIGH CONTAINMENT PRESSURE, transfer out of FRZ-0.1A will not occur until containment pressure is below the entry level pressure.

B. GO TO FRZ-0.2A RESPONSE TO CONTAINMENT FLOODING, transfer out of FRZ-0.2A will not occur until containment level is below the entry level condition.

C. GO TO FRZ-0.1A RESPONSE TO HIGH CONTAINMENT PRESSURE, once actions are taken to reduce containment pressure, return to the procedure and step in effect, even if pressure is still above the entry condition.

D. GO TO FRZ-0.2A RESPONSE TO CONTAINMENT FLOODING, once actions are taken to isolate the source of flooding and make notifications, return to the procedure and step in effect, even if level is still above the entry condition.

Question 64

Unit 1 plant conditions:

- A SBLOCA has occurred
- RCS pressure = 1000 psig
- EOS-1.2A, POST LOCA COOLDOWN AND DEPRESSURIZATION has been initiated
- SG levels = 45%
- Containment pressure = 4.3 psig

Based on the above plant conditions, complete the following statements regarding how EOS-1.2 is performed:

1. SG levels ____(1)____ adequate to initiate an RCS cooldown.

2. When initiating RCS depressurization without RCPs available, ____(2)____ will be used first.

   A. (1) are
      (2) auxiliary spray

   B. (1) are
      (2) PRZR PORV

   C. (1) are NOT
      (2) auxiliary spray

   D. (1) are NOT
      (2) PRZR PORV

Question 65

Unit 1 plant conditions:

- A reactor trip has occurred
- RCPs have been secured
- EOS-0.3A, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS) has been initiated
- RCS depressurization has been initiated
- Letdown is in service

When evaluating plant conditions during the depressurization, complete the following statements:

1. ____(1)____ will be used to depressurize the RCS.

2. The cooldown rate during in EOS-0.3A is limited to ____(2)____.

A. (1) auxiliary spray
   (2) 50°F/hr

B. (1) auxiliary spray
   (2) 100°F/hr

C. (1) PRZR PORV
   (2) 50°F/hr

D. (1) PRZR PORV
   (2) 100°F/hr

Question 66

Which ONE of the following is correct in accordance with Operations Guideline 3, Attachment 4, OPERATIONS DEPARTMENT ALARM RESONSE EXPECTATIONS for addressing expected alarms?

A. During a transient condition the operator responding to the annunciator communicates to the US that the alarm is expected and if the US approves, subsequent alarms associated with that annunciator do not require communication. The ALM is required to be referenced for the initial alarm.

B. During normal equipment operation the operator responding to the annunciator communicates to the US that the alarm is expected and if the US approves, subsequent alarms associated with that annunciator do not require communication. The ALM is not required to be referenced since it was expected.

C. If the alarm is valid and coming in due to a known condition repeatedly during the shift, the US can declare the alarm expected but it will still require the operator responding to the annunciator to announce the alarm each time and to respond to the ALM for the first time only.

D. If the alarm is valid and coming in due to a known condition repeatedly during the shift, the US can declare the alarm expected at which point the operator responding to the annunciator is not required to communicate the alarm to the US or respond to the ALM.

Question 67

Unit 1 plant conditions:

- The control room was evacuated due to a fire
- ABN-803A, RESONSE TO A FIRE IN THE CONTROL ROOM OR CABLE SPREADING ROOM has been initiated

Per ABN-803A, complete the following statements:

(1) The SG Atmospheric Relief Valves will be operated ____(1)____.

(2) As demand on the controller is increased to 5%, expected valve position will be ____(2)____open.

A. (1) locally near the valve
(2) 0%

B. (1) locally near the valve
(2) 5%

C. (1) from the Remote Shutdown Panel
(2) 0%

D. (1) from the Remote Shutdown Panel
(2) 5%

Question 68

Unit 1 plant conditions:

- Reactor startup is in progress per IPO-002A, PLANT STARTUP FROM HOT STANDBY
- Reactor power = 5 x 10^{-10} amps
- 1ALB-6D 1.1 SR HI VOLT FAIL is in alarm

Based on the above plant conditions, which ONE of the following is correct?

A. This alarm is expected for the current reactor power and is a result of placing both Source Range Trip / Reset Block switches on the Main Control Board to the BLOCK position.

B. This alarm is expected for the current reactor power and is a result of placing HIGH FLUX AT SHUTDOWN switches on the SOURCE RANGE DRAWER to the BLOCK position.

C. This alarm is not expected for the current plant conditions and the reactor should be tripped from the Main Control Board.

D. This alarm is not expected for the current plant conditions and per 1-ALB-6D, the fuses should be checked at the SOURCE RANGE DRAWER.

Question 69

Unit 1 plant conditions:

- A reactor shutdown was performed towards the End-Of-Life (EOL) to make repairs
- A reactor startup is in progress 12 hours after the shutdown using IPO-002A, PLANT STARTUP FROM HOT STANDBY

Based on the above plant conditions, complete the following statements:

1. The approach to criticality is affected by the ____(1)____ axial offset.

2. ICRR data indicates that criticality will be achieved above the full out position on CBD, IPO-002A directs you to ____(2)____.

A. (1) negative
   (2) continue the startup and attempt to attain criticality

B. (1) negative
   (2) insert control banks to Control Bank Offset position and recalculate the ECC.

C. (1) positive
   (2) continue the startup and attempt to attain criticality

D. (1) positive
   (2) insert control banks to Control Bank Offset position and recalculate the ECC.

Question 70

Unit 2 plant conditions:

- Reactor power is 20%
- Containment pressure IR Channel I fails low
- Containment pressure IR Channels II, III and IV are operable

Based on the above plant conditions, which ONE of the following Functions in Technical Specification LCO 3.3.2, ESFAS Instrumentation has less than the number of Required Channels OPERABLE?
(See Attached Reference)

A. ONLY Function 1.c for Safety Injection.

B. ONLY Function 1.c for Safety Injection and Function 4.c for Steam Line Isolation.

C. ONLY Function 2.c for Containment Spray and Function 3.b(3) for Phase B Isolation.

D. Function 1.c for Safety Injection, Function 4.c for Steam Line Isolation, Function 2.c for Containment Spray and Function 3.b(3) for Phase B Isolation.

Question 71

You are exiting an RCA and approach the portable frisker which is reading 250 cpm background radiation. Based on this information, answer the following questions:

1. Are you allowed to perform your whole body frisk in an area with background radiation at this level?

2. When you do perform a whole body frisk (in this area or another) you should:

   A. (1) YES
      (2) start on the lowest scale and go up one scale at a time until the meter is on scale.

   B. (1) YES
      (2) start on the highest and go down one scale at a time until the meter is up on scale.

   C. (1) NO
      (2) start on the lowest scale and move up one scale at a time until the meter is on scale.

   D. (1) NO
      (2) start on the highest scale and go down one scale at a time until the meter is on scale.

Question 72

With regards to Escorted Radiation Worker requirements, complete the following statements:

1. The minimum level position which can authorize Escorted Radiation Worker status is ____(1)____.

2. During emergencies, unqualified or offsite personnel that need to enter an RCA should be granted access as an Escorted Radiation Worker ____(2)____.

   A. (1) a qualified Radiation Protection Technician
      (2) and should obtain a whole body count prior to RCA entry

   B. (1) a qualified Radiation Protection Technician
      (2) and should have the whole body count prior to RCA entry waived

   C. (1) the RP Supervisor
      (2) and should obtain a whole body count prior to RCA entry

   D. (1) the RP Supervisor
      (2) and should have the whole body count prior to RCA entry waived

Question 73

Complete the following statements with regards to containment entry requirements when the reactor is shut down for refueling (MODE 6) and the incore detectors are tagged out.

1. ____(1)____is responsible for authorizing a containment entry.

2. If this entry is to include entering the SG Loop Rooms, Plant Manager approval ____(2)____ required.

A. (1) Unit SRO
   (2) is

B. (1) Unit SRO
   (2) is NOT

C. (1) Shift Manager
   (2) is

D. (1) Shift Manager
   (2) is NOT

Question 74

Which ONE of the following is correct regarding how EOP-3.0A (Steam Generator Tube Rupture) procedure steps are performed based on SG pressures?

A. The RCS cooldown termination point is based on the lowest ruptured SG pressure but the intact SG pressures are maintained lower than the ruptured SG pressure to maintain RCS Subcooling.

B. The RCS cooldown termination point is based on the lowest intact SG pressure and the intact SG pressures are maintained lower than the ruptured SG pressure to maintain RCS Subcooling.

C. The RCS cooldown termination point is based on the lowest ruptured SG pressure but the intact SG pressures are maintained higher than the ruptured SG pressure to minimize the spread of contamination.

D. The RCS cooldown termination point is based on the lowest intact SG pressure and the intact SG pressures are maintained higher than the ruptured SG pressure to minimize the spread of contamination.

Question 75

Unit 1 plant conditions:

- RCS heat up is in progress
- RCS temperature = 340°F
- LTOP RCS PRESS HI/AUCT TEMP LO is lit
- AT LO TEMP PORV 455A APPROACHING LMT PRESS is dark
- PORV 1-PCV-455A is closed

Based on the above plant conditions, complete the following statements:

1. 1-PCV-455A ____(1)____.

2. If / when the design LTOP event were to occur, a single PORV ____(2)____adequately relieve pressure sufficiently to prevent system failure.

A. (1) has failed to open and should be opened to relieve RCS pressure
   (2) could

B. (1) has failed to open and should be opened to relieve RCS pressure
   (2) could NOT

C. (1) is in the correct position
   (2) could

D. (1) is in the correct position
   (2) could NOT

Comanche Peak

2015 NRC RO Retake Exam

Answer Key

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

CPNPP NRC 2015 RO Retake Written Exam References

1. NRC Generic Fundamentals Equation Sheet
2. Technical Specification 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation
3. Steam Tables

GENERIC FUNDAMENTALS EXAMINATION
EQUATIONS AND CONVERSIONS HANDOUT SHEET

EQUATIONS

$\dot{Q} = \dot{m}c_p\Delta T$

$\dot{Q} = \dot{m}\Delta h$

$\dot{Q} = UA\Delta T$

$\dot{Q} \propto \dot{m}^3_{Nat\ Circ}$

$\Delta T \propto \dot{m}^2_{Nat\ Circ}$

$K_{eff} = 1/(1 - \rho)$

$\rho = (K_{eff} - 1)/K_{eff}$

$SUR = 26.06/\tau$

$$\tau = \frac{\overline{\beta}_{eff} - \rho}{\lambda_{eff}\ \rho}$$

$$\rho = \frac{\ell^*}{\tau} + \frac{\overline{\beta}_{eff}}{1 + \lambda_{eff}\ \tau}$$

$\ell^* = 1 \times 10^{-4}$ sec

$\lambda_{eff} = 0.1\ sec^{-1}$ (for small positive ρ)

$DRW \propto \varphi^2_{tip}/\varphi^2_{avg}$

$P = P_o 10^{SUR(t)}$

$P = P_o e^{(t/\tau)}$

$A = A_o e^{-\lambda t}$

$CR_{S/D} = S/(1 - K_{eff})$

$CR_1(1 - K_{eff1}) = CR_2(1 - K_{eff2})$

$1/M = CR_1/CR_X$

$A = \pi r^2$

$F = PA$

$\dot{m} = \rho A\vec{v}$

$\dot{W}_{Pump} = \dot{m}\Delta P\upsilon$

$E = IR$

Thermal Efficiency = Net Work Out/Energy In

$$\frac{g(z_2 - z_1)}{g_c} + \frac{(\vec{v}_2^{\,2} - \vec{v}_1^{\,2})}{2g_c} + \upsilon(P_2 - P_1) + (u_2 - u_1) + (q - w) = 0$$

$g_c = 32.2$ lbm-ft/lbf-sec^2

CONVERSIONS

---

1 Mw = 3.41×10^6 Btu/hr	1 Curie = 3.7×10^{10} dps
1 hp = 2.54×10^3 Btu/hr	1 kg = 2.21 lbm
1 Btu = 778 ft-lbf	1 gal_{water} = 8.35 lbm
°C = (5/9)(°F - 32)	1 $ft^3{}_{water}$ = 7.48 gal
°F = (9/5)(°C) + 32	

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).	Immediately
B. One channel or train inoperable.	B.1 Restore channel or train to OPERABLE status. <u>OR</u> B.2.1 Be in MODE 3. <u>AND</u> B.2.2 Be in MODE 5.	48 hours 54 hours 84 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----------	
	C.1 Restore train to OPERABLE status.	24 hours
	OR	
	C.2.1 Be in MODE 3.	30 hours
	AND	
	C.2.2 Be in MODE 5.	60 hours
D. One channel inoperable.	----------NOTE---------- One channel may be bypassed for up to 12 hours for surveillance testing. ----------	
	D.1 Place channel in trip.	72 hours
	OR	
	D.2.1 Be in MODE 3.	78 hours
	AND	
	D.2.2 Be in MODE 4.	84 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Containment Pressure channel inoperable.	----------NOTE---------- One channel may be bypassed for up to 12 hours for surveillance testing. ----------	
	E.1 Place channel in bypass.	72 hours
	OR	
	E.2.1 Be in MODE 3.	78 hours
	AND	
	E.2.2 Be in MODE 4.	84 hours
F. One channel or train inoperable.	F.1 Restore channel or train to OPERABLE status.	48 hours
	OR	
	F.2.1 Be in MODE 3.	54 hours
	AND	
	F.2.2 Be in MODE 4.	60 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----------	
	G.1 Restore train to OPERABLE status.	24 hours
	OR	
	G.2.1 Be in MODE 3.	30 hours
	AND	
	G.2.2 Be in MODE 4.	36 hours
H. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----------	
	H.1 Restore train to OPERABLE status.	24 hours
	OR	
	H.2 Be in MODE 3.	30 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	----------NOTE---------- One channel may be bypassed for up to 12 hours for surveillance testing. ----------	
	I.1 Place channel in trip.	72 hours
	OR	
	I.2 Be in MODE 3.	78 hours
J. One Main Feedwater Pump trip channel inoperable.	J.1 Place channel in trip.	6 hours
	OR	
	J.2 Be in MODE 3.	12 hours
K. One channel inoperable.	----------NOTE---------- One channel may be bypassed for up to 12 hours for surveillance testing. ----------	
	K.1 Place channel in bypass.	72 hours
	OR	
	K.2.1 Be in MODE 3.	78 hours
	AND	
	K.2.2 Be in MODE 5.	108 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One or more required channel(s) inoperable.	L.1 Verify interlock is in required state for existing unit condition. OR L.2.1 Be in MODE 3. AND L.2.2 Be in MODE 4.	1 hour 7 hours 13 hours

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.3	Not Used.	

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.4	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.5	Perform COT.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.6	Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.7	----------NOTES---------- 1. Verification of relay setpoints not required. 2. Actuation of final devices not included. ---------- Perform TADOT.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.8	----------NOTE---------- Verification of setpoint not required for manual initiation functions. ---------- Perform TADOT.	In accordance with the Surveillance Frequency Control Program.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.9	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ---------- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.10	----------NOTE---------- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 532 psig. ---------- Verify ESF RESPONSE TIMES are within limits.	In accordance with the Surveillance Frequency Control Program.
SR 3.3.2.11	----------NOTE---------- Verification of setpoint not required. ---------- Perform TADOT.	In accordance with the Surveillance Frequency Control Program.

Table 3.3.2-1 (page 1 of 6)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[a]
1. Safety Injection					
a. Manual Initiation	1, 2, 3, 4	2	B	SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
c. Containment Pressure -- High 1	1, 2, 3	3	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 3.8 psig
d. Pressurizer Pressure -- Low	1, 2, 3[b]	4	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 1803.6 psig
e. Steam Line Pressure Low	1, 2, 3[b]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 594.0 psig[c] (Unit 1) ≥ 578.4 psig[c] (Unit 2)
2. Containment Spray					
a. Manual Initiation	1, 2, 3, 4	2 per train, 2 trains	B	SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
c. Containment Pressure High -- 3	1, 2, 3	4	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 18.8 psig

(a) The Allowable Value defines the limiting safety system except for functions 5b and 6c (the Nominal Trip Setpoint defines the limiting safety system setting for these Trip Functions). See the Bases for the Nominal Trip Setpoints.
(b) Above the P-11 (Pressurizer Pressure) interlock and below P-11, unless the Function is blocked.
(c) Time constants used in the lead/lag controller are $T_1 \geq 10$ seconds and $T_2 \leq 5$ seconds.

Table 3.3.2-1 (page 2 of 6)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[(a)]
3. Containment Isolation					
a. Phase A Isolation					
(1) Manual Initiation	1, 2, 3, 4	2	B	SR 3.3.2.8	NA
(2) Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
b. Phase B Isolation					
(1) Manual Initiation	1, 2, 3, 4	2 per train, 2 trains	B	SR 3.3.2.8	NA
(2) Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
(3) Containment Pressure High -- 3	1, 2, 3	4	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9	≤ 18.8 psig

(a) The Allowable Value defines the limiting safety system except for functions 5b and 6c (the Nominal Trip Setpoint defines the limiting safety system setting for these Trip Functions). See the Bases for the Nominal Trip Setpoints.

Table 3.3.2-1 (page 3 of 6)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[a]
4. Steam Line Isolation					
a. Manual Initiation	1, 2[i], 3[i]	2	F	SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2[i], 3[i]	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
c. Containment Pressure -- High 2	1, 2[i], 3[i]	3	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 6.8 psig
d. Steam Line Pressure					
(1) Low	1, 2[i], 3[b][i]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 594.0 psig[c] (Unit 1) ≥ 578.4 psig[c] (Unit 2)
(2) Negative Rate -- High	3[g][i]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 178.7 psi[h]

(a) The Allowable Value defines the limiting safety system except for functions 5b and 6c (the Nominal Trip Setpoint defines the limiting safety system setting for these Trip Functions). See the Bases for the Nominal Trip Setpoints.
(b) Above the P-11 (Pressurizer Pressure) Interlock and below P-11, unless the Function is blocked.
(c) Time constants used in the lead/lag controller are $T_1 \geq 10$ seconds and $T_2 \leq 5$ seconds.
(g) Below the P-11 (Pressurizer Pressure) Interlock; however, may be blocked below P-11 when safety injection on steam line pressure-low is not blocked.
(h) Time constant utilized in the rate/lag controller is ≥ 50 seconds.
(i) Except when all MSIVs and their associated upstream drip pot isolation valves are closed and deactivated.

Table 3.3.2-1 (page 4 of 6)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[a]
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1, 2[j]	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
b. SG Water Level -- High High (P-14)	1, 2[j]	3 per SG[p]	I	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤84.5% of narrow range span (Unit 1) [q][r] ≤82.0% of narrow range span (Unit 2) [q][r]
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

(a) The Allowable Value defines the limiting safety system except for functions 5b and 6c (the Nominal Trip Setpoint defines the limiting safety system setting for these Trip Functions). See the Bases for the Nominal Trip Setpoints.
(j) Except when all MFIVs and associated bypass valves are closed and de-activated or isolated by a closed manual valve.
(p) A channel selected for use as an input to the SG water level controller must be declared inoperable.
(q) If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
(r) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Nominal Trip Setpoint, or a value that is more conservative than the Trip Setpoint; otherwise, the channel shall be declared inoperable. The Nominal Trip Setpoint, the methodology used to determine the as-found tolerance and the methodology used to determine the as-left tolerance shall be specified in the Technical Specification Bases.

Table 3.3.2-1 (page 5 of 6)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[a]
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1, 2, 3	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
b. Not Used.					
c. SG Water Level Low-Low	1, 2, 3	4 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥37.5% of narrow range span (Unit 1) [q)(r)] ≥34.9% of narrow range span (Unit 2) [q)(r)]
d. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
e. Loss of Offsite Power	1, 2, 3	1 per train	F	SR 3.3.2.7 SR 3.3.2.9 SR 3.3.2.10	NA
f. Not Used.					
g. Trip of all Main Feedwater Pumps	1, 2	2 per AFW pump	J	SR 3.3.2.8	NA
h. Not Used.					

(a) The Allowable Value defines the limiting safety system except for functions 5b and 6c (the Nominal Trip Setpoint defines the limiting safety system setting for these Trip Functions). See the Bases for the Nominal Trip Setpoints.
(q) If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
(r) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Nominal Trip Setpoint, or a value that is more conservative than the Trip Setpoint; otherwise, the channel shall be declared inoperable. The Nominal Trip Setpoint, the methodology used to determine the as-found tolerance and the methodology used to determine the as-left tolerance shall be specified in the Technical Specification Bases.

Table 3.3.2-1 (page 6 of 6)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[(a)]
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
b. Refueling Water Storage Tank (RWST) Level - Low Low	1, 2, 3, 4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 31.9% instrument span
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.11	NA
b. Pressurizer Pressure, P-11	1, 2, 3	3	L	SR 3.3.2.5 SR 3.3.2.9	≤ 1975.2 psig (Unit 1) ≤ 1976.4 psig (Unit 2)

(a) The Allowable Value defines the limiting safety system except for functions 5b and 6c (the Nominal Trip Setpoint defines the limiting safety system setting for these Trip Functions). See the Bases for the Nominal Trip Setpoints.