U.S. Nuclear Regulatory Commission

Site-Specific SRO Written Examination

Applicant Information	
Name:	
Date:	Facility/Unit: **Sequoyah Station Units 1 & 2**
Region: I ☐ II X III ☐ IV ☐	Reactor Type: W X CE ☐ BW ☐ GE ☐
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results		
RO/SRO-Only/Total Examination Values	____ / ____ / ____	Points
Applicant's Scores	____ / ____ / ____	Points
Applicant's Grade	____ / ____ / ____	Percent

1. Given the following plant conditions:

   - Unit 1 is operating at 100% at EOL (15,000 MWD/MTU)
   - Subsequently a reactor trip occurs on Unit 1.
   - Shutdown Bank 'B' rod G3 remains at 228 steps.
   - Control Bank 'D' rod M8 sticks at 10 steps while inserting.
   - Tavg dropped to 539°F and stable.

   Which ONE of the following completes the statement below?

   Based on the given conditions, in accordance with ES-0.1, "Reactor Trip Response," Emergency Boration is _____ .

   A. **NOT** required

   B. required due to the RCS temperature only

   C. required due to the stuck control rods only

   D. required due to both the RCS temperature and the stuck control rods

2. Given the following plant conditions:

- A safety injection has occurred.
- RCS pressure is 1720 psig and still dropping.
- Pressurizer level is rising.
- All reactor coolant pumps are in operation.

Which ONE of the following identifies the leak location?

A. Pressurizer safety valve

B. Reactor Vessel Head vent line

C. Incore Instrument Guide Tube

D. Pressurizer heater well

3. Given the following plant conditions:

- The crew is performing ES-1.2, "Post LOCA Cooldown and Depressurization."
- Core Exit Temperature is 546°F and lowering.
- RCS Thot is 531°F and lowering.
- RCS wide range pressure is 1520 psig.
- RCPs have been removed from service.

Which ONE of the following identifies the current RCS subcooling margin and the operational impact if subcooling is reduced to 0°F during the depressurization?

A. 53°F;
The RCS cooldown will stop until minimum required subcooling is restored.

B. 68°F;
The RCS cooldown will stop until minimum required subcooling is restored.

C. 53°F;
Pressurizer level will rapidly rise.

D. 68°F;
Pressurizer level will rapidly rise.

4. Given the following plant conditions:

- Unit 1 is initially at 100% power when an event occurred.
- The crew has just restored power to FCV-63-1 at step 6 of ES-1.3, "Transfer to RHR Containment Sump."
- RWST level is 20% and lowering.
- CNTMT pressure is 1.5 psig and lowering.
- CNTMT sump level is 41% and rising.
- 1-HS-63-72A, CNTMT Sump Suct To RHR Pump 1A, Red light **LIT**
- 1-HS-63-73A, CNTMT Sump Suct To RHR Pump 1B, Red light **LIT**
- 1-HS-72-39A, CNTMT Spray Hdr 1A Isol, Green light **LIT**
- 1-HS-72-2A, CNTMT Spray Hdr 1B Isol, Green light **LIT**

Which ONE of the following completes the statement below?

Based on the above indications the RHR CNTMT Sump suction valves ____(1)_____ in the expected positions and the CNTMT Spray Header isolations ___(2)___ in the expected positions.

A. (1) are
(2) are

B. (1) are
(2) are **NOT**

C. (1) are **NOT**
(2) are

D. (1) are **NOT**
(2) are **NOT**

5. Given the following plant conditions:

- Unit 2 is operating at 100% power.
- FS-62-11 REAC COOL PMPS SEAL LEAKOFF HIGH FLOW alarm is LIT.
- LS-62-45A REAC COOL PMP 4 STANDPIPE LVL HIGH-LOW alarm is LIT
- No. 1 seal leakoff flow recorder for RCP #4 indicates 7 gpm.

Which ONE of the following completes the statements below:

(1) The #2 seal on RCP #4 becomes a _____(1)_____ in response to these conditions.

(2) In accordance with AOP-R.04, "Reactor Coolant Pump Malfunctions," the **minimum** No. 1 Seal Leakoff flow that would require an immediate reactor trip and shutdown of #4 RCP is when flow exceeds __(2)__?

A. (1) film riding seal
(2) 8 gpm

B. (1) film riding seal
(2) 9 gpm

C. (1) rubbing face seal
(2) 8 gpm

D. (1) rubbing face seal
(2) 9 gpm

6. Given the following plant conditions:

- While operating at 100% power, the Unit 1 operators entered AOP-M.09, "Loss of Charging," and secured the 1A CCP pump due to indications of gas binding.

- After stopping the CCP, a Turbine Runback occurs due to the trip of 1B MFPT.

- The operators stabilized the Unit at 60% power with the following conditions:

  - Pressurizer level at 37%.
  - Annunciator B-7, ZB-412B ROD CONTROL BANKS LIMIT LOW-LOW, in ALARM on 1-XA-55-4B.
  - Tavg is 568°F.
  - RCP lower bearing temperatures 150°F.
  - RCP seal water temperature 160°F.
  - No CCPs are running.

Based on the current plant conditions, which ONE of the following identifies the reason that the Unit is required to be immediately tripped?

A. RCS boration is required to comply with Tech Spec action

B. Pressurizer level deviation from program

C. Loss of RCP seal injection flow

D. Tavg -Tref difference

7. Given the following plant conditions:

- Unit 1 was operating at 100% power when a LOCA occurred.
- The crew is implementing ES-1.3, "Transfer to RHR Containment Sump".
- Both trains of ECCS and Containment Spray pump suctions have been transferred to the containment sump.
- The 1B RHR pump begins to cavitate.
- Containment pressure is 4.1 psig and slowly trending down.

In accordance with ES-1.3, which ONE of the following completes the statements below?

The conditions above require the operating crew to ensure __(1)__ are stopped and placed to 'Pull to Lock'.

After stopping required pumps in (1) above, if the remaining Containment Spray pump amps start fluctuating, __(2)__ is/are required to be stopped.

A. (1) only the 1B RHR pump and one Containment Spray pump
(2) all running ECCS and Containment Spray pumps

B. (1) only the 1B RHR pump and one Containment Spray pump
(2) only the running Containment Spray pump

C. (1) 1B RHR, one CCP, one SI pump and one Containment Spray pump
(2) all running ECCS and Containment Spray pumps

D. (1) 1B RHR, one CCP, one SI pump and one Containment Spray pump
(2) only the running Containment Spray pump

8. Given the following plant conditions:

- Unit 1 is in Mode 3 with RCS cooldown in progress.
- Unit 2 is operating at 100% power.
- Spent Fuel Pool Cooling is being supplied from Unit 1 Train A CCS.
- A leak upstream of the 1A CCS heat exchangers required all Unit 1 Train A CCS to be shutdown.

Which ONE of the following completes the statement below?

In accordance with AOP-M.03,"Loss of Component Cooling Water," the cooling supply to the Spent Fuel Pool Cooling System is first required to be realigned to be supplied from __(1)__.

After CCS is restored to the in-service Spent Fuel Pool Heat Exchanger, if the CCS flow rate is 3400 gpm through the heat exchanger, the flow rate __(2)__ required to be adjusted in accordance with 0-SO-78-1, "Spent Fuel Pit Coolant System."

	(1)	(2)
A.	Unit 1 CCS Train B	is
B.	Unit 1 CCS Train B	is **NOT**
C.	Unit 2 CCS Train A	is
D.	Unit 2 CCS Train A	is **NOT**

9. Given the following:

- Unit 2 is operating at 100% power when a turbine trip occurs.
- Control rods begin inserting with 2-HS-85-5110, ROD CONTROL MODE SELECTOR, in AUTO.
- Control Rods are inserting at maximum rate.
- The reactor fails to trip and cannot be tripped from the MCR reactor trip handswitches.
- The crew enters the EOP network and has transitioned to FR-S.1, "Nuclear Power Generation / ATWS."

Which ONE of the following completes the statement below in accordance with FR-S.1?

FR-S.1 _____ .

A. allows ROD CONTROL to remain in AUTO until the rod insertion rate first drops to less than 64 steps/min before requiring manual rod insertion

B. allows ROD CONTROL to remain in AUTO until the rod insertion rate first drops to less than 48 steps/min before requiring manual rod insertion

C. requires ROD CONTROL to be immediately placed in MAN and insertion continued resulting in the ROD SPEED indicating 64 steps/min

D. requires ROD CONTROL to be immediately placed in MAN and insertion continued resulting in the ROD SPEED indicating 48 steps/min

10. Given the following plant conditions:

- Unit 1 is operating at 67% power steady state conditions with Rod Control in Manual.

- A steam leak in the west valve vault room results in the following:

	Rx Power	Turb Power	Tavg	RCS Press	MWe
0700	67%	67.0%	567°F	2235 psig	785 MWe
0701	68%	66.5%	566°F	2231 psig	761 MWe
0702	69%	66.5%	564°F	2227 psig	761 MWe
0703	70%	65.5%	563°F	2223 psig	755 MWe
0704	71%	65.0%	561°F	2219 psig	750 MWe

Which ONE of the following completes the statement below?

The **earliest** time the conditions require an immediate reactor trip to be initiated in accordance with AOP-S.05, "Steam or Feedwater Leak," is _____.

A. 0701

B. 0702

C. 0703

D. 0704

11. Given the following plant conditions:

- Unit 2 is at 100% RTP.
- S/G #4 main feedwater line develops a leak inside containment at the containment penetration wall.
- The S/G #4 level is able to be maintained with increased feedwater flow.
- Containment pressure is 1.4 psig and rising.
- Condenser hotwell level is 20" and lowering.
- The operating crew enters AOP-S.05, "Steam or Feedwater Leak."
- While performing AOP-S.05, the AOP directs the operating crew to trip the reactor, initiate SI and close the MSIVs.

Based on the given conditions, which ONE of the following completes the statements below?

The AOP-S.05 criteria used "to trip the reactor, initiate SI and close the MSIVs" is due to __(1)__.

After these actions have been taken, SG #4 pressure __(2)__ lower uncontrolled.

A. (1) hotwell level
(2) will

B. (1) hotwell level
(2) will **NOT**

C. (1) containment pressure
(2) will

D. (1) containment pressure
(2) will **NOT**

12. Given the following plant conditions:

- Unit 1 was operating at 100% rated thermal power when a reactor trip occurs
- The following annunicators are observed in alarm:
  - 0-M26-A, A-5, “Diesel GEN 1A-A Running > 40 RPM”.
  - 0-M26-B, A-5, “Diesel GEN 1B-B Running > 40 RPM”.
  - 0-M26-C, A-5, “Diesel GEN 2A-A Running > 40 RPM”.
  - 0-M26-D, A-5, “Diesel GEN 2B-B Running > 40 RPM”.
  - 1-M1-B, B-2, "6900V Unit BD 1B Failure Or Undervoltage".
  - 0-M26-A, C-7,”6900V SD BD 1A-A Failure or Bus Feeder UV” alarms and clears.

Which ONE of the following completes the statement below?

The crew is required to perform _____(1)_____ in parallel with applicable EOPs, and the Emergency Diesel status is _____(2)_____ based on the above conditions.

A. (1) AOP-P.01, "Loss of Offsite Power"
(2) expected

B. (1) AOP-P.01, "Loss of Offsite Power"
(2) **NOT** expected

C. (1) AOP-P.05, "Loss of Unit 1 Shutdown Boards"
(2) expected

D. (1) AOP-P.05, "Loss of Unit 1 Shutdown Boards"
(2) **NOT** expected

13. Given the following plant conditions:

- Both Units are at 100% power.
- ERCW is in normal alignment.
- ERCW header 1A & 2A are indicating LOW flow.

The following MCR alarms are LIT:

- M-15A Window B-6, "MECH EQUIP SUMP LVL HI."
- M-27A Window A-1, "UNIT 1 HEADER A PRESSURE LOW."
- M-27A Window B-3, "UNIT 2 HEADER A PRESSURE LOW."
- NO OTHER alarms are lit associated with the ERCW system.

Which ONE of the following ERCW conditions accounts for the above indications?

A. Supply header 1A/2A has ruptured in the Yard Area.

B. A discharge header has ruptured in the Yard Area.

C. A rupture has occurred upstream of the 2A strainer.

D. A rupture has occurred in the CCW Intake Pumping Station.

14. Given the following plant conditions:

- Unit 1 is in Mode 3 following a manual reactor trip required due to a control air line break in the non-essential control air header.

- The operating crew performed the applicable emergency instructions and has stabilized the plant.

- The crew has implemented AOP-M.02, "Loss of Control Air," to address the loss of air.

Based on the given conditions, which ONE of the following identifies a **local action** that is required during the performance of AOP-M.02 for this loss of non-essential control air?

A. control RCS pressure

B. control RCS temperature

C. control SG levels

D. control PZR level

15. Given the following plant conditions:

- Unit 1 is at 100% power.
- The Transmission Operator requests the plant to take in the maximum value of MVARs.

Which ONE of the following transmission lines out of service affects the maximum allowed MVAR incoming value on Unit 1, and how is the adjustment made in accordance with 0-GO-5, "Normal Power Operation?"

	TRANSMISSION LINE	METHOD OF ADJUSTMENT
A.	A 161 KV line	Exciter Voltage Auto Adjuster
B.	A 161 KV line	Exciter Voltage Base Adjuster
C.	A 500 KV line	Exciter Voltage Auto Adjuster
D.	A 500 KV line	Exciter Voltage Base Adjuster

16. Given the following plant conditions:

    - Following a reactor trip, abnormal radiation was noted in the Aux. Building due to a loss of RCS inventory outside containment.

    Which ONE of the following identifies a required action and the subsequent check used to determine whether or not the leak is isolated in accordance with ECA-1.2, "LOCA Outside Containment?"

    A. Isolate SI pump Cold Leg Injection;
    Pressurizer level or RVLIS level rising

    B. Isolate SI pump Cold Leg Injection;
    RCS pressure rising

    C. Isolate RHR Cold Leg Injection;
    Pressurizer level or RVLIS level rising

    D. Isolate RHR Cold Leg Injection;
    RCS pressure rising

17. Given the following plant conditions:

- The crew is implementing FR-H.1, "Loss of Secondary Heat Sink."
- CST level is 25%.
- **No** Steam Generator is Intact.

Which ONE of the following identifies,

(1) the preference for restoring a SG as a heat sink

and

(2) which AFW pump is required to be used **first** in the attempt to establish feed to a SG?

A. (1) Feed a ruptured SG before feeding a faulted SG;
(2) TDAFW pump.

B. (1) Feed a ruptured SG before feeding a faulted SG;
(2) MDAFW pump.

C. (1) Feed a faulted SG before feeding a ruptured SG;
(2) TDAFW pump.

D. (1) Feed a faulted SG before feeding a ruptured SG;
(2) MDAFW pump.

18. Given the following plant conditions:

- At 0900 the Unit 1 Reactor Trips.
- At 0920 a small break LOCA occurs.
- At 0950 the crew transitioned to ECA-1.1, "Loss of RHR Sump Recirculation", due to the failure of both RHR pumps.
- Crew has established one train of ECCS flow per ECA-1.1.
- SI flow cannot be terminated due to lack of subcooling.
- At 1030 the crew is performing ECA-1.1 Step 20.b, "Monitor if ECCS flow should be terminated:"

Which one of the following:

(1) identifies the **minimum** ECCS flow rate per "Curve 9" of ECA 1.1 that meets the intent of ECA-1.1, Step 20.b RNO,

and

(2) the reason for the minimum ECCS flow rate?

REFERENCE PROVIDED

A. (1) 325 gpm ECCS flow.
(2) To delay RWST depletion.

B. (1) 325 gpm ECCS flow.
(2) To ensure adequate RVLIS level.

C. (1) 400 gpm ECCS flow.
(2) To delay RWST depletion.

D. (1) 400 gpm ECCS flow.
(2) To ensure adequate RVLIS level.

19. Given the following plant conditions:

At time = T0
- Tavg - Tref deviation is 0°F.
- Pressurizer level is 45% and stable.
- Reactor Power is approximately 75% and stable.
- Control Bank "D" step counters are at 166 steps.

At time = T + 2 min
- Tavg is 2°F > Tref and rising.
- Pressurizer level 46% and slowly rising.
- Pressurizer spray valves have throttled open.
- Reactor Power is approximately 76% and slowly rising.
- Control Bank D step counters are at 178 steps and rising at 8 steps per minute

Which ONE of the following identifies

(1) the procedure required to be entered

and

(2) the FIRST action that must be performed?

A. (1) AOP-C.01, "Rod Control System Malfunctions".
   (2) Trip the reactor and enter E-0, "Reactor Trip or Safety Injection."

B. (1) AOP-C.01, "Rod Control System Malfunctions".
   (2) Place the rod control mode selector switch to MANUAL.

C. (1) AOP-C.02, "Uncontrolled RCS Boron Concentration Changes".
   (2) Trip the reactor and enter E-0, "Reactor Trip or Safety Injection."

D. (1) AOP-C.02, "Uncontrolled RCS Boron Concentration Changes".
   (2) Place the rod control mode selector switch in MANUAL.

20. Given the following plant conditions:

- Refueling is in progress on Unit 1 when a report is made to the control room that an irradiated fuel assembly has been dropped.
- The following is the status of alarms on 0-XA-55-12A:
  - "1-RA-90-112A CNMT BLDG UP COMPT AIR MON HIGH RAD" is Lit.
  - "1-RA-90-59A RX BLDG AREA RAD MON HIGH RAD" is Lit.
  - "1-RA-90-131A CNTMT PURGE AIR EXH MON HIGH RAD" is **NOT** Lit

Based on the given conditions, which ONE of the following correctly completes the statements below?

(1) A containment ventilation isolation __(1)__ automatically occurred.

and

(2) In accordance with AOP-M.04, "Refueling Malfunctions", Auxiliary Building Isolation _____(2)_____ required to be initiated.

A. (1) has **NOT**
(2) is

B. (1) has
(2) is **NOT**

C. (1) has
(2) is

D. (1) has **NOT**
(2) is **NOT**

21.

Given the following:

- Unit 2 was at 100% RTP when a reactor trip occurred due to a sheared shaft on #1 RCP.
- While the crew was in ES-0.1, "Reactor Trip Response", with the plant stable, chemistry reports that #2 SG has developed a tube leak.
- Normal letdown is in service.
- PZR Level is dropping very slowly with the 2A CCP at 114 gpm.
- AOP-R.01, "Steam Generator Tube Leak", was entered and the crew is evaluating step 1, "Monitor if PZR Level can be maintained".

The crew is required to **first** ____(1)____ and the crew will use ____(2)____ during the follow on step to depressurize the RCS in AOP-R.01.

A. (1) isolate letdown
(2) auxiliary spray

B. (1) isolate letdown
(2) normal spray

C. (1) start the 2B CCP
(2) auxiliary spray

D. (1) start the 2B CCP
(2) normal spray

22. Given the following plant conditions:

Initial conditions:

- A reactor startup is in progress on Unit 2 in accordance with 0-GO-2, "Unit Startup From Hot Standby To Reactor Critical."
  - Nuclear Instrumentation indications are:
  - N-31 = 32 cps N-32 = 36 cps
  - N-35 = 1.3X10-8% N-36 = 1.5X10-8%

Current plant conditions:

- Control bank rods have been withdrawn to the estimated "first count doubling" position.
- Reactor power is stable
- Nuclear Instrumentation indications are:
- N-31 = 32 cps N-32 = 5 cps
- N-35 = 3.1X10-8% N-36 = 3.4X10-8%

- The SRO declares both N-31 AND N-32 INOPERABLE, and enters AOP-I.01, "Nuclear Instrumentation Malfunction."

Based on the given conditions, which ONE of the following completes the statements below?

In accordance with 0-GO-2, the earliest time the crew is required to declare the plant in MODE 2 is when the ___(1)___ .

Based on the current conditions, in accordance with AOP-I.01, a manual Reactor Trip ____(2)_____ required.

A. (1) control banks are first withdrawn
   (2) is

B. (1) control banks are first withdrawn
   (2) is NOT

C. (1) reactor is declared CRITICAL
   (2) is

D. (1) reactor is declared CRITICAL
   (2) is NOT

23. ODCM 1.1.1 states that Liquid Radwaste Effluent Line radiation monitor 0-RM-90-122 shall be operable with its alarm setpoint set at a particular value.

Which one of the following completes the statement below?

The alarm setpoint of 0-RM-90-122 is based on _____(1)_____

and

upon alarming, the radiation monitor _____(2)_____terminate the release.

A. (1) the limits of 10 CFR 20, Standards for Protection Against Radiation
(2) will

B. (1) the limits of 10 CFR 20, Standards for Protection Against Radiation
(2) will **NOT**

C. (1) the limits of 10 CFR 100, Reactor Site Criteria
(2) will

D. (1) the limits of 10 CFR 100, Reactor Site Criteria
(2) will **NOT**

24. Given the following plant conditions:

- A Reactor Trip and Safety Injection has occurred on Unit 1.
- While transitioning from E-0, "Reactor Trip or Safety Injection," the following plant conditions are noted:
- Containment pressure is 6.5 psig and stable.
- All RCPs are stopped.
- RVLIS Lower Range is indicating 40%.
- Core Exit Thermocouples are indicating 710°F.
- PZR level is off scale low.
- PZR pressure is 400 psig.
- RCS Wide Range Hot Leg Temperatures are indicating 680°F.

Which ONE of the following identifies the accident that has occurred and the required procedure to be entered?

A. A PZR steam space break has occurred and a transition to FR-C.1, "Response to Inadequate Core Cooling" is required.

B. A PZR steam space break has occurred and a transition to FR-C.2, "Response to Degraded Core Cooling" is required.

C. An RCS hot or cold leg break has occurred and a transition to FR-C.1, "Response to Inadequate Core Cooling" is required.

D. An RCS hot or cold leg break has occurred and a transition to FR-C.2, "Response to Degraded Core Cooling" is required.

25. Given the following plant conditions:

- The crew is implementing ES-1.2, "Post LOCA Cooldown and Depressurization".
- The 1A-A Centrifugal Charging Pump (CCP) is running.
- Both Safety Injection Pumps (SIPs) are running.
- The crew has determined that one SIP can be stopped.

Which ONE of the following completes the statements below?

(1) After the SIP is stopped, the subcooling value will stabilize at a ___(1)___ value when break flow and ECCS flow equalize.

<u>And</u>

(2) If subcooling is adequate, the **next** required procedure action is to __(2)___.

A. (1) Lower
(2) establish normal charging

B. (1) Higher
(2) establish normal charging

C. (1) Lower
(2) stop the 2nd SIP

D. (1) Higher
(2) stop the 2nd SIP

26. Which one of the following identifies the interlocks that must be met before valve FCV-72-23 (Train A Containment Spray Suction from Containment Sump) can be opened from the MCR?

    A. Both FCV-74-3 (RHR Suction from RWST) closed and FCV-72-40 (RHR Discharge to RHR Spray) must be closed.

    B. Both FCV-72-40 (RHR Discharge to RHR Spray) and FCV-72-34 (Containment Spray Pump Recirc) must be closed.

    C. Both FCV-72-22 (Containment Spray Suction from RWST) and FCV-74-3 (RHR Suction from RWST) must be closed.

    D. Both FCV-72-34 (Containment Spray Pump Recirc) and FCV-72-22 (Containment Spray Suction from RWST) must be closed.

27. Given the following plant conditions:

- A large break LOCA has occurred on Unit 1.
- Accumulators have discharged and are isolated.
- ES-1.3, "Transfer to Containment Sump," has been completed.
- Containment sump level is now at 84% and slowly rising.
- FR-Z.2, "Containment Flooding," is in progress.

Based on the given conditions, in accordance with FR-Z.2, which ONE of the following describes;

(1) where the required sample is taken,

and

(2) the reason for sampling?

A. (1) RHR system
(2) To determine the level of activity, to allow the TSC to determine if excess sump water can be transferred to tanks outside of containment.

B. (1) Containment sump
(2) To determine the level of activity, to allow the TSC to determine if excess sump water can be transferred to tanks outside of containment.

C. (1) RHR system
(2) To ensure shutdown margin is being maintained, since non-borated water has entered the containment sump.

D. (1) Containment sump
(2) To ensure shutdown margin is being maintained, since non-borated water has entered the containment sump.

28. Given the following plant conditions:

- Unit 1 is at 100% rated thermal power.
- 1-FCV-62-93, Charging Flow Control Valve is in Manual.
- 1-FCV-62-89, Charging Seal Water Flow Control Valve, is operating at 60% open.
- Due to a positioner failure, 1-FCV-62-89 throttles close, and sticks at the 30% open position.

What effect will this malfunction have on charging pump discharge pressure and RCP seal injection flow?

	Charging Pump Discharge Press	**RCP Seal Injection Flow**
A.	Lowers	Rises
B.	Rises	Lowers
C.	Rises	Rises
D.	Lowers	Lowers

29. Given the following plant conditions:

- Unit 1 is operating at 100% power after restart following a refueling outage.
- U2118, instantaneous thermal power is within applicable limits.
- Rod Control in MANUAL.
- VCT level is currently at 32%.
- An AUO places an un-borated mixed bed demineralizer in service.

Which ONE of the following completes the statements below?

Assuming NO operator action is taken, the VCT level over time will __(1)__.

In accordance with AOP-C.02, "Uncontrolled RCS Boron Concentration Changes," the **first** corrective action the RO will take that will stop the event in progress is to __(2)__.

	(1)	(2)
A.	remain constant	place 1-HS-62-79A, Mixed Bed Hi Temp Bypass, to V.C. TK position
B.	remain constant	perform RCS boration using 0-SO-62-7
C.	rise	place 1-HS-62-79A, Mixed Bed Hi Temp Bypass, to V.C. TK position
D.	rise	perform RCS boration using 0-SO-62-7

30. Given the following plant conditions:

- Unit 1 is at 100% rated thermal power.
- A routine dilution has just occurred.
- The integrater has automatically counted out, however the OATC has NOT returned the CVCS Makeup Selector Switch to the "AUTO" position.

Which ONE of the following identifes the expected positions of the following valves?

Note:
1-FCV-62-140D, Boric Acid Valve to the Blender
1-FCV-62-128, Inlet to the Top of the VCT

	1-FCV-62-140D	1-FCV-62-128
A.	Closed	Open
B.	Closed	Closed
C.	Open	Closed
D.	Open	Open

31. Given the following plant conditions:

- Unit 1 is shutdown with RCS temperature stable at 140°F.
- RHR Train A in service at a flow rate of 2800 gpm.
- CCS temperature going into the 1A RHR Heat Exchanger 85°F.
- The operating crew initiates a RCS heatup at a rate of 20°F/hr in accordance with 0-GO-1, "Unit Startup From Cold Shutdown To Hot Standby."

Current plant conditions:

- The operating crew has just established an initial stable 20°F/hr heatup.
- The operating crew has only operated components on the 1-M-6 panel.
- CCS temperature going into the 1A RHR Heat Exchanger is 85°F.

Based on the given conditions, which ONE of the following completes the statements below?

Compare the current stable conditions to the initial stable conditions before starting the heatup.

(1) The current Train "A" CCS ESF Header flow rate will be __(1)__ the initial Train "A" CCS ESF flow rate before starting the heatup.

and

(2) The current CCS temperature leaving the 1A RHR Heat Exchanger will be __(2)__ the initial CCS temperature leaving the 1A RHR Heat Exhanger before starting the heatup.

A. (1) lower than
(2) lower than

B. (1) approximately the same as
(2) lower than

C. (1) lower than
(2) greater than

D. (1) approximately the same as
(2) greater than

32. Given the following plant conditions:

- Unit 2 is at 100% power
- An inadvertent Safety Injection Actuation has occurred.

In accordance with EPM-3-E-0, "Basis Document for E-0 Reactor Trip or Safety Injection", which ONE of the following identifies the reason for the time critical action following an inadvertent SI?

A. to prevent Safety Injection Pumps from running for extended time periods at minimum flow.

B. to reset SI to allow air to be restored to Containment.

C. to secure Centrifugal Charging Pumps running in Injection Mode to prevent filling the PZR solid.

D. to re-establish RCP seal injection flow to prevent RCP seal damage.

33. Which ONE of the following identifies the pressure that relief valve 63-637, "RHR Pump Discharge," will start relieving and the tank where the flow through the valve will be routed?

	Pressure	Tank
A.	550 psig	RCDT
B.	550 psig	PRT
C.	600 psig	RCDT
D.	600 psig	PRT

34. Given the following plant conditions:

- Unit 2 is at 90% power.
- Due to a leaking PORV, 2-FCV-68-332 PORV block valve was closed.
- PRT level is 80%
- PRT pressure is 7 psig
- PRT Temperature is 145°F

Which ONE of the following describes the action(s) to be taken **first,** and the reason for the action(s), in 2-SO-68-5, "Pressurizer Relief Tank," to return the PRT to normal?

A. Start a Waste Gas Compressor, open 2-PCV-68-301, PRT VENT TO WDS VENT HDR, to restore PRT pressure.

B. Align the B RCDT pump, open FCV-68-305, N2 SUPPLY TO PRT, open 2-LCV-68-310, PRT DRAIN TO RCDT, to restore PRT level.

C. Open 2-FCV-68-303, PRIMARY WATER TO PRT, to restore PRT level.

D. Open 2-FCV-68-303, PRIMARY WATER TO PRT, to restore PRT temperature.

35. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- "1-RA-90-123A CCS LIQ EFF MON HIGH RAD" Alarm is LIT.
- The red HIGH light is LIT on CCS LIQUID EFFLUENT RADMON 0-RM-90-123A.
- CCS surge tank level was increasing but is now stable.
- "RC PUMPS THRM BARRIER RETURN HEADER FLOW LOW" Alarm is LIT.

Which ONE of the following completes the statement below concerning the automatic actions that are designed to occur?

The thermal barrier heat exchanger containment isolation inlet and outlet valves to ____(1)_____ close and the thermal barrier booster pumps ____(2)____.

A. (1) the affected RCP ONLY
   (2) trip

B. (1) the affected RCP ONLY
   (2) continue to run

C. (1) all four (4) RCPs
   (2) trip

D. (1) all four (4) RCPs
   (2) continue to run

36. Given the following plant conditions:

- Unit 1 is operating at 100% RTP.
- Pressure Control Channel Selector Switch, 1-XS-68-340D is selected to PT-68-340 & 334 position.
- 1-PT-68-334, Pressurizer Pressure Transmitter, fails LOW.
- The operating crew enters AOP-I.04, "Pressurizer Instrument and Control Malfunctions."

Which ONE of the following completes the statements below?

Before any operator actions occur the failure __(1)__ result in the pressurizer back-up heaters being energized.

When AOP-I.04 performance is completed __(2)__ of the PORVs will be able to automatically open if pressurizer pressure begins rising.

	(1)	(2)
A.	will	both
B.	will	only one
C.	will **NOT**	both
D.	will **NOT**	only one

37. Given the following plant conditions:

- Unit 2 was operating at 100% power.
- The Loop 1 pressurizer spray valve controller failed causing the spray valve to fully open.

If **NO** operator actions are taken, which ONE of the following identifies:

(1) The Master pressurizer pressure controller output would _____.

and

(2) This failure _____ lead to an automatic reactor trip.

A. (1) INCREASE
(2) will **NOT**

B. (1) INCREASE
(2) will

C. (1) DECREASE
(2) will **NOT**

D. (1) DECREASE
(2) will

38. Which ONE of the following identifies the plant electrical boards that supply power to the listed components on Unit 1?

	SSPS Train B Reactor Trip Breaker 48V UV coil	Reactor Trip Bypass Breaker A (BYA) Control Power Circuit
A.	120V AC Vital Instrument Power Boards 1-II and 1-IV	125V DC Vital Battery Board I
B.	120V AC Vital Instrument Power Boards 1-II and 1-IV	125V DC Vital Battery Board II
C.	120V AC Vital Instrument Power Board 1-II ONLY	125V DC Vital Battery Board I
D.	120V AC Vital Instrument Power Board 1-II ONLY	125V DC Vital Battery Board II

39. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- The operating crew is responding to a loss of 120V AC Vital Instrument Power Board 1-I.
- PZR pressure transmitter 1-PT-68-334 (Channel II) fails LOW.

If **NO** operator actions are taken, which ONE of the following identifies how SSPS and ECCS will respond?

A. Both trains of SSPS SI master relays will actuate AND both trains of ECCS equipment auto start.

B. Both trains of SSPS SI master relays will actuate BUT only "B" train ECCS equipment auto starts.

C. Only the "B" train SSPS SI master relays will actuate BUT both trains of ECCS equipment auto start.

D. Only the "B" train SSPS SI master relays will actuate AND only "B" train ECCS equipment auto starts.

40. Which ONE of the following Containment Cooling System fans will trip and isolate as a DIRECT result of a Containment Isolation Phase-A Signal?

A. Lower Compartment Coolers

B. Upper Compartment Coolers

C. Incore Instrument Room Coolers

D. Control Rod Drive Motor Coolers

41. Given the following plant conditions:

- Unit 1 at 100% RTP when a LOCA occurs.
- A Safety Injection occurs due to containment pressure rising.
- The containment pressure has continued to rise and is now 3.2 psig.

Which ONE of the following completes the statements below?

The Containment Air Return Fans would automatically start 10 minutes after the__(1)__ signal.

If the 1A-A Air Return Fan tripped on excessive current when the start was attempted, the __(2)__ indicating lights on the MCR handswitch would be LIT?

	(1)	(2)
A.	Phase A Isolation	GREEN and WHITE only
B.	Phase A Isolation	GREEN, WHITE and RED
C.	Phase B Isolation	GREEN and WHITE only
D.	Phase B Isolation	GREEN, WHITE and RED

42. Given the following plant conditions:

- Unit 1 was operating at 100% power.
- The operating crew is performing E-1, "Loss of Reactor or Secondary Coolant."
- RCS temperature is 220°F and stable.
- Lower Containment temperature is 120 °F

Based on the given conditions, which ONE of the following completes the statements below?

In accordance with Tech Spec 3.6.1.5, Containment Systems-Air Temperature, Lower Containment temperature __(1)__ above the maximum technical specification limit.

After an automatic initiation of the Containment Spray System, E-1 first allows the containment spray pumps to be stopped and placed in A-AUTO after the containment pressure drops to less than __(2)__.

	(1)	(2)
A.	is	2.8 psig
B.	is NOT	2.0 psig
C.	is NOT	2.8 psig
D.	is	2.0 psig

43. Which ONE of the following identifies a direct electrical interlock associated with opening 1-FCV-72-40, RHR Spray Header "A" Isolation?

1-FCV-72-40 cannot be opened from the MCR unless _____.

A. 1-FCV-74-33, RHR Crosstie, is fully open

B. 1-FCV-63-1, RWST to RHR Suction, is fully open

C. 1-FCV-74-3, RHR Pump 1A-A Suction, is fully open

D. 1-FCV-63-72, Containment Sump to RHR Pump 1A-A Isolation, is fully open

44. Given the following plant conditions:

- Unit 1 reactor power is stable at 90%.
- Turbine Impulse pressure transmitter 1-PT-1-72 fails LOW.

Which ONE of the following identifes the status of the white lights on 1-M-4 for ...

(1) 1-XI-1-103D, STEAM DUMPS ACTUATED D FSV'S ENERGIZED

and

(2) 1-XI-1-103A/B, STM DUMPS ARMED?

	1-XI-1-103D	1-XI-1-103A/B
A.	DARK	DARK
B.	DARK	LIT
C.	LIT	DARK
D.	LIT	LIT

45. Given the following plant conditions:

- Unit 2 startup in progress.
- The Main Generator has just been synchronized and loaded to 40 MWe.
- The Steam Pressure (2-PT-1-33) input to the steam dump controller fails HIGH.

Assuming NO action by the crew, which ONE of the following describes ...

(1) which time in core life the effect on core reactivity is <u>greatest</u>,

and

(2) how many of the steam dump valves would be responding to the failure?

	(1)	(2)
A.	MOL	3 valves only
B.	MOL	All 12 valves
C.	EOL	3 valves only
D.	EOL	All 12 valves

46. Given the following plant conditions:

- Unit 1 is at 72% power.
- PT-1-33, "Steam Header Pressure to DCS," indicates 920 psig.
- PT-1-33A, "Steam Header Pressure to DCS," indicates 900 psig.
- PT-1-33B, "Steam Header Pressure to DCS," indicates 890 psig.
- PT-1-33 fails Low.

Which ONE of the following describes the effect this failure will have on Unit 1 the steam header pressure portion of DCS?

The steam header pressure DCS control will be in _____.

A. median select

B. average

C. manual

D. single element

47. Which ONE of the following is the Alternate power supply for the Unit 2 TDAFW pump Trip and Throttle valve, 2-FCV-1-51A-S?

A. 125V DC Vital Board I

B. 125V DC Vital Board II

C. 125V DC Vital Board III

D. 125V DC Vital Board IV

48. Given the following plant conditions:

- Unit 1 is at 3% power making preparations for Main Turbine warm up.
- The monthly surveillance for 1A-A D/G is in progress and the D/G is paralleled to the board.
- The normal supply breaker to the 1B 6.9kV Unit Board inadvertently trips.
- Consequently, 1A-A 6.9kV Shutdown Board DG Supply breaker trips on overcurrent.
- Unit 1 remains at power.

Based on the given conditions, which ONE of the following completes the statements below?

The operation of the overcurrent relay will cause 1A-A 6.9kV Shutdown Board DG supply breaker to automatically trip open and __(1)__.

An immediate reactor trip __(2)__ required.

A. (1) lock-out
(2) is

B. (1) lock-out
(2) is **NOT**

C. (1) subsequently reclose in automatic
(2) is

D. (1) subsequently reclose in automatic
(2) is **NOT**

49. Given the following plant conditions:

- A station blackout occurs.
- The hydrogen pressure has been reduced to less 3 psig on both units generators.

Which ONE of the following completes the statements below?

EA-250-1, "Load Shed of Vital Loads After Station Blackout," requires the 125v DC loads to be stripped within __(1)__ following a loss of power to three of the 6900V AC shutdown boards.

EA-250-2, "Load Shed of 250V Loads After Station Blackout," requires the DC circuit seal oil pump breakers to be opened within __(2)__.

	(1)	(2)
A.	45 minutes	45 minutes
B.	45 minutes	90 minutes
C.	90 minutes	45 minutes
D.	90 minutes	90 minutes

50. Given the following plant conditions:

- Unit 1 was operating at 100% power when a Safety Injection occurred.
- A station blackout has **NOT** occurred.
- Eighteen (18) seconds after the Safety Injection, a loss of 125V Vital DC Power Channel II occurs.

Which ONE of the following identifies the current status of RHR pump 1B-B?

A. RHR pump 1B-B is **NOT** running but can be started from the MCR handswitch.

B. RHR pump 1B-B is **NOT** running and can **NOT** be started from the MCR handswitch.

C. RHR pump 1B-B is running and can be stopped from the MCR handswitch.

D. RHR pump 1B-B is running but can **NOT** be stopped from the MCR handswitch.

51. Given the following plant conditions:

- Unit 1 is at 100% rated thermal power
- Diesel Generator (DG) 1A-A is being tested for its monthly surveillance test which requires loading to 4400 kw.
- Current load is 2000 kw.
- Subsequently, **2B-B** 6.9KV SDBD experiences a complete loss of voltage.
- No SI signal is present on either unit.

Based on the given conditions, which ONE of the following correctly completes the statements below:

(1) Manual control of the 1A-A DG load ____(1)____ be retained in the control room.

and

(2) The reverse power trip for the 1A-A DG ___(2)___ be functional.

A. (1) will
(2) will

B. (1) will
(2) will **NOT**

C. (1) will **NOT**
(2) will

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

52. Given the following plant conditions:

- 0-RA-90-125A, "MAIN CNTRL RM INTAKE MON HIGH RAD" is LIT

- 0-RA-90-126A, "MAIN CNTRL RM INTAKE MON HIGH RAD" is **NOT** LIT

Based on the conditions given, which ONE of the following completes the statements below?

(1) Main Control Room (MCR) Isolation __(1)__ automatically occurred.

and

(2) The MCR is currently being maintained at a positive pressure by the __(2)__.

A. (1) has
(2) Main Control Room Air Handling Units

B. (1) has **NOT**
(2) Main Control Room Air Handling Units

C. (1) has
(2) Control Building Emergency Air Pressurization Fans

D. (1) has **NOT**
(2) Control Building Emergency Air Pressurization Fans

53. Which ONE of the following identifies how 1-FCV-67-66A, ERCW HDR 1A SUP TO DG1A-A HX A1 &A2 responds to a normal start and stop of Diesel generator 1A-A?

The ERCW valve will automatically open after the start signal when the DG speed rises to __(1)__.

When the diesel generator is stopped, the ERCW valve (1-FCV-67-66A) will be closed __(2)__.

	(1) START	(2) STOP
A.	40 rpm	using the handswitch on 0-M-26
B.	40 rpm	automatically when DG stops following the idle speed run
C.	200 rpm	using the handswitch on 0-M-26
D.	200 rpm	automatically when DG stops following the idle speed run

54. Given the following plant conditions:

- Unit 1 was at 100% power when a LOCA occurred.
- AUOs are performing EA-32-1, "Establishing Control Air to Containment", Appendix A, "Re-establishing Air to Containment on Unit 1."
- FCV-32-80, "Rx Bldg Train "A" Essential Air," is closed.
- FCV-32-110, "Rx Bldg Nonessential Air," is closed.

Based on the given conditions, which ONE of the following completes the statements listed below?

__(1)__ must be opened to restore air to PCV-68-340D, "Pressurizer Spray Valve."

and

In accordance with EA-32-1, the test pushbutton must be depressed for approximately 30 seconds while holding the applicable control switch in OPEN to ensure downstream air pressure is greater than a minimum of __(2)__ psig in order for the valve to remain open.

A. (1) FCV-32-80
   (2) 50

B. (1) FCV-32-80
   (2) 69

C. (1) FCV-32-110
   (2) 50

D. (1) FCV-32-110
   (2) 69

55. Given the following plant conditions:

- Both Units in service at 100% RTP.
- Upper Compartment Cooling Units A-A and B-B are in service on both units.

Compare the effects of the inadvertent closing of the **Lower** Compartment Cooling Unit (LCCU) valves listed:

- Unit 1, LCCU 1A-A ERCW Inlet FCV (Outboard), 1-FCV-67-107
- Unit 2, LCCU 2A-A ERCW Inlet FCV (Outboard), 2-FCV-67-107

Based on the given conditions, if both of the -107 valves were closed, which ONE of the following answers the statements below?

(1) Upper Containment temperature would RISE on ___(1)___.

<u>and</u>

(2) Additional Upper Containment Cooling Units are available to be placed in service for ONLY ___(2)___.

A. (1) <u>both</u> Units 1 and 2
   (2) Unit 1

B. (1) <u>both</u> Units 1 and 2
   (2) Unit 2

C. (1) Unit 1 only
   (2) Unit 2

D. (1) Unit 2 only
   (2) Unit 1

56. Given the following plant conditions:

- A Unit 1 reactor start up following a refueling outage is in progress IAW 0-GO-2, "Unit Startup from Hot Standby to Reactor Critical."
- RCS boron concentration was 1390 ppm for the ECP calculation.
- Just prior to beginning rod withdrawal for the startup chemistry reports the following boron concentrations:

- RCS boron concentration: 1380 ppm
- Pressurizer boron concentration: 1325 ppm

Which ONE of the following completes the statements below?

Actual critical rod height will be ___(1)___ than the ECP.

PZR boron concentration ___(2)___ required to be raised before the startup can continue.

A. (1) higher
(2) is

B. (1) higher
(2) is **NOT**

C. (1) lower
(2) is

D. (1) lower
(2) is **NOT**

57. Given the following plant conditions:

- A reactor start up without Physics Testing is in progress IAW 0-GO-2, "Unit Startup from Hot Standby to Reactor Critical."
- The crew has blocked P-6.
- Reactor power is 5×10^{-4} % and slowly rising.

Which ONE of the following is the **lowest** of the listed values that exceeds the maximum SUR limit allowed per 0-GO-2?

A. 0.4 dpm

B. 0.6 dpm

C. 0.8 dpm

D. 1.1 dpm

58. Given the following plant conditions:

- Unit 1 is operating steady state at 60% reactor power.
- Rod control is in MANUAL.
- Charging flow control valve 1-FCV-62-93A is in MANUAL.
- The failure of a temperature instrument results in greater than a 5% difference between the pressurizer Program Level and Actual pressurizer level.

Based on the given conditions, assuming **NO** operator action, which ONE of the following completes the statements below?

The __(1)__ failing HIGH will result in the above condition.

The Pressurizer backup heaters __(2)__ be automatically energized.

	(1)	(2)
A.	Thot RTD #1	will **NOT**
B.	Thot RTD #1	will
C.	Tcold RTD #1	will **NOT**
D.	Tcold RTD #1	will

59. Given the following conditions:

- Unit 1 is in Mode 3 when a Safety Injection occurs.
- Following the Safety Injection, both the 1A-A 6.9KV Shutdown Board and the 2B-B 6.9 KV Shutdown Boards trip on differential.

Which ONE of the following describes the status of the EGTS and ABGTS systems?

A. "A" EGTS fan and "A" ABGTS fan are running.

B. "B" EGTS fan and "A" ABGTS fan are running.

C. "A" EGTS fan and "B" ABGTS fan are running.

D. "B" EGTS fan and "B" ABGTS fan are running.

60. Given the following plant conditions:

- Unit 1 is in Mode 6.
- The current Spent Fuel Pool boron concentration is 2120 ppm.
- Refueling Water Storage Tank (RWST) is being used as the TRM borated water source and is at the lowest boron concentration allowed as identified in SO-78-1,Spent Fuel Pit Coolant System.
- A leak on the Spent Fuel Pool cooling system results in the need for makeup from the RWST.

Which ONE of the following completes the statement below relative to the Spent Fuel Pool?

Using the RWST to makeup to the Spent Fuel Pool will result in a/an __(1)__ in the Spent Fuel Pool boron concentration.

To meet LCO 3/4.7.13, SPENT FUEL MINIMUM BORON CONCENTRATION, requires a minimum boron concentration of __(2)__ ppm.

	(1)	(2)
A.	decrease	1950
B.	decrease	2000
C.	increase	1950
D.	increase	2000

61. Given the following plant conditions:

- Unit 1 is at 100% RTP.
- Fuel Assembly shuffles are being made in the Spent Fuel Pit.
- 0-RM-90-102, Spent Fuel Pit Radiation Monitor, has been declared INOPERABLE and removed from service due to an instrument malfunction.

Which ONE of the following completes the statements below?

Technical Specification 3.9.12, "Auxiliary Building Gas Treatment System," would __(1)__ continued movement of fuel assemblies in the Spent Fuel Pit.

If 0-RM-90-103, Spent Fuel Pit Radiation Monitor, subsequently detects a high Radiation condition, __(2)__ of Auxiliary Building Isolation equipment will actuate with no operator actions.

	(1)	(2)
A.	allow	only one train
B.	allow	both trains
C.	**NOT** allow	only one train
D.	**NOT** allow	both trains

62. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- ABGTS Train "A" is running for its 10 hour surveillance.
- Waste Gas Decay Tank J relief valve develops a flange leak and the tank contains high activity gas.

Which ONE of the following completes the statement below?

The flange leak will be detected by _____.

Note:
0-RE-90-118, Waste Gas Rad Monitor
0-RE-90-101, Auxiliary Building Ventilation Monitor
1-RE-90-400, Unit 1 Shield Building Vent Monitor

A. Only 0-RE-90-101

B. Only 0-RE-90-118

C. Both 0-RE-90-101 and 1-RE-90-400

D. Both 0-RE-90-118 and 1-RE-90-400

63. Given the following plant conditions:

- 1-RA-90-1C AUX BLDG AREA RAD MON INSTR MALFUNC (M12A, B-7) is LIT

Which ONE of the following completes the statements below?

1-RA-90-1C INSTR MALFUNC alarm ___(1)___ result in an automatic action.

Source checking 1-RA-90-1C, ____(2)____ cause the rad monitor to alarm.

A. (1) will
   (2) will

B. (1) will
   (2) will **NOT**

C. (1) will **NOT**
   (2) will

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

64. Given the following plant conditions:

- Maintenance personnel report that a Service Air connection providing air to a pneumatic grinder has broken and cannot be isolated.
- Air Header Pressure indications are as follows:
  - 0-PI-32-104A, AUX CONT AIR HDR A PRESS 92 psig
  - 0-PI-32-105A, AUX CONT AIR HDR B PRESS 92 psig
  - 0-PI-32-200, CONT AIR HDR PRESS 94 psig and slowly lowering
  - 0-PI-33-199, SERV AIR HDR PRESS 90 psig and slowly lowering

Which ONE of the following completes the statements below?

(1) At the current pressures, PCV-33-4, SERVICE AIR ISOL ___(1)___ open.

(2) If PCV-33-4 automatically closes, once the Service Air Header is repressurized, the valve ___(2)___ .

A. (1) is
(2) must be reset before it will open

B. (1) is NOT
(2) must be reset before it will open

C. (1) is
(2) will reopen automatically

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

65. Given the following plant conditions;

- Unit 1 is in Mode 4.
- AOP-N.03," External Flooding," has been implemented.

Which ONE of the following completes the statements below ?

(1) In accordance with AOP-N.03, once Stage I preparation has been initiated, the Stage I actions must be completed within a **maximum** of __(1)__

and

(2) If river level continues to rise, HPFP must be connected to the piping on the discharge of the __(2)__ AFW pump.

	(1)	(2)
A.	10 hours	Motor Driven
B.	10 hours	Turbine Driven
C.	14 hours	Motor Driven
D.	14 hours	Turbine Driven

66. In accordance with ODM-Y, "Standing Orders and Shift Orders," which ONE of the following completes the statements below?

(1) The maximum time a Standing Order for administrative issues can remain in affect for is ___(1)___ .

and

(2) A Standing Order ___(2)___ be used to circumvent an operating procedure.

A. (1) 30 days
(2) can

B. (1) 30 days
(2) can **NOT**

C. (1) 1 year
(2) can

D. (1) 1 year
(2) can **NOT**

67. Given the following plant condition:

- Unit 1 is conducting an EOL coastdown in accordance with GO-5, "Normal Power Operation."

Which ONE of the following identifies...

(1) how the unit will be operated during the coastdown,

and

(2) why, in accordance with GO-5, reactor power changes should be limited to 1% per hour?

A. (1) The crew will reduce turbine load as needed to maintain Tavg on program.
(2) To prevent MTC from exceeding Tech Spec limits.

B. (1) The crew will reduce turbine load as needed to maintain Tavg on program.
(2) To avoid xenon peaking which could force a plant shutdown.

C. (1) The crew allow Tavg to drop while maintaining reactor power as stable as possible with AFD being maintained less than the positive limit.
(2) To prevent MTC from exceeding Tech Spec limits.

D. (1) The crew allow Tavg to drop while maintaining reactor power as stable as possible with AFD being maintained less than the positive limit.
(2) To avoid xenon peaking which could force a plant shutdown.

68. Given the following plant conditions:

- Unit 1 is in MODE 1 with RCS pressure at 2235 psig.

- The following RCS leakages were determined per 1-SI-OPS-068-137.0, "Reactor Coolant System Water Inventory."

Total RCS leakage	=	12.41 gpm
PRT leakage	=	5.32 gpm
CLA #1 leakage	=	0.88 gpm
RCDT leakage	=	3.18 gpm
S/G #2 leakage	=	0.07 gpm
S/G #1,#3,#4 leakage	=	0.00 gpm

[Note: Assume leakages other than those given as zero (0) gpm].

Which ONE of the following completes the statement below?

LCO 3.4.6.2, "Reactor Coolant System Operational Leakage," action is required to be entered because the _____ limit(s) has/have been exceeded?

1. IDENTIFIED LEAKAGE
2. UNIDENTIFIED LEAKAGE
3. PRIMARY-TO-SECONDARY LEAKAGE

A. 1 only

B. 2 only

C. 2 and 3 only

D. 1 and 3 only

69. Given the following plant conditions:

While performing a cooldown on Unit 1 from Mode 3 to Mode 4 the following parameters were logged:

Time	RCS Press	RCS Temp	PZR LIQ Space Temp
0200	2200 psig	553°F	650°F
0230	1550 psig	527°F	606°F
0300	1135 psig	505°F	560°F
0330	765 psig	447°F	494°F
0400	400 psig	402°F	440°F

Which ONE of the following describes the Tech Spec / TRM implications of these conditions?

A. RCS cooldown rate limits were exceeded; Tech Spec action is required within a maximum of 30 minutes.

B. RCS cooldown rate limits were exceeded; Tech Spec action is required within a maximum of 60 minutes.

C. PZR cooldown rate limits were exceeded; TRM action is required within a maximum of 30 minutes.

D. PZR cooldown rate limits were exceeded; TRM action is required within a maximum of 60 minutes.

70. Given the following plant conditions:

- A main control room annunciator, 2-M15-A, A-4, "PdS-27-13B TRAV SCREEN 2B DIFF PRESS HI", has alarmed repeatedly over the past hour.
- Traveling Screen delta P on 2-PDI-27-13A reads 1.5 in H_20 and steady.
- An AUO is dispatched to CCW pumping station several times and reports:
  - local screen delta P reads 1.5 in H_2O
  - there are **NO** visible obstructions.
  - Screen wash pumps and traveling screens are **NOT** running.

Based on the given conditions, which ONE of the following completes the statements below?

In accordance with OPDP-4, "Annunciator Disablement," this alarm __(1)__ the definition of a nuisance alarm.

and

An annuciator that is disabled due to being a nuisance alarm, ___(2)___ required to be logged in the narrative log.

A. (1) meets
   (2) is

B. (1) meets
   (2) is NOT

C. (1) does NOT meet
   (2) is

D. (1) does NOT meet
   (2) is NOT

71. Given the following plant conditions:

- A Reactor Trip and safety injection have occurred on Unit 1 due to SGTR on #3 SG.
- The crew has just entered E-3, "Steam Generator Tube Rupture."
- SG #3 pressure is 1030 psig.
- PCV-1-23 SG 3 (Atmospheric Relief) is reported to be cycling open and close.
- PCV-1-23 setpoint is 85%.

In accordance with E-3, which ONE of the following is the **first** action required to be taken to minimize the radiation release?

A. Place PCV-1-23 Atmospheric Relief valve handswitch to CLOSE.

B. Adjust PCV-1-23 Atmospheric Relief valve setpoint to 87%.

C. Place controller for PCV-1-23 in MANUAL and adjust Atmospheric Relief valve setpoint to 0%.

D. Isolate Atmospheric Relief PCV-1-23 isolation valve VLV-1-621 using EA-1-2, "Local Control of S/G PORVs."

72. Given the following plant conditions:

- A source check is to be performed on CCS radiation monitor 1-RE-90-123.

Which ONE of the following completes the statements below?

The source check is verified by observing the _____(1)_____ .

The isolation function of the Surge Tanks' vent ____(2)____ be manually blocked during the source check in accordance with 1-SO-90-1, "Liquid Process Radiation Monitors."

A. (1) analog rate meter trending upscale
   (2) can

B. (1) analog rate meter trending upscale
   (2) can NOT

C. (1) bargraph display responds upscale
   (2) can

D. (1) bargraph display responds upscale
   (2) can NOT

73. Given the following plant conditions:

- Unit 2 at 100% power.
- Panel 2-M-1 Annunciator Window "125V DC VITAL CHGR III FAIL/VITAL BAT III DISCHARGE" alarms.
- The crew enters AOP-P.02, "Loss Of 125V DC Vital Battery Board".
- A reactor trip occurs on high PZR pressure.

Which ONE of the following identifies the allowed usage of AOP-P.02 after the Emergency Operating Procedure network is entered following the reactor trip?

Continued performance of AOP-P.02 is _____(1)_____ because _____(2)_____.

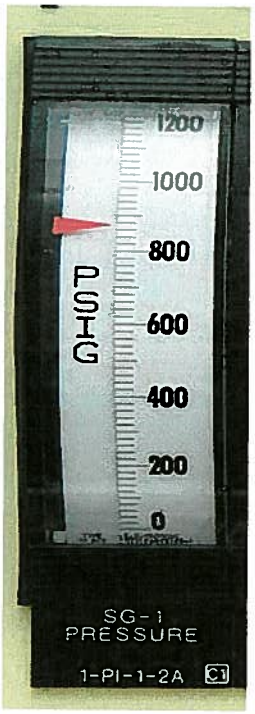
A. (1) allowed after the crew enters ES-0.1, "Reactor Trip Response"
(2) EPM-4 states that AOP-P.02 has priority over ES-0.1

B. (1) allowed after the crew enters ES-0.1, "Reactor Trip Response"
(2) restoring power could have an impact on meeting the goals of the EOP

C. (1) NOT allowed until the crew exits the EOPs and enters a normal ops procedure such as 0-GO-6, "Power Reduction from 30% Reactor Power to Hot Standby"
(2) the procedure reader must remain dedicated to the EOP in effect until the EOPs are exited

D. (1) NOT allowed until the crew exits the EOPs and enters a normal ops procedure such as 0-GO-6, "Power Reduction from 30% Reactor Power to Hot Standby"
(2) the actions taken in AOP-P.02 could conflict with the performance of the EOP

74. Given the following picture of various SG#1 pressure indications:



As identified in EPM-4, "User"s Guide," which ONE of the following identifies Post Accident Monitoring (PAM) indications?

A. 1-PI-1-2A is a PAM indication.
   1-PRI-1-2 is NOT a PAM indication.

B. 1-PI-1-2A is NOT a PAM indication.
   1-PR-1-2 is a PAM indication.

C. Both 1-PI-1-2A AND 1-PR-1-2 are PAM indications.

D. Neither 1-PI-1-2A NOR 1-PR-1-2 are PAM indications.

75. Given the following plant conditions:

- Unit 1 reactor is shutdown.
- RCS in solid water operation.
- All RCS temperatures are approximately 125°F.
- RCS pressure is 330 psig.
- RHR Train A is in service.
- 1 A-A CCP is operating.

Subsequently:

- RCS pressure increases to 600 psig.

Which ONE of the following describes:

1) the effect the pressure increase would have on the PORVs,

AND

2) the action(s) which is/are directed to be taken in accordance with AOP-R.03, "RHR System Malfunction" if RCS pressure is **NOT** promptly reduced below 600 psig?

REFERENCE PROVIDED

	(1)	(2)
A.	Only ONE PORV OPENS	Stop the Charging pump
B.	Only ONE PORV OPENS	Stop A Train RHR pump
C.	BOTH PORVS OPEN	Stop the Charging pump
D.	BOTH PORVS OPEN	Stop A Train RHR pump

76. Given the following plant conditions:

- Unit 1 was operating at 100% power with MD AFW pump 1B-B out of service for maintenance when an inadvertent reactor trip occurs.
- MD AFW pump 1A-A fails to start and could not be started manually.
- Upon entry into ES-0.1, "Reactor Trip Response," the CRO reports the TD AFW pump has tripped on overspeed.
- RCS Tave is 550°F and rising.
- The operating crew is unable to restore any AFW flow.
- Current SG Narrow Range levels are:

SG 1	SG2	SG3	SG4
14%	4%	9%	18%

Which ONE of the following completes the statement below?

To restore water to the steam generators, the operating crew is required to implement __(1)__ while continuing in ES-0.1 and a transition to FR-H.1, "Loss of Secondary Heat Sink," would be first required when __(2)__ dropped below 10% narrow range.

A. (1) EA-3-8, "Manual Control of AFW Flow,"
(2) one additional SG Level

B. (1) EA-3-8, "Manual Control of AFW Flow,"
(2) all four SG levels

C. (1) EA-2-2, "Establishing Secondary Heat Sink Using Main Feedwater or Condensate System"
(2) one additional SG Level

D. (1) EA-2-2, "Establishing Secondary Heat Sink Using Main Feedwater or Condensate System"
(2) all four SG levels

77. Given the following plant conditions:

0800 - Unit 2 was operating at 100% power when a LOCA occurred.

0900 - All actions of ES-1.3, "Transfer to RHR Containment Sump," have been completed.

1200 - The operating crew is currently performing E-1, "Loss of Reactor or Secondary Coolant," and has reached the step to "MONITOR SI termination criteria."

- Current conditions are:

Lowest RCS Tcold	- 195°F
RCS pressure	- 10 psig and stable
PZR level	- 0%
RVLIS Lower Range	- 43% and trending up
Containment pressure	- 5.7 psig and trending down
All 4 SG NR levels	- 32-34%
AFW pumps	- All running
SG 2, 3, & 4 pressures	- 880 psig and stable
SG 1 pressure	- 820 psig and trending down

Based on current plant conditions, the Unit Supervisor is required to _____

A. transition to ES-1.1, "SI Termination."

B. transition to E-2, "Faulted Steam Generator."

C. continue in E-1 until a transition is directed to ES-1.4, "Transfer to Hot Leg Recirculation."

D. continue in E-1 until a transition is directed to ES-1.2, "Post LOCA Cooldown."

78. Given the following plant conditions:

- Unit 2 is in 'Reduced Inventory Conditions' operation in accordance with GO-13, "Reactor Coolant System Drain and Fill Operations."
- The RCS level is at Elevation 698' 2"
- RHR Train A in service with a flow rate of 2100 gpm.
- The OAC reports that RCS level is at Elevation 698' and that the RHR pump amps have started to fluctuate.
- The crew enters AOP-R.03, "RHR System Malfunction," Section 2.1, "RHR Malfunctions Due to Low Water Level During Reduced Inventory or Mid-Loop Ops."
- With Charging flow raised to maximum and letdown terminated, the RCS level is at Elevation 697' 10" and continues to slowly drop.

Based on the above conditions, in accordance with AOP-R.03, the RHR flow rate is required to be reduced to a flow rate between__(1)__ and the crew is required to ___(2)___.

	(1)	(2)
A.	1000 gpm -1500 gpm	remain in AOP-R.03, Section 2.1
B.	1000 gpm -1500 gpm	transition to AOP-R.02, "Shutdown LOCA"
C.	1500 gpm -2000 gpm	remain in AOP-R.03, Section 2.1
D.	1500 gpm -2000 gpm	transition to AOP-R.02, "Shutdown LOCA"

79. Given the following plant conditions:

- Unit 1 is in Mode 3 for maintenance.
- One event occurs which results in all of the following annunciators:
  - "MISC EQUIP SUP HDR FLOW LOW," (M27B-B, A-3).
  - "LETDOWN HX OUTLET FLOW/TEMP ABNORMAL," (M27B-B, A-5)
  - "TS-62-78 LTDN HX OUTLET TO DEMIN TEMP HIGH," (M6C, A4)
  - "TURB AUX OR REAC BLDG FLOODED" (M15B, D3)

Which ONE of the following identifies the procedure required to mitigate this event?

A. AOP-M.09, "Loss of Charging."

B. AOP-R.05, "RCS Leak and Leak Source Identification."

C. AOP-M.03, "Loss of Component Cooling Water."

D. AOP-M.01, "Loss of Essential Raw Cooling Water."

80. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- Unit 2 Tave is 235°F and stable .
- Both Unit 1 and Unit 2 Start Buses are aligned to "A" and "C" CSSTs.
- DG 1A-A has been INOPERABLE for the past 8 hours for a planned 60 hour outage.

- A complete loss of Bus 1 of 161 kV Switchyard occurs.

If the condition of the A.C. sources are unchanged, and all required actions are taken, which ONE of the following identifies the maximum time following the 161 kV Bus loss that could be taken to have Unit 2 in compliance with LCO 3.8.1.1, A.C. Sources - Operating?

REFERENCE PROVIDED

A. 30 hours

B. 36 hours

C. 42 hours

D. 48 hours

81. Given the following plant conditions:

- Unit 1 and Unit 2 were operating at 100% RTP
- Unit 1 CCS aligned to supply Spent Fuel Pool Cooling system.
- A loss of all ERCW occurred and the operating crews implemented AOP-M.01, "Loss of Essential Raw Cooling Water," on both units.
- The crew is at the step to dispatch an AUO to perform AOP-M.01 Appendix J, "Installation of Temporary Cooling (HPFP) to CCP Oil Coolers," on both units.
- The STA reports Unit 1 Status Trees indicates a confirmed ORANGE path exists on FR-S.1, "Nuclear Generation / ATWS."

Based on the given conditions, which ONE of the following completes the statements below?

The AUO will be instructed to perform the AOP-M.01 Appendix J on Unit __(1)__ **first**.

A transition to FR-S.1 __(2)__ required at this time.

	(1)	(2)
A.	1	is
B.	1	is **NOT**
C.	2	is
D.	2	is **NOT**

82. Given the following plant conditions:

- Unit 2 is operating at 95% power.
- A troubleshooting activity in the Rod Control Power Cabinet 2BD resulted in blowing a Control Bank Rod stationary gripper fuse which caused control rod H12 to drop.
- The STA reports that Quadrant Power Tilt Ratio (QPTR) is exactly 1.09.
- The maintenance Supervisor reports that it will be at least four (4) hrs until trouble shooting can be completed and the dropped rod could begin to be recovered and QPTR restored.
- Two (2) hrs. after the rod drop, the STA reports that QPTR is still <u>exactly</u> 1.09

Based on given conditions, which ONE of the following completes the statements below?

Two hours after the rod drop, Technical Specification (TS) ___(1)____ requires the lowest THERMAL POWER.

The Bases of TS 3/4.2.4 "Quadrant Power Tilt Ratio," states that the 2-hour time allowance for operation with the tilt condition is provided to allow identification and correction of a ___(2)____ .

Reference Provided

A. (1) 3/4.1.3, "Movable Control Assemblies/Group Height,"
(2) dropped or misaligned control rod

B. (1) 3/4.2.4, "Quadrant Power Tilt Ratio,"
(2) dropped or misaligned control rod

C. (1) 3/4.1.3, "Movable Control Assemblies/Group Height,"
(2) malfunctioning power range nuclear instrument

D. (1) 3/4.2.4, "Quadrant Power Tilt Ratio,"
(2) malfunctioning power range nuclear instrument

83. Given the following plant conditions:

- Unit 2 was at 100% rated thermal power.

- Fifty (50) minutes ago, a seismic event caused a steam generator tube rupture and a steam line break inside containment.
- Containment pressure peaked at 3.9 psig and is currently 1.1 psig.
- Operators have isolated feedwater to S/Gs #1 and #3.
- Pressurizer (PZR) level is 42% and stable.
- S/G NR levels are as follows:
  #1=0% #2=25% #3=63% #4=24%

- Operators are performing the step in E-3, "Steam Generator Tube Rupture," to "CONTROL RCS pressure and charging flow to minimize RCS-to-secondary leakage."

- Current conditions:
  - A malfunction has caused charging flow to lower.
  - PZR level is 30% and lowering.
  - S/G NR levels are as follows:
  #1=0% #2=23% #3=66% #4=22%

Based on the current conditions, which ONE of the following identifies the required action(s) is accordance with E-3?

REFERENCE PROVIDED

A. Raise charging flow AND Depressurize the RCS. Turning on PZR heaters is **NOT** required.

B. Raise charging flow. Depressurization of the RCS is **NOT** required. Turning on PZR heaters is **NOT** required.

C. Depressurize the RCS. Raising charging flow is **NOT** required. Turning on PZR heaters is **NOT** required.

D. Turn on PZR heaters. Raising charging flow is **NOT** required. Depressurization of the RCS is **NOT** required.

84. Given the following plant conditions:

0500 - Conditions arise that require the Unit 1 Main Control Room (MCR) to be abandoned.
0501 - The reactor is TRIPPED.
0505 - All MCR actions of AOP-C.04, "Shutdown From Auxiliary Control Room," were completed and the crew has established control in the Auxiliary Control Room.
0515 - Tech Spec 3.0.3 is entered.
0730 - The crew initiates a natural circulation cooldown.

Which ONE of the following completes the statements below?

At 0700, RCS Pressure is being controlled by PZR backup heaters cycling between ___(1)___ .

The **latest** time allowed by Tech Specs to place the unit in Mode 5 is at ___(2)___ the next day.

A. (1) 2210 psig and 2218 psig
(2) 1215

B. (1) 2210 psig and 2218 psig
(2) 1815

C. (1) 2210 psig and 2250 psig
(2) 1215

D. (1) 2210 psig and 2250 psig
(2) 1815

85. Given the following plant conditions:

- Unit 1 tripped from 100% power due to a Loss of Offsite Power.
- The crew is performing a plant cooldown in accordance with ES-0.2, "Natural Circulation Cooldown."
- From time 10:00 to 10:45, RCS pressure was constantly reduced by the operators, and charging flow rate was maintained constant.
- At 10:45, the SRO is at the step in ES-0.2, to monitor for steam voids in the reactor vessel.
- The following data is noted:

Time	RVLIS Upper Plenum Range	Pressurizer Level
10:00	107%	25%
10:15	104%	25%
10:30	98%	32%
10:45	84%	58%

Current conditions:

- At 10:47, the Shift Manager decides that repressurization of the RCS is **NOT** desirable.

Based on the given conditions, a transition to ES-0.3," Natural Circulation Cooldown With Steam Void In Vessel (with RVLIS)" ___(1)___ required.

and

The Maximum cooldown rate allowed by the procedure to be implemented is __(2)__.

A. (1) is
(2) 50°F/hr

B. (1) is
(2) 100°F/hr

C. (1) is **NOT**
(2) 50°F/hr

D. (1) is **NOT**
(2) 100°F/hr

86. Given the following plant conditions,

- Unit 1 is operating at 100% power

0700 - Alarm "LS-62-6A REAC COOL PMP 1 STANDPIPE LVL HIGH-LOW," (M5-B, A2) is received.
- No other alarms are received.

0702 - 1-FCV-81-13, "RCP 1 Standpipe Makeup Water" is opened for 20 secs and closed.

0705 - Annunciator M5-B, A2 remains lit.
- Radwaste reports that RCDT level is 14% (52.0 gals).

0720 - While performing actions of AOP-R.04, "Reactor Coolant Pump Malfunctions," Radwaste reports that RCDT level is 22% (76.4 gals).

(1) Based on current conditions and in accordance with AOP-R.04, the Unit Supervisor is required to transition to __(1)__

and

(2) A normal plant shutdown within 8 hrs __(2)__ required.

A. (1) AOP-R.04, Section 2.5, "#3 Seal Leakoff High Flow on ANY RCP"
(2) is NOT

B. (1) AOP-R.04, Section 2.4, "#2 Seal Leakoff High Flow on ANY RCP"
(2) is NOT

C. (1) AOP-R.04, Section 2.5 "#3 Seal Leakoff High Flow on ANY RCP"
(2) is

D. (1) AOP-R.04, Section 2.4 "#2 Seal Leakoff High Flow on ANY RCP"
(2) is

87. Given the following plant conditions:

- Unit 1 is in Mode 3 with the RCS at normal operating temperature and pressure with the following conditions:
- RCP #4 out of service.
- A Safety injection occurs due to a Steam Generator #3 tube rupture.
- The operating crew has just completed a rapid plant cooldown in accordance with E-3, "Steam Generator Tube Rupture," and is ready to initiate RCS depressurization.

Which ONE of the following identifies ...

(1) a condition that would result in the pressurizer sprays being inadequate, as defined by E-3, in depressurizing the RCS

and

(2) the action required to accomplish the RCS depressurization as a result of the normal spray valves being inadequate, as defined by E-3?

	(1) Condition	(2) Action required to depressurize the RCS
A.	Trip of the RCP #2	Use a pressurizer PORV in accordance with E-3.
B.	Loss of 120v Vital Instrument Power Board 1-II	Use a pressurizer PORV in accordance with E-3.
C.	Trip of the RCP #2	Transition to ECA-3.3, "SGTR without PZR Pressure Control" to allow use of auxiliary sprays.
D.	Loss of 120v Vital Instrument Power Board 1-II	Transition to ECA-3.3, "SGTR without PZR Pressure Control" to allow use of auxiliary sprays.

88. Given the following plant conditions:

- Unit 1 at 100% power.
- An Eagle 21 malfunction has occurred that caused several annunciators to alarm and unexpected reactor trip bi-stables to be LIT.
- AOP-I.11, "Eagle 21 Malfunction," has been entered.
- 2 hours after the event, MIG is prepared to initiate work on the failure.

Based on the given conditions, which ONE of the following completes the statements below?

The crew will implement AOP-I.11, Section __(1)__ to address the failure.

AOP-I.11 directs that the preferred action is to __(2)__ .

A. (1) 2.1, "Test Sequence Processor (TSP) Subsystem Failure "
(2) hard trip bistables before attempting a system reset

B. (1) 2.1, "Test Sequence Processor (TSP) Subsystem Failure"
(2) attempt a system reset before hard tripping bistables

C. (1) 2.2, "Loop Control Processor (LCP) Failure"
(2) hard trip bistables before attempting a system reset

D. (1) 2.2, "Loop Control Processor (LCP) Failure"
(2) attempt a system reset before hard tripping bistables

89. Given the following plant conditions:

- Unit 1 has been shutdown for a refueling outage.
- The surveillance for determining the Chemical Composition of the ice in the ice condensers is in progress.

Which ONE of the following completes the statements below in accordance with LCO 3.6.5.1, Ice Condenser Ice Bed?

The stored ice is required to have a MINIMUM boron concentration of __(1)__ ppm as Sodium Tetraborate.

LCO 3.6.5.1 bases states that the reason for using Sodium Tetraborate in the ice is __(2)__.

	(1)	(2)
A.	2000	due to its effectiveness in maintaining the boron concentration for long storage periods and its enhancement of the ability of the solution to remove and retain fission product iodine
B.	1800	due to its effectiveness in maintaining the boron concentration for long storage periods and its enhancement of the ability of the solution to remove and retain fission product iodine
C.	2000	to ensure the reactor core remains greater than 1.6% delta K/K shutdown margin during the recirc phase of a steamline or feedline break inside containment
D.	1800	to ensure the reactor core remains greater than 1.6% delta K/K shutdown margin during the recirc phase of a steamline or feedline break inside containment

90. Given the following plant conditions:

- Both Units are at 100% RTP.
- SG specific activity is $4.2E^{-5}$ microCi/g Dose Equivalent I-131.
- Valve 0-40-783, LVWT overboard to diffuser pond ("L" valve) is OPEN.
- The Condensate Demineralizer Neutralizing tank is being discharged to the Turbine building sump.
- Alarm "0-RA-90-212B STA SUMP DISCH INSTR MALFUNC" (M12A-E-2) annunciates.
- The Turbine Bldg AUO reports that the breaker for RM-90-212 on 120 V AC Rad monitoring & Sampling Power Distribution panel 1 is OFF.

Which ONE of the following identifies the automatic valve response, if any, and the mitigating actions required to allow continued discharge of Turb Bldg Sump?

Reference Provided

Note:
FCV-14-188 Neutralizing Tank Recirculation
FCV-14-187 Neutralizing Tank Overboard Discharge

	Automatic Response	**Mitigating Action**
A.	FCV-14-188 Opens & FCV-14-187 Closes	Notify Chem Lab to sample Turbine Bldg Sump at least every 12 hrs per ODCM.
B.	FCV-14-188 Opens & FCV-14-187 Closes	Notify Chem Lab to sample Turbine Bldg Sump at least every 24 hrs per ODCM.
C.	No response	Notify Chem Lab to sample Turbine Bldg Sump at least every 12 hrs per ODCM.
D.	No response	Notify Chem Lab to sample Turbine Bldg Sump at least every 24 hrs per ODCM.

91. Given the following plant conditions:

- Unit 1 was operating at 100%
- A turbine runback occurs due to a MFPT Trip.
- Prior to the runback, Control Rod Bank D control rod RPI indications were:

D-4	D-12	M-12	M-4	H-4	D-8	H-12	M-8	H-8
212	224	218	220	224	219	220	217	224

- During the runback, Control Bank D control rod Group 2 step counter failed.
- After the plant was stablized, the rod step counters read 182/000 and the Control Bank D rod RPI indications are:

D-4	D-12	M-12	M-4	H-4	D-8	H-12	M-8	H-8
171	181	176	182	181	177	180	175	184

If the above conditions cannot be corrected, which ONE of the following identifies Tech Spec 3.1.3.2. "Position Indication Systems - Operating," required action(s), if any?

Reference Provided

A. No actions required.

B. Be in HOT STANDBY within the next 6 hours.

C. Reduce Thermal Power to less than 50% of rated within 8 hours.

D. Place control rods in manual and record RCS Tavg at least once per hour <u>and</u> restore the rod position indicators to OPERABLE status within 24 hrs.

92. Given the following plant condtions:

- A Reactor Trip and Safety Injection has occurred on Unit 1 due to a stuck open PZR safety valve.
- The operating crew transitioned from E-0, "Reactor Trip or Safety Injection," to E-1, "Loss of Reactor or Secondary Coolant."
- The crew is performing the step in E-1 to "Monitor if hydrogen igniters and recombiners should be turned on:"
- The Hydrogen Analyzers are in service and the containment hydrogen concentration is determined to be 5.2%.

Which ONE of the following completes the statements below?

An Appendix to place the Hydrogen Igniters in service would __(1)__.

The CRO __(2)__ directed to perform EA-268-1, "Placing Hydrogen Recombiners in Service."

	(1)	(2)
A.	be first initiated during performance of E-1	will be
B.	have been initiated during performance of E-0	will be
C.	be first initiated during performance of E-1	will **NOT** be
D.	have been initiated during performance of E-0	will **NOT** be

93. Given the following plant conditions:

- Unit 1 turbine load at 28%
- Condenser pressure is 1.79 psia and slowly increasing.
- Operators have entered AOP-S.02, "Loss of Condenser Vacuum."

Based on the given conditions, which ONE of the following completes the statements below?

The Unit Supervisor is required to direct the crew to ____(1)_____ .

In accordance with NPG-SPP-03.5," Regulatory Reporting Requirements," the Shift Manager is responsible to notify _____(2)_____ .

A. (1) Trip the turbine and GO TO AOP-S.06, "Turbine Trip."
   (2) Site Operations management and the Duty Plant Manager, ONLY

B. (1) Trip the turbine and GO TO AOP-S.06, "Turbine Trip."
   (2) all TVA internal management listed in Appendix D, "Site Event Notification Matrix."

C. (1) reduce Turbine load as necessary per AOP-C.03, "Rapid Shutdown or Load Reduction"
   (2) Site Operations management and the Duty Plant Manager, ONLY

D. (1) reduce Turbine load as necessary per AOP-C.03, "Rapid Shutdown or Load Reduction"
   (2) all TVA internal management listed in Appendix D, "Site Event Notification Matrix."

94. Given the following plant conditions:

- Both units are operating at 100% power and are staffed with the minimum allowed number of licensed operators on-site in accordance with OPDP-1, "Conduct of Operations."

- Shortly after shift change the crew realizes that both the OATC and the Unit Supervisor on Unit 1 have a 'no-solo' restriction on their license.

- None of the other license holders on shift have a 'no-solo' restriction on their license.

Based on the given conditions, which ONE of the following completes the statements below?

The current staffing on Unit 1 __(1)__ .

In accordance with OPDP-1, if any of the currently on-shift licensed persons become incapacitated, the Shift Manager shall arrange for replacement personnel to restore the shift complement within a maximum of __(2)__ hours.

	(1)	(2)
A.	is allowed	2
B.	is allowed	4
C.	is **NOT** allowed	2
D.	is **NOT** allowed	4

95. Given the following plant conditions:

- Both Units are operating at 100% power.
- Maintenance activities require removing the A-A ERCW traveling screen from service to support diving operations.
- Both the J-A and K-A ERCW pumps will be tagged as part of the clearance.

Which ONE of the following identifies the minimum required Initial Risk Level classification and operability status of the 'A' Train ERCW Headers in accordance with NPG-SPP-07.3, "Work Activity Risk Management Process," and Tech Specs, respectively?

Reference Provided

	Minimum Required Risk Level	Operability Status
A.	Site High Focus	'A' train ERCW is INOPERABLE
B.	Site High Focus	'A' train ERCW is OPERABLE
C.	High	'A' train ERCW is INOPERABLE
D.	High	'A' train ERCW is OPERABLE

96. Given the following plant conditions:

- Unit 1 is operating at 100% power with RHR pump 1B-B out of service and tagged.

0750 - DG 1A-A is determined to be inoperable.

Which ONE of the following completes the statements below?

The 1A-A RHR pump ____(1)_____.

To comply with Tech Specs, the **latest** time the **first** performance of 0-SI-OPS-082-007.W, "AC Electrical Power Source Operability Verification," is required to be completed is ___(2)____ .

A. (1) must be declared INOPERABLE
   (2) 0850

B. (1) must be declared INOPERABLE
   (2) 0905

C. (1) remains OPERABLE
   (2) 0850

D. (1) remains OPERABLE
   (2) 0905

97. Given the following plant conditions:

- Rad Waste water inventory is approaching storage capacity.
- A release of the Monitor Tank is planned.
- Sample results indicate non gaseous activity in the tank is slightly higher than the 7.0E-6 μci/ml value listed in 0-SI-CEM-077-400.1, "Liquid Waste Effluent Batch Release," for opening a Batch Release Permit.
- The source check on 0-RM-90-122, "Liquid Radwaste Release Monitor," has failed and the monitor has been declared Inoperable.
- Chemistry Department Manager has granted approval of the release.

Which ONE of the following completes the statement below in accordance with 0-SI-CEM-077-400.1?

Provided ODCM compliance is maintained, this Monitor Tank release is permitted _____.

A. after Shift Manager obtains the Operations Superintendent approval

B. after the US/SRO grants approval, without any additional required signatures/approvals needed

C. only after the contents of the Monitor Tank are reprocessed to lower activity

D. only after 0-RM-90-122 has been returned to an OPERABLE status

98. Given the following plant conditions:

- Both Units are operating at 100% RTP.
- A diving operation in the Spent Fuel Pit is planned to commence later in the shift.

Which ONE of the following completes the statements below?

If the rad level in the area of the dive is estimated at 62 Rad/hr, in accordance with RCI-14, "Radiation Work Permit (RWP) Program," the Plant Manager __(1)__ required to approve the RWP.

While inspecting the spent fuel rods, the diver receives a gash to his head which will require stitches , the resulting event would be a __(2)__ reportable event in accordance with NPG-SPP-03.5, "Regulatory Reporting Requirements."

Reference Provided

	(1)	(2)
A.	is NOT	4 hour
B.	is	4 hour
C.	is NOT	8 hour
D.	is	8 hour

99. Given the following plant conditions:

- A loss of all offsite power has occurred.
- 2A 6.9kV shutdown board is energized by its respective diesel generator.
- The other 6.9kV shutdown boards have no power.
- Offsite power restoration is estimated to be complete in 5 hours.
- The Unit 1 US is directing unit response per ECA-0.0, "Loss of All AC Power."

Based on the given conditions, which ONE of the following identifies:

(1) required actions to shed DC loads in accordance with ECA-0.0,

and

(2) the basis for leaving the turbine emergency oil pump in service for 3 hours?

Note:
EA-250-1, "Load Shed of Vital Loads After Station Blackout"
EA-250-2, "Load Shed of 250V DC Loads After Station Blackout"

A. (1) Perform EA-250-1, ONLY.
(2) To prevent potential for a fire or explosion due to hydrogen loss from the main generators.

B. (1) Perform EA-250-2, ONLY.
(2) To ensure sufficient turbine heat load has been dissipated from the main turbines.

C. (1) Perform BOTH EA-250-1 and EA-250-2.
(2) To prevent potential for a fire or explosion due to hydrogen loss from the main generators.

D. (1) Perform BOTH EA-250-1 and EA-250-2.
(2) To ensure sufficient turbine heat load has been dissipated from the main turbines.

100. Given the following plant conditions:

- Both Units are at 100% power.
- An evaluation of EPIP-1, "Emergency Plan Classification Matrix," determines that the conditions for an NOUE were initially met, but are now fully resolved.

In accordance with EPIP-1, the SED is required to ____(1)_____ and notification ___(2)___ required to be made to the State of Tennessee.

A. (1) report but not declare the event
(2) is

B. (1) report but not declare the event
(2) is NOT

C. (1) declare and terminate the event at the same clock time
(2) is

D. (1) declare and terminate the event at the same clock time
(2) is NOT

You have completed the test!

References for 1305 NRC SRO Exam

1. Steam Tables
2. Mollier Diagram
3. ECA-1.1 Loss of ECCS Sump Recirculation; Curve 9 Minimum ECCS Flow for Decay Heat vs. Time After Trip, rev 12
4. Pressure Temperature Limits Report; Sequoyah Unit 1 LTOPS Selected Setpoints pg 11
5. Unit 2 Tech Spec LCO 3.8.1. A.C. Sources-Operating, Amendment 231

   (2 pages – 3/4 8-1 and 3/4 8-2)
6. Unit 2 Tech Spec LCO 3.2.4 Quadrant Power Tilt Ratio, Amendment 214

   (pages 3/4 2-10 thru 3/4 2-12)
7. Unit 2 Tech Spec LCO 3.1.3 Moveable Control Assemblies, Group Height

   Amendment 205

   (pages 3/4 1-14 and 1-15)
8. E-3, step 32. Entire page (rev 20)

   (page 32 of 44)
9. ODCM 1/2.1.1 Radioactive Liquid Effluent Monitoring Instrumentation, rev 58 (pages 13 – 15)
10. Tech Spec LCO 3.1.3.2 Position Indication Systems-Operating, Amendment 315

    (2 pages – 3/4 17 and 3/4 17a)
11. NPG-SPP-07.3, Work Activity Risk Management Process, rev 0008 (all)
12. NPG-SPP-03.5, Regulatory Reporting Requirements, rev 0005

    Appendix A (pages 19-31)

ANSWER KEY REPORT
for 1305 NRC RO Exam Test Form: 0

#	ID	Points	Type	Answers 0
1	007 EK1.02 301	1.00	MCS	B
2	008 AK2.01 302	1.00	MCS	A
3	009 EK1.02 503	1.00	MCS	C
4	011 EG2.1.31 4	1.00	MCS	A
5	015 AG2.1.28 305	1.00	MCS	A
6	022 AK3.05 306	1.00	MCS	A
7	025 AK2.05 707	1.00	MCS	D
8	026 AA1.06 308	1.00	MCS	C
9	029 EA1.09 309	1.00	MCS	B
10	040 AA2.02 310	1.00	MCS	C
11	054 AK1.01 711	1.00	MCS	C
12	056 G2.4.4 312	1.00	MCS	A
13	062 AA2.01 13	1.00	MCS	C
14	065 AK3.08 714	1.00	MCS	D
15	077 AA1.03 15	1.00	MCS	C
16	W/E04 EA2.2 316	1.00	MCS	D
17	W/E05 EK2.2 317	1.00	MCS	B
18	W/E11 EK3.4 318	1.00	MCS	A
19	001 AA2.05 19	1.00	MCS	B
20	036 AK2.02 720	1.00	MCS	A
21	037AG2.2.44 321	1.00	MCS	B
22	032 AG2.1.23 722	1.00	MCS	A
23	059 AK3.01 23	1.00	MCS	A
24	074 EA2.07 324	1.00	MCS	C
25	W/E03 EK1.1 325	1.00	MCS	C
26	W/E14 EA1.1 326	1.00	MCS	C
27	W/E15 EK3.1 727	1.00	MCS	A
28	003 K6.02 28	1.00	MCS	C
29	004 A2.06 329	1.00	MCS	C
30	004 A4.12 30	1.00	MCS	B
31	005 A1.03 831	1.00	MCS	B
32	006 K5.05 832	1.00	MCS	C
33	007 A3.01 33	1.00	MCS	D
34	007 G2.1.20 334	1.00	MCS	D
35	008 A3.01 335	1.00	MCS	C
36	010 K6.01 336	1.00	MCS	C
37	010 K6.03 337	1.00	MCS	D
38	012 K2.01 738	1.00	MCS	A
39	013 K4.07 39	1.00	MCS	B
40	022 K4.03 40	1.00	MCS	C
41	025 A4.02 541	1.00	MCS	D
42	026 A1.02 742	1.00	MCS	B
43	026 K1.01 343	1.00	MCS	D
44	039 K3.06 44	1.00	MCS	B
45	039 K5.08 545	1.00	MCS	D
46	059 A3.04 546	1.00	MCS	B

ANSWER KEY REPORT
for 1305 NRC RO Exam Test Form: 0

#	ID	Points	Type	Answers 0
47	061 K2.01 47	1.00	MCS	B
48	062 A2.09 748	1.00	MCS	C
49	063 A1.01 349	1.00	MCS	B
50	063 K3.02 350	1.00	MCS	D
51	064 K3.03 551	1.00	MCS	A
52	073 K1.01 852	1.00	MCS	C
53	076 A4.02 53	1.00	MCS	A
54	078 G2.4.35 754	1.00	MCS	A
55	103 K1.01 855	1.00	MCS	C
56	002 K5.07 356	1.00	MCS	C
57	015 A1.02 357	1.00	MCS	D
58	016 A3.01 758	1.00	MCS	C
59	027 K2.01 259	1.00	MCS	B
60	033 A2.01 60	1.00	MCS	D
61	034 K6.02 361	1.00	MCS	A
62	071 K3.05 362	1.00	MCS	C
63	072 A4.01 363	1.00	MCS	D
64	079 K4.01 364	1.00	MCS	A
65	086 K1.03 365	1.00	MCS	A
66	G 2.1.15 366	1.00	MCS	D
67	G 2.1.43 567	1.00	MCS	B
68	G 2.2.22 368	1.00	MCS	B
69	G 2.2.42 69	1.00	MCS	A
70	G 2.2.43 770	1.00	MCS	A
71	G 2.3.11 371	1.00	MCS	B
72	G 2.3.5 372	1.00	MCS	D
73	G 2.4.8 573	1.00	MCS	B
74	G 2.4.3 774	1.00	MCS	C
75	G 2.4.9 375	1.00	MCS	D
SECTION 1 (75 items)		**75.00**		

ANSWER KEY REPORT
for 1305 NRC SRO Exam Test Form: 0

#	ID	Points	Type	Answers 0
1	007 EA2.02 376	1.00	MCS	D
2	011 EA2.08 777	1.00	MCS	C
3	025 AA2.05 78	1.00	MCS	A
4	026 AG2.4.45 379	1.00	MCS	C
5	056 AG2.2.40 780	1.00	MCS	C
6	062 AG2.1.23 781	1.00	MCS	D
7	003 AG2.2.36 882	1.00	MCS	A
8	028 AG2.4.47 883	1.00	MCS	A
9	068 AA2.06 384	1.00	MCS	C
10	W/E10 EA2.2 885	1.00	MCS	B
11	003 G2.4.11 386	1.00	MCS	D
12	010 A2.02 387	1.00	MCS	A
13	012 A2.05 88	1.00	MCS	D
14	025 G2.2.25 389	1.00	MCS	B
15	073 A2.01 90	1.00	MCS	D
16	014 A2.04 391	1.00	MCS	C
17	028 A2.03 92	1.00	MCS	B
18	055 G 2.4.30 93	1.00	MCS	A
19	G 2.1.4 94	1.00	MCS	A
20	G 2.2.17 95	1.00	MCS	D
21	G 2.2.36 396	1.00	MCS	A
22	G 2.3.6 397	1.00	MCS	A
23	G 2.3.7 98	1.00	MCS	D
24	G 2.4.18 399	1.00	MCS	D
25	G 2.4.29 300	1.00	MCS	B
SECTION 1 (25 items)		**25.00**		