FACILITY NAME: SEQUOYAH Section 9

REPORT NUMBER: 05000327/2010301 and 05000328/2010301

FINAL SRO WRITTEN EXAM

CONTENTS:

- ✓ ☐ **Final SRO Written Exam (~~25~~ 100 'as given' questions with changes made during administration annotated)**
- ✓ ☐ **Reference Handouts Provided To Applicants**
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Location of Electronic Files:

O:\Sequoyah Examinations\Initial Exam 2010-301

Submitted By: B. Caballero Verified By: [signature]

U.S. Nuclear Regulatory Commission

Site-Specific SRO Written Examination

Applicant Information	
Name:	
Date:	Facility/Unit: Sequoyah Nuclear Station 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

Pearson NCS Test Sheet 100/W

Form No. 95677

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KEY ID (A) (B) (C) (D)

SCORING & PRINTING OPTIONS: ○ RESCORE ○ MULTIPLE ANSWER SCORING ○ CORRECT ANSWER ○ MARK X ○ TOTAL ONLY — MARK ONLY ONE

FEED IN THIS DIRECTION

	T	F				
1	A	B	●	D	E	
2	A	●	C	D	E	
3	●	B	C	D	E	
4	A	B	●	D	E	
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14	A	B	C	●	E	
15	●	B	C	D	E	
16	●	B	C	D	E	
17	A	B	C	●	E	
18	A	●	C	D	E	
19	●	B	C	D	E	
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27	●	B	C	D	E	
28	A	B	C	●	E	
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94	A	B	●	D	E	
95	A	B	C	●	E	
96	●	B	C	D	E	
97	A	B	C	●	E	
98	●	B	C	D	E	
99	A	B	C	●	E	
100	●	B	C	D	E	

FEED IN THIS DIRECTION

NUMBER CORRECT		
PERCENT CORRECT		
ROSTER NUMBER		
SCORE		
RESCORE		

PEARSON NCS

COMBINED POINTS EARNED		
COMBINED PERCENT CORRECT		
LETTER GRADE		
SCORE		
RESCORE		

100 ITEM

NAME .....

SUBJECT .....

PERIOD ..... DATE .....

MARKING INSTRUCTIONS

Use a No. 2 Pencil

A ● C D E

Fill oval completely

A B C D E

Erase cleanly

ANSWER KEY INFO.

# OF KEYS	
ITEM COUNT	
0 0 0	2
1 1 1	3
2 2	4
3 3	
4 4	
5 5	
6 6	
7 7	
8 8	
9 9	

PERFORMANCE ASSESSMENT

% OF TOTAL SCORE (00 = 100%)			POINTS EARNED		
EQUAL PT ○ VALUE	0 0	0	0 0	0	0
	1 1	1	1 1	1	1
	2 2	2	2 2	2	2
	3 3			3	3
	4 4			4	4
	5 5			5	5
	6 6			6	6
	7 7			7	7
	8 8			8	8
	9 9			9	9

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SEQUOYAH 2010-301
SRO EXAM
ANSWER KEY

Bar Code

STUDENT ID NUMBER

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

1. Given the following:

   - Unit 2 is starting up and is at 2% power with the Steam Dump Control System operating as follows:
     - Steam Dump Mode Selector Switch (HS-1-103D): STEAM PRESS
     - Steam Dump Pressure Controller (PIC-1-33): AUTO

   - A spurious Reactor Trip occurs, however Reactor Trip Breaker B fails to open.

   Which ONE of the following identifies the steam generator (SG) pressure setpoint immediately after the reactor trip and the required actions to adjust SG pressure with PIC-1-33 in AUTO?

   A. SG pressure corresponding to Tavg of 547°F (~ 1005 psig)
      Use the lever at the bottom of the PIC-1-33 controller.

   B. SG pressure corresponding to Tavg of 552°F (~ 1047 psig)
      Use the lever at the bottom of the PIC-1-33 controller.

   C. SG pressure corresponding to Tavg of 547°F (~ 1005 psig)
      Use the setpoint up/down pushbuttons on the PIC-1-33 controller.

   D. SG pressure corresponding to Tavg of 552°F (~ 1047 psig)
      Use the setpoint up/down pushbuttons on the PIC-1-33 controller.

2. Given the following:

   - Unit 1 was operating at 100% power when a small break LOCA occurred.
   - RCP's are tripped in accordance with the EOP network.
   - The following plant conditions exist:
     - SI pumps fail to start.
     - RCS Pressure is 1200 psig.
     - RCS Hot Legs and the Reactor Vessel Head have voided.
     - All SG narrow range levels are 10%.

   Which ONE of the following identifies the current method(s) of cooling the core?

   A. Only break flow is providing core cooling.

   B. Break flow and reflux boiling are providing core cooling.

   C. Natural circulation and reflux boiling are providing core cooling.

   D. Only natural circulation is providing core cooling.

3. A large break LOCA occurred on Unit 1 and the crew is currently implementing ES-1.3, "Transfer to Containment Sump."

   The following conditions currently exist:

   - Both RHR Pumps are running aligned to the Containment Sump.
   - The charging pump suction from the RWST has been manually isolated.
   - The crew is ready to close 1-FCV-63-5, SI Pump Suction from RWST.
   - RHR Pump 1A-A subsequently trips.

   Which ONE of the following identifies the CCPIT Inlet Flow rate on 1-FI-63-170 and the required actions for the following step in accordance with ES-1.3?

   "14. Monitor Both RHR Pumps Running"

   A. Greater than zero;
      Ensure 1B-B CCP and 1B-B SI Pumps are running and then place the 1A-A CCP and 1A-A SI Pumps control switches to the pull-to-lock (P-T-L) position.

   B. Greater than zero;
      Close 1-FCV-63-72, Train A Containment Sump Valve

   C. Zero;
      Ensure 1B-B CCP and 1B-B SI Pumps are running and then place the 1A-A CCP and 1A-A SI Pumps control switches to the pull-to-lock (P-T-L) position

   D. Zero;
      Close 1-FCV-63-72, Train A Containment Sump Valve

4. Given the following:

   - The plant is tripped from full power due to a loss of Component Cooling Water.
   - The crew transitions to ES-0.1, "Reactor Trip Response," while continuing to perform the actions of AOP-M.03, "Loss of Component Cooling Water."

   - Fifteen minutes after the trip, the following conditions exist:
     - SG pressures are all approximately 1005 psig and stable.
     - RCS pressure 2235 psig and stable.
     - Thot is approximately 570°F in all loops and slowly lowering.
     - Core exit TC's indicate approximately 575°F and stable.
     - Tcold is approximately 547°F in all loops and stable.

   Which ONE of the following describes the status of RCS heat removal for the current plant conditions?

   A. Natural circulation is NOT established. RCS subcooling inadequate.

   B. Natural circulation is NOT established. Core exit TC's not dropping.

   C. Natural circulation is established. Heat removal via condenser steam dumps.

   D. Natural circulation is established. Heat removal via SG atmospheric reliefs.

5. Given the following:

   - Unit 2 is at 100% power.
   - Letdown was removed from service to repair a leak.
   - Excess Letdown is in service.
   - The 2A-A CCP trips.

   Which ONE of the following...

   (1) describes how excess letdown flow will be affected

   and

   (2) a condition that requires a reactor trip in accordance with AOP-M.09, "Loss of Charging?"

   A. (1) Excess letdown will be automatically isolated.
      (2) RCP lower bearing temperature >225°F.

   B. (1) Excess letdown will be automatically isolated.
      (2) LS-68-335D/E PRESSURIZER LEVEL HIGH-LOW (M5A, C-3) alarms.

   C. (1) Excess letdown will continue until manually isolated.
      (2) RCP lower bearing temperature >225°F.

   D. (1) Excess letdown will continue until manually isolated.
      (2) LS-68-335D/E PRESSURIZER LEVEL HIGH-LOW (M5A, C-3) alarms.

6. Given the following:

   - Unit 1 is in Mode 5 with the pressurizer solid. Train "A" RHR is operating in Shutdown Cooling.
   - The following alarm is received:
     "FCV-74-1/2 TROUBLE OR RHR PRESS HI (M6-C, E-7)"
   - The operator attempted to adjust letdown and charging; however, the alarm condition did not clear and RCS pressure continued to slowly rise.
   - The operator subsequently stopped the 1A-A RHR Pump and noted that RCS Pressure was still slowly rising.

   Which ONE of the following identifies the RCS Pressure at which the operator is directed to manually close FCV-74-1 and 74-2 in accordance with AOP-R.03, "RHR System Malfunction," including the reason for this required action?

   A. 380 psig; prevent inventory loss

   B. 380 psig; prevent over-pressurization of the PRT

   C. 450 psig; prevent inventory loss

   D. 450 psig; to prevent over-pressurization of the PRT.

7. Given the following:

   - The unit is operating at 85% power and both Pressurizer Spray Valve Controllers (1-PIC-68-340D & 1-PIC-68-340B) are in MANUAL with their output set to "0."

   Which ONE of the following predicts the plant response if the Pressurizer Master Pressure Controller (1-PIC-68-340A) output signal fails to 100%?

   A. PS-68-340F/G PRESSURIZER PRESS ABOVE REF SET POINT (M5-A, B-3) will alarm;
   Actual pressure will remain the same.

   B. PS-68-340F/G PRESSURIZER PRESS ABOVE REF SET POINT (M5-A, B-3) will alarm;
   Actual pressure will lower.

   C. PS-68-340G/F PRESSURIZER PRESSURE LOW BACKUP HTRS ON (M5-A, D-4) will alarm;
   Actual pressure will rise.

   D. PS-68-340G/F PRESSURIZER PRESSURE LOW BACKUP HTRS ON (M5-A, D-4) will alarm;
   Actual pressure will remain the same.

8. Given the following:

   - Unit 1 is at 100% power with Reactor Trip Breaker "A" open due to SSPS testing on Train "A."
   - A transient occurs that initiates a reactor trip signal, but the reactor fails to trip from the main control room.

   Which ONE of the following identifies;

   (1) the required immediate operator actions listed in FR-S.1, "Nuclear Power Generation/ATWS"

   and

   (2) the minimum local actions that will result in a reactor trip?

   A. (1) Maintain rod insertion at maximum rate and trip the turbine only.
   (2) Open either RTB or BYA

   B. (1) Maintain rod insertion at maximum rate and trip the turbine only.
   (2) Open both RTB and BYA

   C. (1) Maintain rod insertion at maximum rate and trip the turbine and start AFW.
   (2) Open either RTB or BYA

   D. (1) Maintain rod insertion at maximum rate and trip the turbine and start AFW.
   (2) Open both RTB and BYA

9. Given the following:

   - Unit 2 was operating at 100% rated thermal power.
   - The plant was tripped and SI was actuated due to a SGTR in #3 SG.
   - The crew is currently implementing ES-3.1, "Post-SGTR Cooldown Using Backfill."
   - The following boron concentrations have just been reported by Chemistry:

     - RCS required boron for Cold Shutdown - 1750 ppm
     - Current RCS boron concentration - 1800 ppm
     - Ruptured SG boron concentration - 1200 ppm

   Which ONE of the following identifies an action that is required to be performed BEFORE a cooldown can be commenced and the reason why the cooldown should be promptly initiated at a rate near 100°F/hr in accordance with ES-3.1?

   A. Borate the RCS > 35 gpm from the BAT;
      Inadvertent criticality could occur during a slower cooldown rate.

   B. Inject Boric Acid into the Secondary side of #3 SG using AFW;
      Longer operation of the RCPs is permitted

   C. Borate the RCS > 35 gpm from the BAT;
      Longer operation of the RCPs is permitted.

   D. Inject Boric Acid into the Secondary side of #3 SG using AFW;
      Inadvertent criticality could occur during a slower cooldown rate.

10. Given the following:

    - A steam line rupture has occurred on Unit 2

    Which ONE of the following points indicates a Pressurized Thermal Shock condition and identifies how this condition affects the reactor vessel in accordance with FR-P.1, "Pressurized Thermal Shock," and EPM-3-FR-P.1, "Basis Document for FR-P.1?

    Referenced Provided

    A. To the LEFT of Limit A on Curve 2; an existing flaw could propagate.

    B. To the RIGHT of Limit A on Curve 2; new flaw can develop.

    C. To the LEFT of Limit A on Curve 2; new flaw can develop.

    D. To the RIGHT of Limit A on Curve 2; an existing flaw could propagate.

11. Given the following:

- Unit 1 at 8% power, startup in progress in accordance with 0-GO-4, "Power Ascension from Less than 5 Percent Reactor Power to 30% Reactor Power."
- SG levels are being controlled by the MFW Bypass Reg valves in AUTO.
- Main Feed Pump (MFP) 1A in service.
- Motor Driven Auxiliary Feedwater Pumps have been stopped and placed in A-P AUTO.
- A failure of the #2 SG level control program results in the #2 SG level rising to the P-14 setpoint.

Assuming no operator actions, which ONE of the following identifies how the MFW Bypass Reg Valves and the bar graph indications on the associated Bypass Reg Valve Controllers will initially respond?

A. ALL Bypass Reg Valves closed;
All controller bar graphs dropping.

B. ONLY #2 Bypass Reg Valve closed;
All controller bar graphs dropping.

C. ONLY #2 Bypass Reg Valve closed;
ONLY #2 controller bar graph dropping.

D. All Bypass Reg Valves closed;
ONLY #2 controller bar graph dropping.

12. Which ONE of the following identifies the pump that will be sequenced on first following a blackout signal on a 6900v Shutdown board and a reason?

	First Pump	Reason
A.	CCP	Largest blackout load on the board.
B.	CCP	Reactor Cooling Pump seal cooling restoration.
C.	ERCW pump	Largest blackout load on the board.
D.	ERCW pump	Diesel Generator cooling restoration.

13. Given the following:

- Unit 1 is at 100% RTP.
- Pressurizer Level Control Level Selector Switch is in the 339/320 position.
- A loss of the 120V Vital instrument Power Board 1-II occurs.

Which ONE of the following identifies the required actions for controlling charging flow using 1-HIC-62-93A, Charging Flow Control, in MANUAL?

A. Control pressurizer level at or trending to 60% and maintain RCP seal injection between 6 gpm and 11 gpm per pump.

B. Control pressurizer level at or trending to 25% and maintain RCP seal injection between 6 gpm and 11 gpm per pump.

C. Control pressurizer level at or trending to 60% and maintain RCP seal injection between 3 gpm and 4 gpm per pump.

D. Control pressurizer level at or trending to 25% and maintain RCP seal injection between 3 gpm and 4 gpm per pump.

14. Given the following:

    - Unit 1 is operating at 100% rated thermal power.
    - A total loss of ERCW occurs, and the reactor is manually tripped.

    Which ONE of the following identifies the required procedures?"

    A. E-0, "Reactor Trip or Safety Injection," will be implemented.
    Cooldown will be implemented in accordance with 0-GO-7, "Unit Shutdown From Hot Standby To Cold Shutdown."

    B. E-0, "Reactor Trip or Safety Injection," will **NOT** be implemented.
    Cooldown will be implemented in accordance with 0-GO-7, "Unit Shutdown From Hot Standby To Cold Shutdown."

    C. E-0, "Reactor Trip or Safety Injection," will be implemented.
    Cooldown will be implemented in accordance with AOP-M.01, "Loss of ERCW."

    D. E-0, "Reactor Trip or Safety Injection," will **NOT** be implemented.
    Cooldown will be implemented in accordance with AOP-M.01, "Loss of ERCW."

15. Given the following:

- Both units are operating at 100% power.
- A loss of control air is occurring.
- All available Station Control & Service Air Compressors and both Auxiliary Air Compressors have started and loaded.

Which ONE of the following identifies the pressure that 0-FCV-32-82 "Train A Control Air Supply" and 0-FCV-32-85 "Train B Control Air Supply" will close as the pressure in the Station Control & Service Air System drops and why?

A. At 69 psig to ensure control air is provided to the essential components for safe shutdown.

B. At 69 psig to prevent exceeding containment design pressure in the event of a design bases accident when the air leak is inside containment.

C. At 50 psig to ensure control air is provided to the essential components for safe shutdown.

D. At 50 psig to prevent exceeding containment design pressure in the event of a design bases accident when the air leak is inside containment.

16. Given the following:

- Unit 1 is operating at 100% rated thermal power.
- "GEN EXCITER FIELD OVERCURRENT" (M-1A, A-6) alarms.
- The following indications are observed:
  - Main Generator Voltage 24.6 kV
  - Main Generator MVARS 310 MVARS (outgoing)
  - Main Generator Exciter Amps 220 amps

Which ONE of the following identifies the parameter that is out of limits and the required operator action in accordance with the alarm response procedure?

A. Main Generator MVARS
Place the Exciter Voltage Auto Adjuster Switch to the LOWER Position

B. Main Generator MVARS
Trip the Reactor

C. Main Generator Exciter Amps
Place the Exciter Voltage Auto Adjuster Switch to the LOWER Position

D. Main Generator Exciter Amps
Trip the Reactor

17. 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 rising

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

    C. Isolate RHR Cold Leg Injection;
       Pressurizer level rising

    D. Isolate RHR Cold Leg Injection;
       RCS pressure rising

18. Given the following:

- 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 the preference for restoring a SG as a heat sink and the order in which the feed water sources are attempted in accordance with FR-H.1, "Loss of Secondary Heat Sink?"

A. Feed a ruptured SG before feeding a faulted SG;
TDAFW, MFW, Condensate, MDAFW using ERCW

B. Feed a ruptured SG before feeding a faulted SG;
MDAFW, TDAFW, MFW, Condensate

C. Feed a faulted SG before feeding a ruptured SG;
TDAFW, MFW, Condensate, MDAFW using ERCW

D. Feed a faulted SG before feeding a ruptured SG;
MDAFW, TDAFW, MFW, Condensate

19.

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- Pressurizer Level Control Selector Switch, 1-XS-339E, is selected to the LT-68-339/320 position.

Which ONE of the following subsequent instrument failures will result in a reactor trip in the shortest time assuming all systems respond as designed and there is NO operator action?

(Consider each failure to occur independently)

A. 1-LT-68-339 fails LOW.

B. 1-LT-68-339 fails HIGH.

C. 1-LT-68-320 fails LOW.

D. 1-LT-68-320 fails HIGH.

20. Given the following plant conditions:

- Unit 2 is in MODE 6.
- "SOURCE/INTERMED RANGE CH-II TROUBLE," (M-4B, A-2) suddenly alarms.
- The OATC notices at the same time that a loss of the audio count rate signal has occurred.
- No other alarms associated with this failure have actuated.

Which ONE of the following describes the action necessary to restore the audio count rate signal to the control room in accordance with AOP-I.01, "Nuclear Instrument Malfunction?"

A. Place the audio count rate CHANNEL SELECTOR switch on the front of the Audio Count Rate Drawer to the SR N-31 position.

B. Place the audio count rate CHANNEL SELECTOR switch on the front of the Audio Count Rate Drawer to the SR N-32 position.

C. Place the AMPLIFIER SELECT switch on the rear of the audio count rate drawer assembly to the A1 position.

D. Place the AMPLIFIER SELECT switch on the rear of the audio count rate drawer assembly to the A2 position.

21. Given the following:

- Unit 1 is in Mode 1 doing a power ascension following a refueling outage.
- During the power ascension the 1-M-4 Control Board indicators for N-35 and N-36 (1-X1-92-5003A & 1-X1-92-5004A) have trended as follows:

	N-35	N-36
2000 (6/18)	8×10^0	4×10^1
0800 (6/19)	1×10^1	6×10^1
2000 (6/19)	2×10^1	1×10^2

Which ONE of the following indicates the status of control board readings for N-35 and N-36?

REFERENCE PROVIDED

A. maximum allowable channel deviation exceeded at 2000 (6/18)

B. maximum allowable channel deviation exceeded at 0800 (6/19)

C. maximum allowable channel deviation exceeded at 2000 (6/19)

D. maximum allowable channel deviation not exceeded.

22. Given the following:

- Unit 1 is in Mode 6 with Refueling in progress.
- The refueling SRO in containment reports a large reactor cavity seal leak.
- The crew is implementing AOP-M.04, "Refueling Malfunctions."
- Per Section 2.1, "Reactor Cavity Seal Failure," two operators are dispatched to close the Transfer Tube Wafer Valve.

Which ONE of the following identifies:

(1) the location of the handwheel for 78-610 (Wafer Valve)

and

(2) the reason for performing this action?

A. Reverse Osmosis Room; to maintain SFP inventory.

B. Reverse Osmosis Room; to maintain Refueling Cavity inventory.

C. PASF Room; to maintain SFP inventory.

D. PASF Room; to maintain Refueling Cavity inventory.

23. Given the following:

- Unit 1 is operating at 100% rated thermal power.
- A 5 gpd SG tube leak has been confirmed on #1 SG.

Which ONE of the following identifies the preferred method and initial frequency for SG leak rate monitoring in accordance with AOP-R.01, "Steam Generator Tube Leak?"

A. SG samples;
every 15 minutes

B. SG samples;
every 30 minutes

C. Condenser vacuum exhaust radiation monitor;
every 15 minutes

D. Condenser vacuum exhaust radiation monitor;
every 30 minutes

24. Given the following:

- Unit 1 and Unit 2 are at 100% rated thermal power.
- A fire in the Control Building requires evacuating the Main 'Control Room (MCR) in accordance with AOP-C.04, "Shutdown from the Auxiliary Control Room."

Which ONE of the following identifies an action that is taken prior to evacuating the MCR in accordance with AOP-C.04 and the reason for this action?

A. Place one CCP in pull-to-lock;
Minimize PORV cycling.

B. Place one CCP in pull-to-lock;
Prevent common mode failure of both CCPs due to spurious closure of VCT outlet valves (FCV-62-132 & 133)

C. Isolate normal CVCS letdown flow path;
Minimize inventory loss from RCS.

D. Isolate normal CVCS letdown flow path;
Minimize the possibility of a loss of RCP seal cooling.

25. Given the following:

- At 1600, Unit 1 tripped from 100% power due to a Small Break LOCA.
- At 1625, the crew initiated an RCS cooldown using ES-1.2, "Post LOCA Cooldown and Depressurization."
- At 2200 the crew is evaluating the step to determine if RHR can be placed in service. The following plant conditions exist:
  - Both RHR pumps are stopped.
  - Normal charging has been established.
  - PZR level is 28% and stable.
  - RCP #2 is the only RCP running.
  - RCS pressure - 330 psig and slowly trending down.
  - RCS temperature - 340°F and slowly trending down.

Which ONE of the following identifies...

(1) the initial starting time used to calculate if the cooldown rate is acceptable,

and

(2) if RHR can be placed in service with the current conditions in accordance with ES-1.2?

A. (1) 1600
(2) Conditions do not allow RHR shutdown cooling to be established.

B. (1) 1600
(2) with TSC concurrence, RHR shutdown cooling is allowed.

C. (1) 1625
(2) Conditions do not allow RHR shutdown cooling to be established.

D. (1) 1625
(2) with TSC concurrence, RHR shutdown cooling is allowed.

26. Given the following:

- While operating at 100% power, Unit 1 has experienced a large steam break.
- The crew is responding to a Red Path on PTS using FR-P.1, "Pressurized Thermal Shock."

- Current plant conditions are:
  - RCS Tcold is 250°F and slowly rising
  - PZR pressure is 2000 psi
  - PZR level is 90% and rising
  - Total AFW flow to the intact SGs is 300 gpm
  - CCPs are injecting via the CCPIT

Which ONE of the following identifies a required action that will reduce the potential for damage to the reactor vessel in accordance with FR-P.1?

A. Raise AFW flow to greater than 440 gpm.

B. Reduce AFW flow to no greater than 50 gpm per SG.

C. Reset SI and stop both CCPs.

D. Reset SI, stop one CCP, and isolate the CCPIT.

27. Given the following:

- A reactor trip from 100% power and loss of Offsite power occurred 1 hour ago.
- ES-0.3, "Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS)," is in progress.
- PZR pressure is 785 psig and being lowered by auxiliary spray.
- Core exit TCs indicate 520°F.
- RVLIS upper plenum range reads 81%.

Assuming NO additional operator action, which ONE of the following predicts the expected RVLIS and PZR level trends as the depressurization continues?

	RVLIS	**PZR Level**
A.	Decrease	Increase
B.	Increase	Decrease
C.	Decrease	Decrease
D.	Increase	Increase

28. Which one of the following completes both statements in accordance with Tech Spec 3.4.1, Reactor Coolant Loops and Coolant Recirculation?

    The plant is designed to operate with all reactor coolant loops in operation which maintains _____ above the safety analysis limits during all normal operations and anticipated transients.

    With one reactor coolant loop not in operation, the plant is required to be _____ within 1 hour.

    A. QPTR; less than or equal to 5% power

    B. QPTR; in Hot Standby

    C. DNBR; less than or equal to 5% power

    D. DNBR; in Hot Standby

29. Given the following:

- Unit 2 is at 100% rated thermal power.
- Rod control is in Manual.
- The OATC notices a slow decrease in RCS pressure and Tavg has decreased 1.5°F over the last several minutes.
- PZR variable heaters are energized and spray valves are closed.

Which ONE of the following will result in these conditions?

A. CVCS letdown heat exchanger temperature control valve failed open.

B. 2-FCV-62-138, Emergency Boration Flow Control valve is leaking by.

C. Primary water makeup flow was set at 70 gpm during the last manual makeup to the VCT.

D. A CVCS mixed bed demineralizer with new resin was put in service before being borated.

30. Given the following:

- Unit 1 is operating at 100% power.
- "LS-62-129A/B VOLUME CONTROL TANK LEVEL HI-LOW," (1-M-6C, A-3) has just gone into Alarm.
- LI-62-129, VCT Level, indicates 35% decreasing.
- LI-62-130, VCT Level, indicates 100% on ICS.

Which ONE of the following predicts the plant response assuming no operator action?

A. Suction to the operating CCP will align to the RWST when VCT level decreases to 7%.

B. Pressurizer level will decrease to 17% resulting in letdown system isolation and recovery of VCT level.

C. VCT level will continue to decrease until the charging pumps lose suction.

D. Auto makeup will initiate to the VCT when LT-62-129 decreases to 20% and will raise VCT level back to 41%.

31. Given the following:

- Unit 1 is in Mode 5 with the RCS in solid water operation.
- RHR pump 1A-A in service.
- 1-PCV-62-81, Letdown Pressure Control Valve, is in automatic.

Which ONE of the following completes the statement below if the 1A-A RHR Pump trips?

The RCS pressure will initially ___(1)___ because 1-PCV-62-81 will automatically throttle ___(2)___ when RHR pump trips.

	(1)	(2)
A.	drop	open
B.	drop	closed
C.	rise	open
D.	rise	closed

32. Given the following:

- Unit 2 was operating at 100% power when a LOCA occurred.
- Hottest core exit thermocouples are stable at 400°F.
- RCS pressure is 225 psig.
- RVLIS Upper Plenum is 64%.
- RVLIS Lower Range is 70%.
- Containment pressure is 6 psig.
- All SG pressures are 500 psig.

Which ONE of the following conclusions can be determined from these indications?

A. Decay heat is being removed by Steam Generators.

B. RVLIS Upper range indication has failed.

C. Core cooling is inadequate. Additional ECCS flow is required.

D. Vessel level is adequate. ECCS flow should continue to ensure core cooling is maintained.

33. Given the following plant conditions:

- A reactor trip has occurred.
- RCS pressure is 1810 psig and lowering.
- Containment Pressure is 1.55 psig and rising.

Which ONE of the following identifies the status of the RCP's #1 seal leakoff flowpath?

A. routed to the PRT

B. routed directly to the VCT

C. routed to the RCDT

D. routed to the CCP suction

34. Given the following:

- Unit 1 at 100% power.
- Component Cooling Water system is in the normal alignment.
- Unit 2 in Mode 5.

Which ONE of the following describes the affect of closing 2-FCV-70-75, '2B ESF Header Return Isolation,' without closing 2-FCV-70-3, '2B ESF Header Supply Isol' in accordance with 0-SO-70-1, 'Component Cooling Water System "B" Train?'

A. Less than minimum required flow on the C-S CCS pump.

B. Inadequate suction supply path to 2B-B CCS pump.

C. Abnormal level changes in both CCS Surge Tanks.

D. Loss of flow on Unit 2 Reactor Building supply Header.

35. Given the following:

- Unit 1 is being cooled down and has been placed on shutdown cooling with 'A' Train RHR in service.
- "RHR HX A OUTLET TEMPERATURE HIGH" (M27-B-A, E-6) alarms.
- Temperature on 1-TI-70-157, "RHR Heat Exchanger 1A Outlet Temperature" reads 120°F and steady.

Which ONE of the following choices completes both statements below in accordance with the Annunciator Response Procedure?

It is _____ to exceed the alarm setpoint when RHR is in service for shutdown cooling.

In order to reduce the RHR heat exchanger CCS outlet temperature _____.

A. allowed;
either the CCS flow or the RHR flow through the heat exchanger is allowed to be adjusted.

B. allowed;
only the CCS flow through the heat exchanger is allowed to be adjusted.

C. **NOT** allowed;
either the CCS flow or the RHR flow through the heat exchanger is allowed to be adjusted.

D. **NOT** allowed;
only the CCS flow through the heat exchanger is allowed to be adjusted.

36. Unit 1 was in Mode 3, Tave 547°F, PZR pressure 2235 psig.

A malfunction occurred which caused PZR pressure to drop to 2050 psig and PZR level to drop to 15%.

Currently PZR pressure is 2100 psig and PZR level is 30%.

Assuming no operator action, which ONE of the following predicts the current status of the PZR heaters?

A. All Backup and Control group heaters will be OFF.

B. All Backup and Control group heaters will be ON.

C. All Backup heaters will be ON and Control group D heaters will be OFF.

D. All Backup heaters will be OFF and Control group D heaters will be ON.

37. Given the following:

- Unit 1 is operating at 100% rated thermal power.
- Rod control has been placed in MANUAL with Tavg at 578.0°F.

Which ONE of the following identifies how the actual RPS trip setpoint value will change if Tavg decreases by 1°F? Assume AFD remains constant.

A. Both OTDT and OPDT trip setpoint values will decrease.

B. OTDT trip setpoint value will increase and OPDT trip setpoint value will decrease.

C. OTDT trip setpoint value will increase and OPDT trip setpoint value will remain the same.

D. OTDT trip setpoint value will remain the same and OPDT trip setpoint value will decrease.

38. Which ONE of the following identifies the plant board that provides power to a reactor trip breaker UV Trip coil?

    A. 48V-DC Plant Battery Board

    B. 125V-Vital DC Battery Board

    C. 120V-AC Preferred Power Board

    D. 120V-AC Vital Instrument Power Board

39. Given the following plant conditions:

- 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.

Which ONE of the following predicts 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. The following conditions exist on Unit 1:

- Reactor power is 100%.
- RWST level transmitter 1-LT-63-50 fails causing 1-LI-63-50 to read off-scale High.
- All other RWST level indicators (1-LI-63-51, -52, -53) are at 99%.

Which ONE of the following describes the impact of this failure and the required actions in accordance with AOP-I.09, "RWST Level Instrument Malfunction?"

	Swapover Logic Status	**Required Action**
A.	Train A swapover is disabled, Train B swapover is operable.	Place the failed channel in tripped condition
B.	Train A swapover is disabled, Train B swapover is operable.	Place the failed channel in bypassed condition
C.	Both trains of swapover are operable.	Place the failed channel in tripped condition
D.	Both trains of swapover are operable.	Place the failed channel in bypassed condition

41. Given the following:

- Both Units in service at 100% RTP.
- **Upper** Compartment Cooling Units A and 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

If both of the valves were closed, which ONE of the following identifies the effect on the **Upper** Containment temperature on the respective unit(s) and the required actions, if any?

A. **Upper** containment temperature will remain the same on Unit 1 and 2.
No additional coolers are available on either Unit.

B. **Upper** containment temperature will RISE on Unit 1 and 2.
Place additional coolers in service on both Units.

C. **Upper** containment temperature will RISE on Unit 1 only.
No additional coolers are available on Unit 1.

D. **Upper** containment temperature will RISE on Unit 1 only.
Place additional coolers in service on Unit 1.

42. Which ONE of the following describes a design feature of the Ice Condenser Glycol system that prevents over-pressurization of the piping when the glycol trapped between the containment isolation valves expands?

A. The penetration's INSIDE containment isolation valve disks are modified with a drilled hole.

B. The penetration's OUTSIDE containment isolation valve disks are modified with a drilled hole.

C. The penetration's INSIDE containment isolation valve has a bypass line and check valve arrangement.

D. The penetration's OUTSIDE containment isolation valve has a bypass line and check valve arrangement.

43. Given the following conditions:

- Unit 1 is operating at 100% power.
- 1A-A Containment Spray (CS) Pump is out of service.
- A large break LOCA occurs.
- 60 minutes later, the following conditions exist:
  - Containment pressure is 8.4 psig.
  - FR-Z.1, "High Containment Pressure" is in progress.
  - ES-1.3, "Transfer To RHR Containment Sump" has been completed.
  - The crew observes 1B-B CS Pump running with a discharge flow of approximately 4000 gpm.

Which ONE of the following describes the condition of the Containment Spray System and the FR-Z.1 direction concerning RHR spray?

A. Containment spray flow is normal and RHR spray will be placed in service only if containment pressure rises to greater than 9.5 psig.

B. Containment spray flow is normal and RHR spray will be immediately placed in service.

C. Containment spray flow is LOWER than normal and RHR spray will be placed in service only if containment pressure rises to greater than 9.5 psig.

D. Containment spray flow is LOWER than normal and RHR spray will be immediately placed in service.

44. Given the following:

- Unit 1 operating at 60% power.
- A Steam Generator safety valve begins to leak through.

Which ONE of the following identifies both....

(1) the time in core life that will result in the largest addition of positive reactivity

and

(2) a condition which requires a manual reactor trip in accordance with AOP-S.05, "Steam or Feedwater Leak?"

Time in Core Life	Condition requiring reactor trip
A. EOL	Final Reactor power of 65%.
B. EOL	Tavg/Tref can not be maintained within 3°F.
C. BOL	Final Reactor power of 65%.
D. BOL	Tavg/Tref can not be maintained within 3°F.

45. Given the following:

- Unit 1 is starting up from a refueling outage and is currently at 70% rated thermal power.
- "B" MFW pump tripped.
- Prompt operator actions were taken to lower turbine load and stabilize the plant in accordance with AOP-S.01, "Loss of Normal Feedwater."

Assuming no additional operator actions, which ONE of the following identifies the current status of the AFW system?

A. Only "B" MDAFW pump running.

B. Only "A" and "B" MDAFW pumps running.

C. "A" and "B" MDAFW pumps, and TDAFW pump running.

D. None of the AFW pumps running.

46. Given the following:

- Unit 1 was initially at 100% RTP and a reactor trip occurred.
- The following steam generator levels and containment pressures are observed:

Time:	0200	0201	0202	0203	0205
SG Level:					
#1 S/G (% NR)	8	12	22	26	35
#2 S/G (% NR)	7	12	24	27	36
#3 S/G (% NR)	5	13	25	29	33
#4 S/G (% NR)	5	16	28	31	35
Cntmt press (psig):	1.5	3.5	2.5	1.5	0.6

Which ONE of the following identifies the **EARLIEST** time that AFW can be reset and throttled to less than 440 gpm in accordance with E-0, "Reactor Trip or Safety Injection?"

A. 0201

B. 0202

C. 0203

D. 0205

47. Given the following plant conditions:

    - Unit 1 & 2 are operating steady-state at 100%.

    Which ONE of the following identifies the degraded voltage set point that will automatically trip open the 1B-B 6.9 kV Shutdown Board Normal Feeder Breaker?

    A. Voltage at 93.5% of nominal voltage for 30 seconds.

    B. Voltage at 80% of nominal voltage for 30 seconds.

    C. Voltage at 93.5% of nominal voltage for 5 minutes.

    D. Voltage at 80% of nominal voltage for 5 minutes.

48. Given the following:

- Unit 1 was operating at 100% rated thermal power when the following alarm was received:
- "125V DC VITAL BAT BD 1 ABNORMAL" (M1-C, A-5).
- No other abnormal alarms are lit.

Which ONE of the following identifies the reason for this alarm and an expected indication OR required operator action in accordance with alarm response procedure?

A. Charger has tripped; EI-57-92 "125V VITAL BATT BD AMPS" indicates steady current flow below zero.

B. Charger has tripped; EI-57-92 "125V VITAL BATT BD AMPS" indicates steady current flow above zero.

C. A ground exists; Locally adjust red flag set point to clear the control room alarm.

D. A ground exists; Sequentially open breakers (one at a time) on the battery board to locate the ground.

49. Given the following:

- The A-A Diesel Generator is being synchronized to its shutdown board for a surveillance test.
- When 1-HS-57-47, "DG 1A Synchronize" is placed to the "SYN" position, the synchroscope pointer begins to rotate quickly in the counter-clockwise direction.

Which ONE of the following identifies...

(1) the position of 0-HS-82-18, DG 1A-A MODE SELECTOR, at this time,

and

(2) the action required prior to closing the Diesel Generator output breaker?

A. (1) PARALLEL
(2) Place 0-HS-82-13, Speed Control, to the RAISE position.

B. (1) PARALLEL
(2) Place 0-HS-82-13, Speed Control, to the LOWER position.

C. (1) PULL FOR LOCAL TRANSFER
(2) Place 0-HS-82-13, Speed Control, to the RAISE position.

D. (1) PULL FOR LOCAL TRANSFER
(2) Place 0-HS-82-13, Speed Control, to the LOWER position.

50. Which ONE of the following choices completes the following statements?

Each DG air start system accumulator set has sufficient capacity to start the engine __(1)__ times without recharging.

Anytime either of the B air receivers is less than __(2)__ psig the D/G is inoperable.

	(1)	(2)
A.	5	210
B.	5	150
C.	10	210
D.	10	150

51. Given the following:

- U-1 operating at 100% power.

0900 - "1-RA-90-119A CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD" (M12A, C-1) alarms.
0905 - The following radiation monitor trends are noted:

Condenser Vacuum Exhaust Rad Monitor,1-RM-90-119 trending up.
SGBD Rad Monitor, 1-RM-90-120 stable.

0910 - Reactor Trip and Safety Injection are manually initiated due to rapidly lowering Pressurizer level.

Which ONE of the following identifies ...

(1) why 1-RM-90-120 trend is stable at 0905

and

(2) where the SGBD sample lines tap off the SGBD system?

A. (1) SGBD isolates on High Radiation.
(2) Upstream of the inside SGBD CNMT isolation valves.

B. (1) SGBD isolates on High Radiation.
(2) Downstream of the inside SGBD CNMT isolation valves.

C. (1) SGBD piping transport time.
(2) Upstream of the inside SGBD CNMT isolation valves.

D. (1) SGBD piping transport time.
(2) Downstream of the inside SGBD CNMT isolation valves.

52. Given the following:

- Boths units are at 100% rated thermal power with all components in normal alignment.
- A Safety injection occurs on Unit 1.

Which ONE of the following predicts the automatic response of the following ERCW System valves?

Note:
- 0-FCV-67-151, CCS Heat Exchanger '0B1' Disch to Header A
- 0-FCV-67-152, CCS Heat Exchanger '0B2' Disch to Header B

A. 0-FCV-67-151, automatically travels to 100% open.
0-FCV-67-152, automatically throttles to 35% open.

B. 0-FCV-67-151, remains as is.
0-FCV-67-152, automatically travels to 100% open.

C. 0-FCV-67-151, remains as is.
0-FCV-67-152, automatically throttles to 35% open.

D. 0-FCV-67-151, automatically travels to 100% open.
0-FCV-67-152, automatically travels to 100% open.

53. The breaker for Auxiliary Air Compressor B is located on which ONE of the following electrical boards?

    A. 480v Reactor Vent Board 1B-B

    B. 480v Reactor Vent Board 2B-B

    C. 480v C & A Vent Board 1B1-B

    D. 480v C & A Vent Board 2B1-B

54. An irradiated fuel assembly has been dropped in containment during a refueling outage on Unit 1.

    Which ONE of the following identifies required areas to be evacuated and required actions to be taken in accordance with AOP-M.04, "Refueling Malfunctions?"

    A. Only personnel inside containment must be evacuated;
    At least ONE door must be closed in both Upper and Lower containment air locks.

    B. All personnel inside containment AND the Aux Building must be evacuated;
    BOTH doors must be closed in both Upper and Lower containment air locks.

    C. Only personnel inside containment must be evacuated;
    BOTH doors must be closed in both Upper and Lower containment air locks.

    D. All personnel inside containment AND the Aux Building must be evacuated;
    At least ONE door must be closed in both Upper and Lower containment air locks.

55. Which ONE of the following identifies the effect of a Phase B Containment Isolation signal on the Lower Compartment Cooling Fans and the Containment Air Return Fans?

	Lower Compartment Cooling Fans	Containment Air Return Fans
A.	Trip	Start after 10 minute time delay
B.	Trip	Start immediately
C.	Start	Start after 10 minute time delay
D.	Start	Start immediately

56. Given the following:

- Unit 1 at 100% power.
- 480v Common Emergency Transformer out of service.

Which ONE of the following describes the effect on the Control Rod Drive MG Sets if 6900v Unit Board 1D is de-energized?

A. Both MG sets lose power to the motor.

B. Neither MG set loses power to the motor.

C. Only 1A MG set loses power to the motor.

D. Only 1B MG set loses power to the motor.

57. Given the following:

- Unit 1 is at 100% rated thermal power.
- Control bank D group 2 rod H-8 has dropped into the core.
- The operating crew is performing steps in AOP-C.01, "Rod Control System Malfunctions."

When ready to withdraw the rod, which ONE of the following identifies...

(1) the group step counter(s) that is/are required to be adjusted to ZERO

and

(2) the position 1-HS-85-5110, Rod Control Mode Selector Switch, is required to be placed in?

A. (1) Group 2 ONLY
(2) MAN

B. (1) BOTH Group 1 and 2
(2) MAN

C. (1) Group 2 ONLY
(2) CBD

D. (1) BOTH Group 1 and 2
(2) CBD

58. Which ONE of the following identifies how the Control Room Audio Count Rate sound is initiated following a reactor trip?

A. AUTOMATICALLY initiated only after both N-35 & N-36 are less than 10^{-4}% power.

B. AUTOMATICALLY initiated only after 3 out of 4 of the Power range detectors are less than 10%.

C. MANUALLY initiated only after the Level Trip Bypass Switches are placed in the Normal position.

D. MANUALLY initiated only after SRM Trip Reset Block Switches are placed to the RESET position.

59. Which ONE of the following identifies the primary function of the Isolation Amplifier associated with the Pressurizer Pressure Transmitters?

A. Amplifies the pressure output signal between containment and the instrument rack.

B. Amplifies the pressure output signal between the instrument rack and the main control room.

C. Protects the Pressurizer Pressure Control circuit.

D. Protects the Pressurizer Pressure Protection circuit.

60. Given the following:

- Unit 1 is operating at 100% power
- The following alarm is received:
- "INCORE TEMP MONITORING SYSTEM TROUBLE" (M4-B, A-3)

Which ONE of the following identifies ...

(1) the indication on the Exosensor Plasma Display if an incore thermocouple was outside its electrical limit due to an electrical short in the circuit

and

(2) the minimum number of thermocouples, per core quadrant, required to be operable in accordance with Tech Specs without relying on an Action Statement?

	Plasma Display Indication	Tech Spec Requirement
A.	" ? "	One in each train.
B.	"XXX"	One in each train.
C.	" ? "	Two in each train.
D.	"XXX"	Two in each train.

61. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A lower containment purge is in progress in accordance with 1-SO-30-3, "Lower Containment Purge Operation."

Which ONE of the following identifies...

(1) the minimum required logic to initiate an automatic containment ventilation isolation signal

and

(2) whether the 1-RM-90-106, Lower Containment Radiation Monitor control board indication remains valid after the isolation signal?

Note: 1-RM-90-130 & 131, Containment Purge Rad Monitors

A. (1) Both rad monitors (90-130 & 131) must reach the high setpoint;
(2) VALID .

B. (1) Both rad monitors (90-130 & 131) must reach the high setpoint;
(2) NOT VALID.

C. (1) ONLY one rad monitor (90-130 OR 131) must reach the high setpoint;
(2) VALID.

D. (1) ONLY one rad monitor (90-130 OR 131) must reach the high setpoint;
(2) NOT VALID.

62. In accordance with AOP-M.06, "Loss of Spent Fuel Cooling," which ONE of the following identifies...

(1) The basis for the 40°F minimum spent fuel pit (SFP) temperature limit

and

(2) The condition that could result if the SFP temperature exceeded 192°F?

A. (1) Criticality analysis.
(2) Excessive gassing from the SFP.

B. (1) Criticality analysis.
(2) Spent Fuel Pool Cooling pump cavitation.

C. (1) Fuel reliability.
(2) Excessive gassing from the SFP.

D. (1) Fuel reliability.
(2) Spent Fuel Pool Cooling pump cavitation.

63. Which ONE of the following describes the function of the Unit 1 Manipulator Crane SENSOTEC load system interlock, SEN 8H, "light assembly" overload limit switch?

A. Stops upward motion of the hoist and illuminates the overload light.

B. Prevents the gripper from disengaging at any bridge location.

C. Stops hoist travel in the down direction, if the bridge is over the reactor core and the gripper is not disengaged.

D. Stops bridge travel at the edge of the reactor until the trolley is aligned with the transfer system centerline.

64. Which ONE of the following identifies...

(1) the signal that is used to derive the SG level control program setpoint

and

(2) the basis for the zero load SG level setpoint?

A. (1) Main Steam header pressure.
(2) To prevent flooding the Moisture Separators if a rapid load increase occurred.

B. (1) Main Steam header pressure.
(2) To limit containment pressure rise resulting from a steam line break accident.

C. (1) Main Turbine impulse pressure.
(2) To prevent flooding the Moisture Separators if a rapid load increase occurred

D. (1) Main Turbine impulse pressure.
(2) To limit containment pressure rise resulting from a steam line break accident.

65. Which ONE of the following choices completes both statements?

The Main Feedwater Pump Seal Water Injection System taps off of the condensate system _____ .

A sustained condition with low seal water _____ will cause a MFW Pump to automatically trip.

A. between the condenser and condensate booster pumps; injection pressure at 220 psig

B. between the condenser and condensate booster pumps; differential pressure at 10 psid

C. downstream of the condensate booster pumps; injection pressure at 220 psig

D. downstream of the condensate booster pumps; differential pressure at 10 psid

66. Using the attached ICS AFD TARGET DISPLAY screen printout, which ONE of the choices completes the following statements?

The AFD HIGH LIMIT is _____.

If _____ was/were outside of the limit, TS LCO 3.2.1, "Axial Flux Difference," action statement will be entered.

REFERENCE PROVIDED

A. 7.2;
any NIS channel

B. 7.2;
at least 2 NIS channels

C. 4;
any NIS channel

D. 4;
at least 2 NIS channels

67. Given the following:

- Unit 2 is in Mode 4 with plant heatup in progress.
- 2A-A Diesel Generator is being rolled in accordance with 0-SO-82-3, "Diesel Generator 2A-A." prior to the performance of a monthly surveillance.

Which ONE of the following identifies the status of the 2A-A Diesel Generator while it is being rolled and the maximum time frame that the start of the diesel generator can be delayed before the diesel generator pre-start roll must be re-performed?

	DG Status	Maximum time
A.	Operable	2 hours
B.	Operable	24 hours
C.	Inoperable	2 hours
D.	Inoperable	24 hours

68. Which ONE of the following identifies the reason the pressurizer manway must be open with air flow unobstructed whenever the reactor head is in place and the SG U-tubes are drained or pressurizer level is off scale low in accordance with 0-GO-9, "Refueling Procedure?"

    This ensures ....

    A. that on a loss of level in the RCS rapid refill capability using RHR pumps would be available.

    B. that a steam void in the RCS piping would not prevent natural circulation flow.

    C. an adequate vent exists to allow gravity fill from RWST on a station blackout event.

    D. an adequate vent exists to prevent a vacuum from being developed in the RCS piping on a rapid loss of RCS level.

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

Time	RCS Temp	PZR LIQ Space Temp
0200	553°F	650°F
0230	527°F	606°F
0300	505°F	560°F
0330	447°F	494°F
0400	402°F	440°F

Which ONE of the following identifies the cooldown rate that was exceeded and the maximum time allowed to restore the parameter/temperature to within limits in accordance with TS 3.4.9.1, "RCS Pressure and Temperature Limits" or TR 3.4.9.2, "Pressurizer Temperature Limits?"

A. RCS cooldown rate limits were exceeded; TS 3.4.9.1 action is required within a maximum of 30 minutes.

B. RCS cooldown rate limits were exceeded; TS 3.4.9.1 action is required within a maximum of 60 minutes.

C. PZR cooldown rate limits were exceeded; TR 3.4.9.2 action is required within a maximum of 30 minutes.

D. PZR cooldown rate limits were exceeded; TR 3.4.9.2 action is required within a maximum of 60 minutes.

70. During a prejob brief, an operator discovers a procedure step meets the critical step criteria listed in SPP-2.2, "Administration of Site Technical Procedures"; however, it is not identified as a critical step.

Which ONE of the choices completes the following statements?

The procedure step __(1)__.

Critical steps performed outside the control room require __(2)__, in accordance with OPDP-1, "Conduct of Operations."

A. (1) can be marked or highlighted to identify the step as a Critical Step and the procedure performed prior to revision.
(2) a Peer Check

B. (1) can be marked or highlighted to identify the step as a Critical Step and the procedure performed prior to revision.
(2) Independent Verification

C. (1) will require a revision prior to performance. (cannot be performed as is)
(2) a Peer Check

D. (1) will require a revision prior to performance. (cannot be performed as is)
(2) Independent Verification

71. Which ONE of the following identifies the incore flux detector requirements listed in 0-SI-OPS-000-011.0, "Containment Access Control During Modes 1 – 4," for an entry into lower containment or the annulus?

Required Incore Flux Detector Placement	Tagged with a...
A. Storage position only	Caution Order
B. Storage position only	Hold Order
C. Storage position or inserted to within 10 feet of the core	Caution Order
D. Storage position or inserted to within 10 feet of the core	Hold Order

72. Given the following:

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

Which ONE of the following identifies how the source check is verified and whether the isolation function of the Surge Tanks vent can be manually blocked during the source check in accordance with 1-SO-90-1, "Liquid Process Radiation Monitors?"

A. Observing the analog rate meter trending upscale;
Isolation function can be manually blocked.

B. Observing the analog rate meter trending upscale;
Isolation function can NOT be manually blocked.

C. Observing the bargraph display responds upscale;
Isolation function can be manually blocked.

D. Observing the bargraph display responds upscale;
Isolation function can NOT be manually blocked.

73. Which ONE of the following completes the following statement in accordance with the General Requirements in RCI-10, "ALARA Program?"

The _____ shall approve all Containment Building Entries during periods which are outside the pre-determined Containment Building entry schedule. Approvals shall be documented on an Attachment 6, "Containment Building Entry Request/Authorization."

A. Plant Manager

B. Radiation Operations Shift Supervisor

C. Radiation Protection Manager

D. Shift Manager

74. Which ONE of the following completes the following statement in accordance with EPIP-8, "Personnel Accountability and Evacuation?"

The "2-Person-Line-of-Sight Rule" is required _____ and requires that _____ .

A. any time EPIP-8 is implemented
only persons in vital areas must remain in visual contact with another person.

B. any time EPIP-8 is implemented
all persons in the protected area must remain in visual contact with another person.

C. when a Credible Insider Threat exists
only persons in vital areas must remain in visual contact with another person.

D. when a Credible Insider Threat exists
all persons in the protected area must remain in visual contact with another person.

75. Given the following:

- A LOCA has occurred on Unit 1 resulting in a Reactor Trip and Safety Injection.
- The crew is responding in accordance with E-1, "Loss of Reactor or Secondary Coolant."
- Annunciator 'LS-63-50A RWST LVL LO' (M6E, E-3) alarms.
- Containment Sump Level indicates 50%.
- 1-FCV-74-3 and 1-FCV-74-21, RHR PUMP SUCTION ISOL valves are open.
- 1-FCV-63-72 and 1-FCV-63-73, CNTMT SUMP SUCT TO RHR PUMP valves are closed.

Which ONE of the following identifies the status of the RHR suction alignment and the required operator response in accordance with ES-1.3, "Transfer to RHR Containment Sump?"

A. The valves are NOT aligned correctly.
Place 1-HS-63-72 and 1-HS-63-73, 'CNMT SUMP SUCT TO RHR PUMP' valves to OPEN to initiate the transfer of the RHR pump suction to the containment sump.

B. The valves are NOT aligned correctly.
Place 1-HS-74-3 and 1-HS-74-21, 'RHR PUMP SUCTION ISOL' valves to CLOSE to initiate the transfer of the RHR pump suction to the containment sump.

C. The valves are aligned correctly.
Ensure that auto swapover occurs when annunciator 'LS-63-50B RWST LVL LO-LO' (M6E, E4) alarms.

D. The valves are aligned correctly.
Ensure that auto swapover occurs when annunciator 'LS-63-104 CONTAINMENT SUMP FULL' (M6C, E-3) alarms.

76. Unit 2 was operating at 100% with the TDAFW Pump tagged out when a valid trip signal occurred; however, the reactor did not trip. All attempts to manually trip the reactor from the MCR were unsuccessful. The crew entered E-0, "Reactor Trip or Safety Injection," and the Immediate operator actions of FR-S.1, "Nuclear Power Generation/ATWS," have been completed.

- The following plant conditions currently exist:

	SG#1	SG#2	SG#3	SG#4
NR level	0%	0%	0%	0%
Max AFW flow	195 gpm	220 gpm	0 gpm	0 gpm

RCS pressure is 2285 psig and stable.
Emergency boration flow 45 gpm and supplied from the BAT.
Reactor Power 19% and slowly dropping.

Given the above conditions, which ONE of the following identifies required actions, in accordance with FR-S.1?

A. Do **NOT** perform the actions of FR-H.1 "Loss of Secondary Heat Sink;" RCPs are allowed to be tripped.

B. Perform the actions of FR-H.1, "Loss of Secondary Heat Sink;" RCPs are **NOT** allowed to be tripped.

C. Do **NOT** perform the actions of FR-H.1 "Loss of Secondary Heat Sink;" RCPs are **NOT** allowed to be tripped.

D. Perform the actions of FR-H.1, "Loss of Secondary Heat Sink;" RCPs are allowed to be tripped.

77. A small-break LOCA has occurred on Unit 1 and the following conditions exist:

- All RCPs were stopped in E-0, "Reactor Trip or Safety Injection."
- The crew is now performing E-1, "Loss of Reactor or Secondary Coolant."
- RCS subcooling 34°F.
- All SG levels 40-50% NR.
- RCS pressure 1125 psig & stable.
- PZR level 11% & slowly increasing.

Which ONE of the following identifies the next required procedure and the operational implications of a NOTE in this procedure prior to starting an RCP?

A. ES-1.1, "SI Termination;"
A steam bubble is required in the Pressurizer to minimize the pressure transient when cold water injected by the charging pump is circulated in the RCS during the RCP startup.

B. ES-1.1, "SI Termination;"
A steam bubble may exist in the Reactor Vessel Upper Head which could result in lowering Pressurizer level indication and lowering subcooling margin during the RCP startup.

C. ES-1.2, "Post LOCA Cooldown and Depressurization;"
A steam bubble is required in the Pressurizer to minimize the pressure transient when cold water injected by the charging pump is circulated in the RCS during the RCP startup.

D. ES-1.2, "Post LOCA Cooldown and Depressurization;"
A steam bubble may exist in the Reactor Vessel Upper Head which could result in lowering Pressurizer level indication and lowering subcooling margin during the RCP startup.

78. Given the following:

- Unit 2 was operating at 100% power with 2A-A RHR pump tagged for maintainence when a LOCA occurred. The reactor was tripped and safety injection was actuated.

Which ONE of the following identifies how a loss of CCS cooling to the 2B-B RHR pump seal water heat exchanger will affect continued pump operation and the required procedure if RWST level is 25% and lowering?

Note:
ES-1.3, "Transfer to RHR Containment Sump"
ECA-1.1, "Loss of RHR Sump Recirculation"

A. 2B-B RHR pump can run indefinitely; ES-1.3

B. 2B-B RHR pump must be immediately removed from service; ES-1.3

C. 2B-B RHR pump can run indefinitely; ECA-1.1

D. 2B-B RHR pump must be immediately removed from service; ECA-1.1

79. Given the following:

- Both Units in service at 100% power with all equipment in a normal alignment.
- Component Cooling Water (CCS) for the Spent Fuel Pool heat exchangers is being supplied from Unit 2.

Which ONE of the following identifies...

(1) a condition that will cause a loss of CCS Train B on both units

and

(2) the procedure section that restores <u>two</u> operable CCS trains to <u>one</u> unit in accordance with AOP-M.03, "Loss of Component Cooling Water?"

Note:
0-SO-70-1, "Component Cooling Water System "B" Train"

A. (1) Loss of 480v Shutdown Board 1A2-A
(2) 0-SO-70-1, Section 8.6, "Swapping C-S CCS Pump Power Supplies."

B. (1) Loss of 480v Shutdown Board 1A2-A
(2) 0-SO-70-1, Section 8.3, "Swapping 1B-B CCS Pump From "A" Train to "B" Train and Back Again."

C. (1) Loss of 480v Shutdown Board 2B2-B
(2) 0-SO-70-1, Section 8.6, "Swapping C-S CCS Pump Power Supplies."

D. (1) Loss of 480v Shutdown Board 2B2-B
(2) 0-SO-70-1, Section 8.3, "Swapping 1B-B CCS Pump From "A" Train to "B" Train and Back Again."

80. Given the following:

- Both Units are at 100% power.
- A loss of all Offsite Power occurs.
- AOP-P.01, "Loss of Offsite Power," is implemented.
- The Transmission Operator reports that it will be at least 2 hours before offsite power restoration can be attempted.

In accordance with AOP-P.01, which ONE of the following identifies...

(1) the staffing requirements for the TSC and OSC

and

(2) the Appendix that is required to establish the preferred source of Offsite power?

	TSC and OSC staffing	AOP-P.01 Appendix to be used
A.	Required	Appendix D, "Energizing 161Kv Switchyard from Chickamauga No.1 Line."
B.	Required	Appendix E, "Energizing 161Kv Switchyard from Watts Bar Hydro Line."
C.	**NOT** required	Appendix D, "Energizing 161Kv Switchyard from Chickamauga No.1 Line."
D.	**NOT** required	Appendix E, "Energizing 161Kv Switchyard from Watts Bar Hydro Line."

81. Given the following:

- Both units are at 100%.

- The Transmission Operator informs the control room staff that the grid/offsite power conditions are in an unanalyzed condition due to the total system load exceeding the maximum analyzed system load for the current transmission system conditions.

- Capacitor Yard Bus Voltage is :
  A 164.3
  B 164.2
  C 164.3

- 0-REC-241-2, Frequency Recorder Potential 120v AC indicates 60 Hz.

Which ONE of the following identifies the required procedure and the current operability status of offsite power sources?

Procedure	Status of Offsite Power
A. GOI-6, "Apparatus Operation" Section AA, "Actions for Condition Red or Yellow Offsite Power Sources."	Both sources still operable.
B. GOI-6, "Apparatus Operation" Section AA, "Actions for Condition Red or Yellow Offsite Power Sources."	Both sources immediately inoperable.
C. 0-GO-5, "Normal Power Operation" Appendix E, "Manual Operation of the Voltage Regulator."	Both sources still operable.
D. 0-GO-5, "Normal Power Operation" Appendix E, "Manual Operation of the Voltage Regulator."	Both sources immediately inoperable.

82. Given the following:

- Unit 1 is at 8% being raised to 18% by control rod withdrawal.
- While control rod withdrawal is in progress, the following annunciator on 1-M-4 alarms:

COMPUTER ALARM ROD DEV & SEQ NIS PWR RANGE TILTS (M4B,D4)

Which ONE of the following identifies...

(1) a condition that will cause this alarm

and

(2) the Technical Specification(s) that has/have a more frequent surveillance requirement if annunciator (M4B,D4) is inoperable?

Note:
TS 3.1.3.1, Movable Control Assemblies Group Height
TS 3.1.3.6, Control Rod Insertion Limits

A. (1) Rods within 12 steps of the control rod Lo-Lo insertion limit.
(2) TS 3.1.3.1 only

B. (1) Rods within 12 steps of the control rod Lo-Lo insertion limit.
(2) Both TS 3.1.3.1 and TS 3.1.3.6

C. (1) Greater than a 12 step difference between the actual rod position and the bank demand counter.
(2) TS 3.1.3.1 only

D. (1) Greater than a 12 step difference between the actual rod position and the bank demand counter.
(2) Both TS 3.1.3.1 and TS 3.1.3.6

83. Given the following:

- Unit 1 was operating at 100% power near EOL when a Reactor Trip occurred.
- While performing ES-0.1, "Reactor Trip Response," the crew initiated EA-68-4, Section 4.2, "Emergency Boration from BAT" due to low RCS temperature.
- After placing 1-HS-62-138A, Emergency Boration FCV to the OPEN position, the OATC immediately released the handswitch as soon as minimum required flow was observed on 1-FI-62-137A, Emerg Boration Flow.

Which ONE of the following identifies...

(1) the indicating light(s) that will be lit on 1-HS-62-138A five minutes after the handswitch was released

and

(2) whether one operable Boric Acid Storage Tank (BAT) has sufficient volume to satisfy the Shutdown Margin requirement for placing the unit in Mode 5 from peak xenon conditions in accordance with Technical Requirement 3.1.2 Basis?

A. (1) RED indicating light, only.
(2) One BAT can meet the requirement.

B. (1) RED indicating light, only.
(2) One BAT will **NOT** meet the requirement.

C. (1) Both the RED and GREEN indicating lights lit.
(2) One BAT can meet the requirement.

D. (1) Both the RED and GREEN indicating lights lit.
(2) One BAT will **NOT** meet the requirement.

84. Given the following:

- Unit 1 is at 40% power and N-35 fails due to one blown fuse.

Which ONE of the following N-35 drawer indications means that the IR high flux reactor trip signal can **not** be manually bypassed using the Level Trip Switch and identifies the maximum time allowed by Tech Specs to restore N-35 to operable status?

A. Control Power light is DARK;
N-35 must be restored operable within 7 days or be in Hot Standby within the next 6 hours.

B. Control Power light is DARK;
N-35 must be restored operable within 30 days or be in Hot Standby within the next 6 hours.

C. Instrument Power light is DARK;
N-35 must be restored operable within 7 days or be in Hot Standby within the next 6 hours.

D. Instrument Power light is DARK;
N-35 must be restored operable within 30 days or be in Hot Standby within the next 6 hours.

85. A LOCA occurred on Unit 1 and core exit T/Cs have exceeded 1200°F. The crew has performed the following actions:

- RCPs #1 and #2 have been started.
- SG depressurization has been commenced.

During the depressurization, the following conditions were noted:

- All SG NR levels dropped to <10% NR.
- Core exit T/Cs are 1210°F and lowering.

Which ONE of the choices completes the following statement in accordance with FR-C.1, "Inadequate Core Cooling?"

The depressurization of the SGs is ____(1)____ and the required action is to _____(2)_____.

A. (1) required to continue;
(2) remain in FR-C.1, "Inadequate Core Cooling."

B. (1) required to continue;
(2) enter SACRG-1, "Severe Accident Control Room Guideline Initial Response."

C. (1) **NOT** allowed to continue;
(2) remain in FR-C.1, "Inadequate Core Cooling."

D. (1) **NOT** allowed to continue;
(2) enter SACRG-1, "Severe Accident Control Room Guideline Initial Response."

86. Given the following:

- Unit 1 is shutdown with RCS temperature at 170°F with Train A RHR in service.
- All RCS loops are filled and all RCPs are off.
- The 1A RHR pump trips and the crew places Train B RHR in service.
- SGs levels are:
  SG #1 at 8% WR
  SG #2 at 15% WR
  SG #3 at 9% WR
  SG #4 at 6% WR

Which ONE of the following identifies the minimum required action (if any) in accordance with Tech Spec 3.4, Reactor Coolant System, and also identifies the Tech Spec Basis for the requirement that one RHR loop be in operation for this plant mode?

A. (1) No action required;
   (2) Provides sufficient core decay heat removal in the event one control rod bank is accidently withdrawn.

B. (1) No action required;
   (2) Ensures that any reactivity changes associated with boron reduction are within the capability of operator recognition and control.

C. (1) Immediately raise one additional SG level to > 10% WR.
   (2) Provides sufficient core decay heat removal in the event one control rod bank is accidently withdrawn.

D. (1) Immediately raise one additional SG level to > 10% WR.
   (2) Ensures that any reactivity changes associated with boron reduction are within the capability of operator recognition and control.

87. Given the following:

- Unit 1 at 100% power.
- The following alarm is received:
  PROTECTION SET CHANNEL SET FAILURE (M6A,C3)
- The PROTECTION SET TROUBLE status light is LIT on 1-M-5.
- Crew enters AOP-I.11, "Eagle 21 Malfunction."
- SSPS status lights indicate a failure of Protection Set 1 Rack 2.
- The crew implements AOP-I.02, "RCS Loop RTD Instrument Malfunction," as directed by AOP-I.11.

Which ONE of the following identifies...

(1) the Eagle 21 Subsystem failure that has occurred

and

(2) the maximum time allowed for placing affected channel in the tripped condition in accordance with Tech Specs?

A. (1) Test Sequence Processor (TSP)
   (2) 4 hours

B. (1) Test Sequence Processor (TSP)
   (2) 6 hours

C. (1) Loop Control Processor (LCP)
   (2) 4 hours

D. (1) Loop Control Processor (LCP)
   (2) 6 hours

88. Given the following:

- Unit 1 is at 56% power with turbine control in 'OPER AUTO' and 'IMP OUT'.
- SG #4 has an inoperable safety valve and all required actions have been taken in accordance with Technical Specification (TS) 3.7.1.1.
- A second safety valve on SG #4 subsequently develops a leak causing power to rise to 57%.
- The decision has been made to gag the leaking safety valve.

Which ONE of the following predicts the initial generator megawatt response to the SG #4 safety valve leakage and identifies additional required action, if any, in accordance with TS 3.7.1.1?

A. (1) Generator megawatt output will remain constant.
(2) The Power Range Neutron Flux High Setpoint must be adjusted.

B. (1) Generator megawatt output will remain constant.
(2) **NO** additional required action for TS 3.7.1.1.

C. (1) Generator megawatt output will lower.
(2) The Power Range Neutron Flux High Setpoint must be adjusted.

D. (1) Generator megawatt output will lower.
(2) **NO** additional required action for TS 3.7.1.1.

89. Given the following plant conditions:

- Both Unit 1 and Unit 2 are at 100% power.
- Diesel Generator 1A-A is paralleled to the grid and loaded to rated load for a performance of 1-SI-OPS-082-007.A, "Electrical Power System Diesel Generator 1A-A."
- A Loss of Offsite Power occurs.
- The 6.9 Kv Shutdown Board 1A-A Emergency Feeder Breaker 1912 overcurrent (50) relay actuates.
- Transmission Operator reports that offsite power restoration will take 1 hour.

Which ONE of the following describes ...

(1) how breaker 1912 will respond,

and

(2) the <u>minimum</u> required Radiological Emergency Plan (REP) declaration?

REFERENCE PROVIDED

	(1) <u>Breaker 1912 Response</u>	(2) <u>REP EPIP Status</u>
A.	Breaker 1912 will trip and reclose.	ALERT
B.	Breaker 1912 will trip and reclose.	NOUE
C.	Breaker 1912 will trip and remain open.	ALERT
D.	Breaker 1912 will trip and remain open.	NOUE

90. Given the following

- Unit 1 at 100% power with Steam Generator Blowdown (SGBD) in service to the Cooling Tower Blowdown.
- The following alarm is received:
  "1-RA-120/121B STM GEN BLDN LIQ SAMP MON INSTR MALFUNC" (M12A, B6), due to sample flow less than 1 gpm.

Which ONE of the following identifies ...

(1) how the SGBD system will be affected

and

(2) the parameter that determines the frequency of sampling required by the ODCM to allow the release to Cooling Tower Blowdown <u>without</u> an operable SGBD radiation monitor?

A. (1) SGBD flow will continue to the Cooling Tower Blowdown.
(2) The SGBD flow rate.

B. (1) SGBD flow will continue to the Cooling Tower Blowdown.
(2) Specific activity of the secondary coolant.

C. (1) SGBD flow will be automatically terminated.
(2) The SGBD flow rate.

D. (1) SGBD flow will be automatically terminated.
(2) Specific activity of the secondary coolant.

91. Which ONE of the choices completes the following statements?

Hydrogen igniters are **NOT** allowed to be placed in service if containment hydrogen concentration is greater than or equal to _____ in accordance with EOPs.

The 'A' train hydrogen igniters are _____ if one igniter fails to energize during quarterly surveillance testing in accordance with TS 3.6.4.3, "Hydrogen Mitigation System."

A. 4%;
still operable

B. 6%;
inoperable

C. 4%;
inoperable

D. 6%;
still operable

92. Given the following:

- Unit 1 is operating at 100% power.
- Condenser Vacuum Pump Rad Monitor, 1-RM-90-119, is out of service for maintenance.

If Condenser Vacuum Pump Rad Monitor, 1-RM-90-99, fails, which ONE of the following identifies....

(1) the required ODCM action(s)

and

(2) the required NRC report if the ODCM action for restoring a monitor is **NOT** completed within the allowed time?

A. (1) Take grab samples at least once per 12 hours and analyze for noble gas activity.
(2) Report as License Event Report (LER).

B. (1) Take grab samples at least once per 12 hours and analyze for noble gas activity.
(2) Explain in the next Annual Radioactive Effluent Report.

C. (1) Remove the Condenser Vacuum Pumps from service within 1 hour in accordance with ODCM 1.0.3.
(2) Report as License Event Report (LER).

D. (1) Remove the Condenser Vacuum Pumps from service within 1 hour in accordance with ODCM 1.0.3.
(2) Explain in the next Annual Radioactive Effluent Report.

93. Given the following:

- The operating crew has just been informed of a failure of the Chickamauga Dam and the lake level is dropping.
- The crew enters AOP-N.04, "Break of Downstream Dam."

Which ONE of the following identifies...

(1) The maximum time allowed to notify the NRC of the condition

and

(2) The lake level when the CCW pumps first lose suction?

A. (1) 4 hours after a plant shutdown is initiated;
(2) 639 ft.

B. (1) 1 hour after a NOUE is declared;
(2) 639 ft.

C. (1) 4 hours after a plant shutdown is initiated;
(2) 668 ft.

D. (1) 1 hour after a NOUE is declared;
(2) 668 ft.

94. A section of caustic piping between the caustic tank and the condensate demin regeneration system is to be replaced; however, there is only one valve in the flow path for isolation of the piping section coming from the caustic tank.

    Which ONE of the following identifies the procedure for establishing safe work conditions, including requirements due to only one isolation valve being available?

    A. SPP-10.2, "Clearance Procedure to Safely Control Energy"
    Operations Manager and Maintenance Manager approval is required before issue.

    B. MMDP-12, "Lockout/ Tagout"
    Operations Manager and Maintenance Manager approval is required before issue.

    C. SPP-10.2, "Clearance Procedure to Safely Control Energy"
    Single valve isolation must be documented and communicated to the clearance holder before issue.

    D. MMDP-12, "Lockout/ Tagout"
    Single valve isolation must be documented and communicated to the Lockout/Tagout holder before issue.

95. Unit 1 is in Mode 3 preparing to enter Mode 2. While performing 1-SO-3-2, Attachment 2, "Auxiliary Feedwater System Valve Checklist 1-3-2.02," the breaker for 1-FCV-1-16, S/G 4 Steam Supply to Aux Feedwater Pump Turbine, is discovered to be open.

Which ONE of the following identifies...

(1) the required verification method for re-positioning the breaker in accordance with the checklist,

and

(2) if the breaker can NOT be closed, whether the provisions of LCO 3.0.4(b) can be applied to allow entry to Mode 2?

	Verification Method	Mode 2 Entry
A.	Concurrent Verification	Can be entered
B.	Concurrent Verification	Can **NOT** be entered
C.	Independent Verification	Can be entered
D.	Independent Verification	Can **NOT** be entered

96. Unit 2 is operating at 100% power and the 2A-A Diesel Generator was declared inoperable at 0800.

Which ONE of the following completes both statements?

The latest time that 0-SI-OPS-082-007.W, "AC Electrical Power Source Operability Verification," is allowed to be completed in accordance with Tech Specs is _____.

If the 0-SI-OPS-082-007.W is not performed by this time, then this event _____ required to be reported to the NRC in accordance with SPP-3.5, "Regulatory Reporting Requirements."

A. 09:00; is

B. 09:15; is

C. 09:00; is **NOT**

D. 09:15; is **NOT**

97. Given the following:

- Both Units in service 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 Risk Level classification and operability status of the 'A' Train ERCW Headers in accordance with SPP-7.3, "Work Activity Risk Management Process," and Tech Specs, respectively?

	Minimum Required Risk Level	Operability Status
A.	Medium	'A' train ERCW inoperable
B.	Medium	'A' train ERCW operable
C.	High	'A' train ERCW inoperable
D.	High	'A' train ERCW operable

98. Given the following:

- Unit 1 was operating at a 100% power when a LOCA occurred.

Which ONE of the following completes the statements below as they pertain to the Upper Containment Radiation Monitors (1-RE-90-273 and 1-RE-90-274) in accordance with EPIP-1, "Emergency Plan Classification Flowchart?"

The Upper Containment Radiation Monitors are required to assess the integrity of _____ barriers in the fission product barrier matrix.

The Upper Containment Radiation Monitors should be used for trending only until _____ has been stable for approximately 5 minutes after a steam line break or LOCA.

A. 2; containment temperature

B. all 3; containment temperature

C. 2; source range nuclear instrumentation

D. all 3; source range nuclear instrumentation

99. Which choice completes the following statement in accordance with EPM-4, "User's Guide?"

In the event of a fire or medical emergency with _____ at the minimum crew staffing level, the _____ may recall the Incident Commander (IC) to the MCR if necessary to mitigate events in progress.

A. Unit Operators;
Unit Supervisor

B. Unit Operators;
Shift Manager

C. Unit Supervisors;
Unit Supervisor

D. Unit Supervisors;
Shift Manager

100. Given the following:

- A LOCA has occurred on Unit 1 and FR-C.2, "Degraded Core Cooling," has been entered and a depressurization of the Steam Generators is being performed.
- The STA subsequently reported a Red Path to FR-P.1, "Pressurized Thermal Shock."

Which ONE of the following identifies the required depressurization rate in FR-C.2 and the required action in accordance with Functional Restoration Procedures?

A. Less than 100°F/hr;
Suspend implemention of FR-P.1 until FR-C.2 is exited.

B. Maximum achievable rate;
Immediately transition to FR-P.1.

C. Less than 100°F/hr;
Immediately transition to FR-P.1.

D. Maximum achievable rate;
Suspend implemention of FR-P.1 until FR-C.2 is exited.

Sequoyah 2010
NRC Examination
SRO Reference Package

1. Steam Tables
2. Mollier diagram
3. 1-SI-OPS-000-002.0 Shift Log pg 19
4. Unit 2 Curve 2 PTS Limits
5. ICS AFD TARGET DISPLAY
6. EPIP-1, Emergency Plan Classification Matrix, page 21

APPENDIX A
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	Surveillance Ref.	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
Nuclear Instrumentation	4.3.1.1.1.A.2 4.3.1.1.1.A.5	1,2	26	OPERABLE	N-41	%			
					N-42	%			
					N-43	%			
					N-44	%			
		1,2	27	OPERABLE	N-35	%			
					N-36	%			

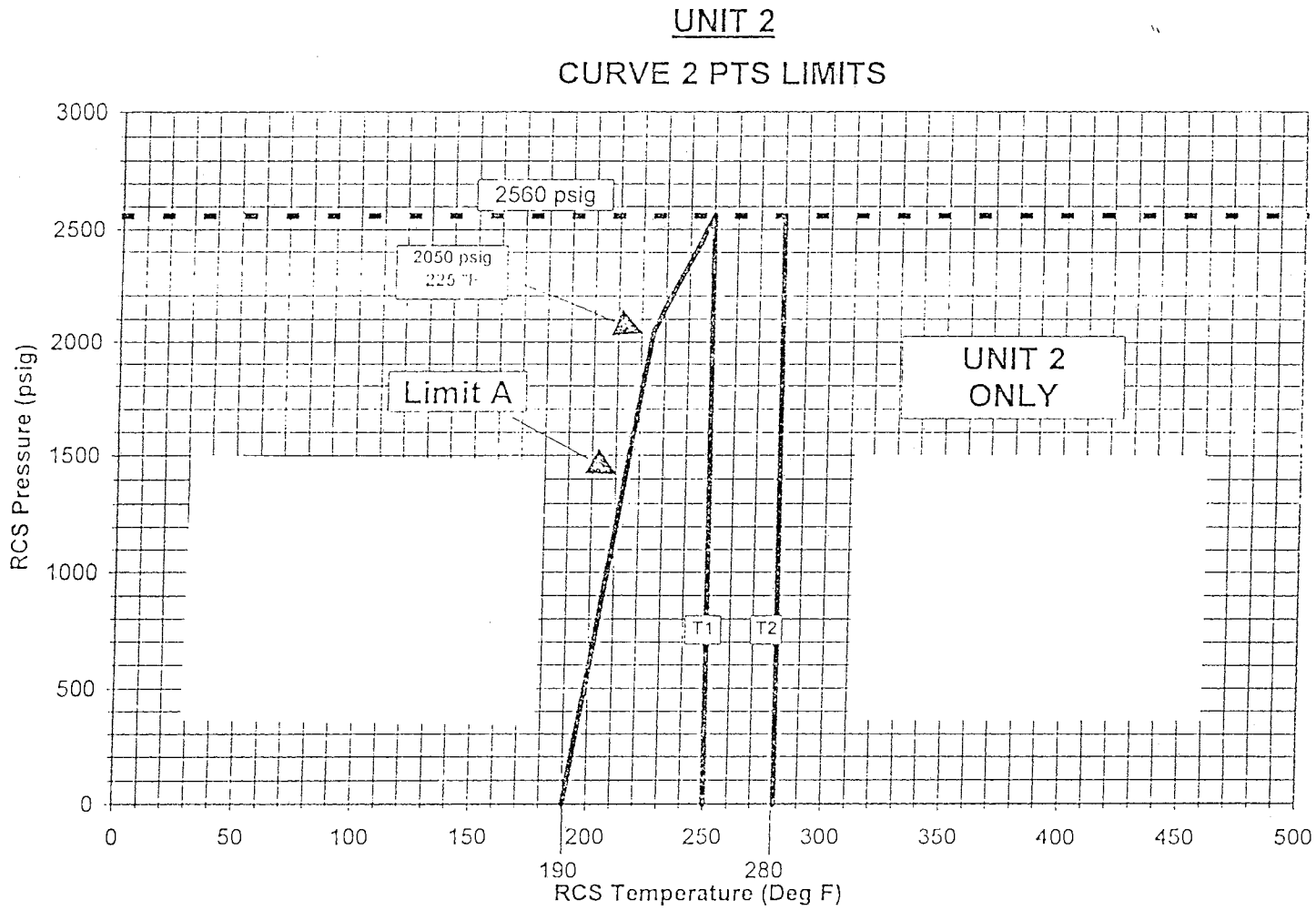
UO/RO Review Initials

NOTES

26. **COMPARE** the four power range channels to each other. This constitutes an adequate "channel check" and acceptable deviation between channels is equal to or less than 3.5%.

27. **COMPARE** the two intermediate range channels located on panel 1-M-4. Readings on both channels will provide evidence that the instruments are operable. Agreement between the readings provides additional verification of channel operability. Control Board indicators are verified operable if they are reading within 0.75 decades of each other. Use the following examples as a guide to determine the .75 decade deviation. The following equation will convert the IRM Indicated % RTP to a voltage value which can be used to determine the IRM indication difference and to determine if those readings are within the .75 decades acceptance limit. The IRM 10 decade scale is equal to 10 volts, thus each decade is equivalent to 1 volt.

Example #1	LOG (% IRM RTP) = Voltage	N-35 is indicating 30% RTP	Log (% IRM RTP) = Voltage Log (30%) = Voltage 1.4771 = 1.4771 volts	Difference = 1.6021 - 1.4771 = **0.125**	Difference between N-35 and N-36 is **0.125** which is within the .75 decade acceptance range.
		N-36 is indicating 40% RTP	Log (% IRM RTP) = Voltage Log (40%) = Voltage 1.6021 = 1.6021 volts		
Example #2	LOG (% IRM RTP) = Voltage	N-35 is indicating 15% RTP	Log (% IRM RTP) = Voltage Log (15%) = Voltage 1.176 = 1.176 volts	Difference = 1.929 - 1.176 = **0.753**	Difference between N-35 and N-36 is **0.753** which is outside the .75 decade acceptance range. Notify the UO and SRO of the deviation.
		N-36 is indicating 85% RTP	Log (% IRM RTP) = Voltage Log (85%) = Voltage 1.929 = 1.929 volts		


UNIT 2
CURVE 2 PTS LIMITS
RCS Pressure (psig)
RCS Temperature (Deg F)
2560 psig
2050 psig
225 °F
Limit A
UNIT 2
ONLY
T1
T2
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
190
280

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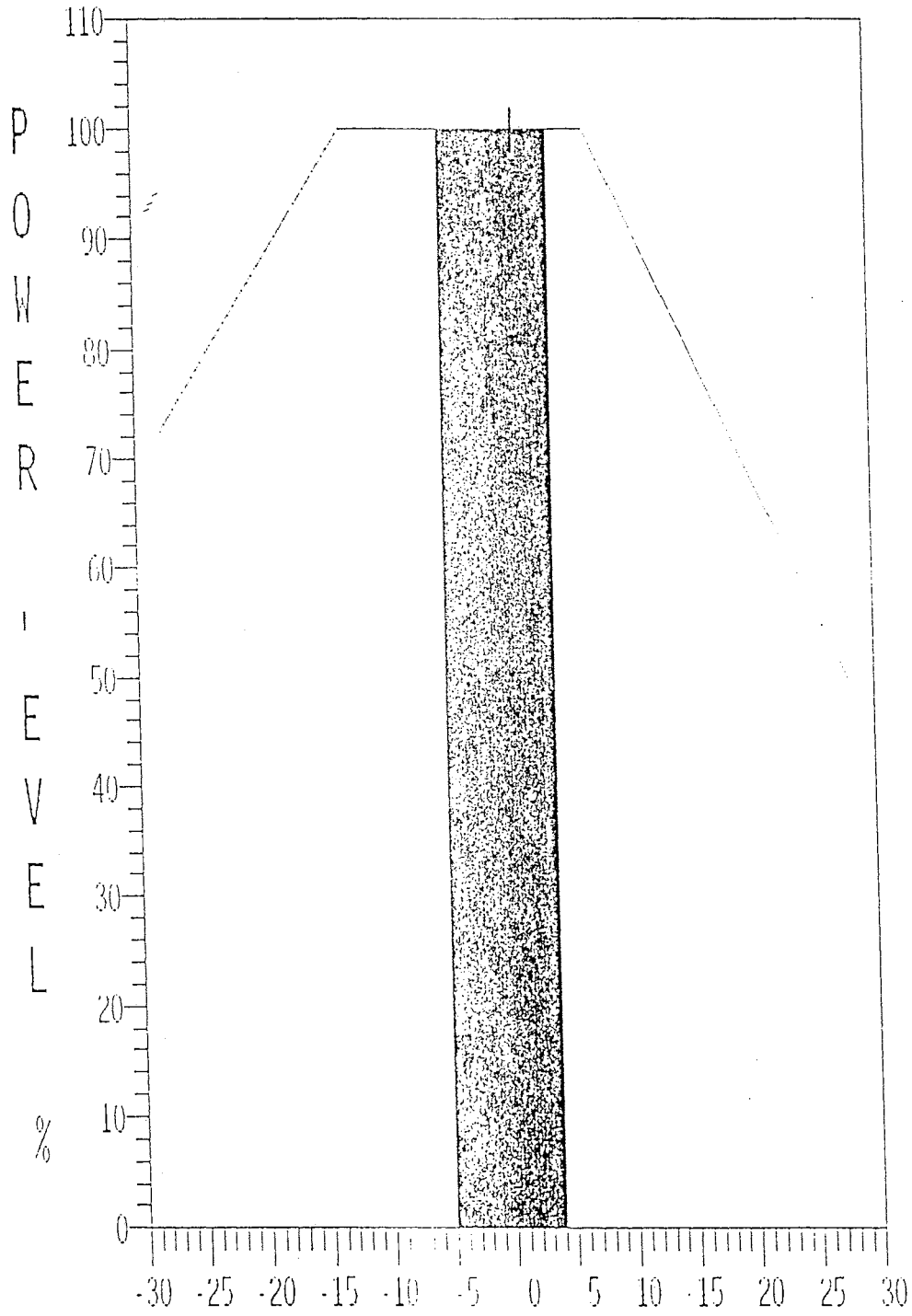
SCHPZ1FD

SELECT FUNC. KEY OR TURN-ON CODE INDET



POWER LEVEL	100.0 %
CTRL BANK D (STEPS)	220.0
AFD NIS CHANNEL 43	1.2 %
AFD NIS CHANNEL 42	1.2 %
AFD NIS CHANNEL 44	1.2 %
AFD NIS CHANNEL 41	1.1 %
NIS ACTUAL AFD	1.2 %
NIS TARGET AFD	0.0 %

AFD LOW LIMIT

AFD HIGH LIMIT

CONTROL BAND LOW LIM

CONTROL BAND HIGH LIM

TIME OUT OF BAND ACCUM (MIN) 0.

PREVIOUS (F7) | CANCEL (ESC) | F1=CLEAR | F2= | F3= | F4= | F5= | F6=

PG UP PG DN

3.1 Loss of AC (Power Ops)			3.2 Loss of AC (Shutdown)	
Mode	Initiating / Condition		Mode	Initiating / Condition
1, 2, 3, 4	**Prolonged loss of all offsite and all onsite AC power to either unit.** *(1 and 2):* 1. Both unit related 6.9 KV shutdown boards de-energized for > 15 minutes. 2. (a or b) a. Core Cooling Status Tree Red or Orange Path OR b. Restoration of either a 6.9 KV shutdown board or a 6.9 KV unit board is not likely within 4 hours of the loss.	GENERAL		*Not Applicable.*
1, 2, 3, 4	**Loss of all offsite and all onsite AC power to either unit for > 15 Minutes.** 1. Both unit related 6.9 KV shutdown boards de-energized for > 15 minutes.	SITE AREA		*Not Applicable.*
1, 2, 3, 4	**Loss of offsite power to either unit with degraded onsite AC power for > 15 minutes.** *([1a and 1b] or 2):* 1a. All four (4) 6.9KV unit boards de-energized for > 15 minutes. 1b. One (1) unit related 6.9 KV shutdown board de-energized for > 15 minutes. OR 2. Any AC power condition lasting > 15 minutes where a single additional failure will result in a unit blackout.	ALERT	5, 6, DEFUELED	**UNPLANNED loss of all offsite and all onsite AC power to either unit for > 15 minutes.** 1. Both unit related 6.9KV shutdown boards de-energized for > 15 minutes. *Also Refer to "Loss of Shutdown Systems" (6.1) and continue in this column.*
1, 2, 3, 4	**Loss of offsite power to either unit for > 15 minutes.** *(1 and 2):* 1. All four (4) 6.9KV unit boards de-energized for > 15 minutes. 2. Both unit related 6.9KV shutdown boards are energized.	NOUE	5, 6, DEFUELED	**UNPLANNED loss of all offsite power to either unit for > 15 minutes.** *(1 and 2):* 1. All four (4) 6.9KV unit boards de-energized for > 15 minutes. 2. One (1) unit related 6.9KV shutdown board de-energized for > 15 minutes.