Question: 76

Given the following conditions:

- Unit 1 was at 100% power.
- The reactor tripped due to a loss of offsite power.
- A loss of all feedwater occurred and the crew transitioned to 1-FR-H.1, Response to Loss of Secondary Heat Sink.
- Operators have not been able to restore a source of feedwater and are establishing RCS bleed and feed in accordance with 1-FR-H.1.
- Operators were able to open ONLY ONE PRZR PORV.

Based on these conditions, complete the following:

1) The RCS bleed path is _____.
2) Once the heat sink is restored the crew will transition to _____.

A. 1) inadequate
   2) 1-ES-1.1, SI Termination.

B. 1) adequate
   2) 1-E-1, Loss of Reactor or Secondary Coolant, then 1-ES-1.2, Post-LOCA Cooldown and Depressurization.

C. 1) adequate
   2) 1-ES-1.1, SI Termination.

D. 1) inadequate
   2) 1-E-1, Loss of Reactor or Secondary Coolant, then 1-ES-1.2, Post-LOCA Cooldown and Depressurization.

Question: 77

Initial Conditions:

- Unit 1 is operating at 100%.
- During performance of Channel II testing, Pressurizer Pressure Channel II, 1-RC-PT-1456, High Pressure Reactor trip bistable failed.

In accordance with Tech Spec Table 3.7-1 (see excerpt below);

TABLE 3.7-1
REACTOR TRIP
INSTRUMENT OPERATING CONDITIONS

Functional Unit	Total Number Of Channels	Minimum OPERABLE Channels	Channels To Trip	Permissible Bypass Conditions	Operator Action
5. Overtemperature ΔT*	3	2	2		6

With the number of operable channels less than __(1)__, the inoperable channel must be placed in __(2)__ with 72 hours in accordance with Operator Action 6.

A. (1) minimum
   (2) trip

B. (1) total
   (2) trip

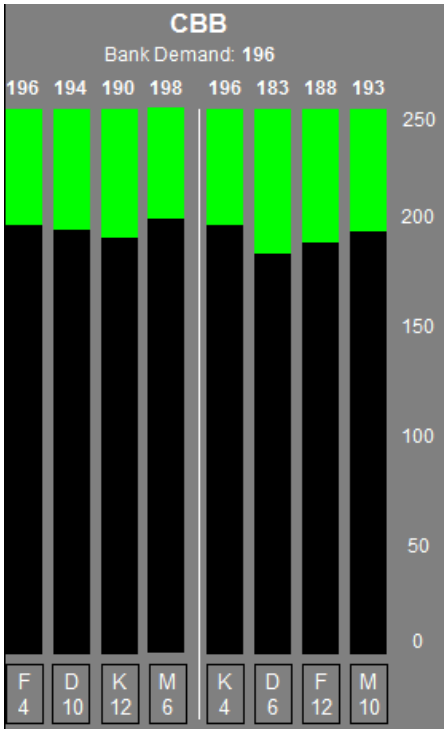
C. (1) minimum
   (2) bypass

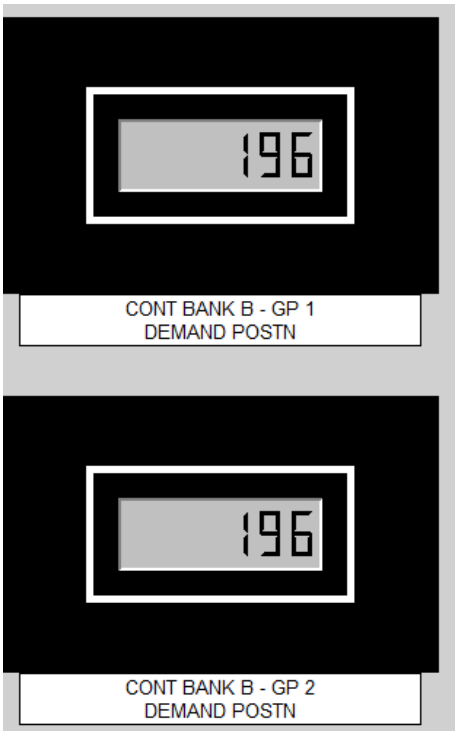
D. (1) total
   (2) bypass

Question: 78

Given the following conditions:

- Unit 1 is performing physics testing following a refueling outage.
- Isothermal Temperature Coefficient determination is in progress.
- RCS temperature is currently being lowered by 3°F.
- MCR indications are:





Which ONE of the following completes the statements:

1) Control Rod D-6 ____ operable.
2) One of the bases for Rod Position Indication is to _____.

A.	1) is not	2) provide required SDM
B.	1) is not	2) limit the reactivity inserted by an ejected rod
C.	1) is	2) limit the reactivity inserted by an ejected rod
D.	1) is	2) provide required SDM

Question: 79

With the plant at 100% power, a loss of all feedwater occurs.

- The SGs reach the LO-LO level reactor trip setpoint, but the reactor fails to trip.
- The crew is NOT successful at tripping the reactor manually.
- The crew enters FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION - ATWS.

Which of the following completes the following statements:

1) The operator completes step 2, “Manually Trip The Turbine” by verifying ALL Turbine Stop valves closed or _____.

2) The Shift Manager is required to declare a (an) _____ for this event.

(REFERENCE PROVIDED)

A. 1. reducing load using the limiter
   2. Alert (SA2.1)

B. 1. checking all Turbine Governor valves closed
   2. Alert (SA2.1)

C. 1. reducing load using the limiter
   2. Site Area Emergency (SS2.1)

D. 1. checking all Turbine Governor valves closed
   2. Site Area Emergency (SS2.1)

Question: 80

Initial Conditions:

Unit 2 is operating at 100% power.

- 2-AP-16.00, Excessive RCS Leakage, in progress due to RCS leakage of 30 gpm into the "C" SG.
- Conditions degrade, and the RO is directed to trip the reactor and perform 2-E-0 due to a rise in RCS leakage.

Current Conditions:

- Over the next 15 minutes RCS leakage is as follows:

At Rx Trip	10 min. after Rx Trip	20 min. after Rx Trip	30 min. after Rx Trip
60 gpm	70 gpm	165 gpm	300 gpm

Using the procedures below, which of the following is the correct procedure sequence following performance of 2-E-0 immediate actions?

2-ES-0.1	Reactor Trip Response
2-E-3	Steam Generator Tube Rupture
2-AP-24.00	Minor SG Tube Leakage
2-AP-24.01	Large SG Tube Leak

A. 1) 2-ES-0.1, 2-AP-24.00, 2-E-3.

B. 1) 2-AP-24.01, 2-E-0, 2-E-3.

C. 1) 2-ES-0.1, 2-AP-24.01, 2-E-0, 2-E-3.

D. 1) 2-AP-24.00, 2-AP-24.01, 2-E-0, 2-E-3.

Question: 81

Initial conditions:

- Unit 1 is at 100%
- Przr PORVS 1-RC-PCV-1455C and 1-RC-PCV-1456 are isolated due to Leak by.
- Air ejector Rad Monitor is alarming in ALERT and HIGH.
- N-16 Rad Monitors are alarming in ALERT and HIGH.
- 1-MS-RR-193, N16 Recorder, indicates 200 gpd on all 3 SGs.
- Reactor Trip and SI actuated 30 seconds after Rad Monitors alarmed.

Current conditions (3 minutes from Rx. Trip):

- All SG pressure indications are approximately 980 psig and rising slowly.
- AFW flow is 200 gpm to each SG.
- All SGs are steaming equally through the Steam Dumps.
- Trend of SG levels from the time of Rx Trip to Now:

SG	Rx Trip	Trip + 1 min.	Trip + 2 min.	Trip + 3 min.
SG 'A' WR	55.3%	44.1%	45.0%	46.1%
SG 'B' WR	56.5%	46.1%	48.5%	51.0%
SG 'C' WR	56.3%	43.2%	44.5%	45.8%

Which of the following answers the questions below:

1) How many Steam Generators are ruptured?
2) Assuming no other failures, which procedure will be performed following 1-E-3, Steam Generator Tube Rupture?

A. 1) Three.
   2) 1-ES-3.1, POST SGTR COOLDOWN USING BACKFILL.

B. 1) Three.
   2) 1-ECA-3.3, SGTR without PRZR PRESS. CONTROL.

C. 1) One.
   2) 1-ES-3.1, POST SGTR COOLDOWN USING BACKFILL.

D. 1) One.
   2) 1-ECA-3.3, SGTR without PRZR PRESS. CONTROL.

Question: 82

Unit 1 is at 100% Power.

- 1-FW-P-1A and 1-FW-P-1B (A & B Main Feed Pumps) trip.
- A Reactor Trip occurs.
- Neither MDAFW pump (1-FW-P-3A and 1-FW-P-3B) automatically starts.
- All other components operate as designed.

1) Following transition out of 1-E-0, what procedure will address manually starting the MDAFW pumps?
2) In accordance with the Tech Spec excerpt below, _____ hours are allowed to restore to operable status.

TABLE 3.7-2 (Continued)
ENGINEERED SAFEGUARDS ACTION
INSTRUMENT OPERATING CONDITIONS

Functional Unit	Total Number Of Channels	Minimum OPERABLE Channels	Channels To Trip	Permissible Bypass Conditions	Operator Actions
3. AUXILIARY FEEDWATER (continued)					
e. Trip of main feedwater pumps - start motor driven pumps	2/MFW pump	1/MFW pump	2-1 each MFW pump		24

A. 1) 1-ES-0.1.
   2) 48

B. 1) 1-FR-H.1.
   2) 48

C. 1) 1-ES-0.1.
   2) 72

D. 1) 1-FR-H.1
   2) 72

Question: 83

Both Units operating at 100% power.

- A loss of off-site power has caused the trip of both Units.
- A number of equipment failures has led to the implementation of 1-ECA-0.0, Loss of All AC Power, on Unit 1.
- The Team has energized 1J emergency buses in accordance with 0-AP-17.06, AAC Diesel Generator – Emergency Operations.
- Annunciators 1B-C6, CTMT PART PRESS +0.20 PSI CH1 and 1B-D6, CTMT PART PRESS +0.20 PSI CH2 are lit.
- CTMT pressure is 11.0 psia.
- RCS subcooling is 42 °F and stable.
- PRZR level is 26% and stable.

Which ONE of the following identifies:

1) The First attempt to load EDG #1 is done in accordance with ____1)____.
2) Which procedure will the Team transition to under these conditions?

A. 1) ECA-0.0, Loss of All AC Power
   2) ECA-0.2, Loss of All AC Power With SI Required.

B. 1) 0-AP-17.04, EDG 1 or EDG 2 – Emergency Operations
   2) ECA-0.2, Loss of All AC Power With SI Required.

C. 1) ECA-0.0, Loss of All AC Power
   2) ECA-0.1, Loss of All AC Power Without SI Required.

D. 1) 0-AP-17.04, EDG 1 or EDG 2 – Emergency Operations
   2) ECA-0.1, Loss of All AC Power Without SI Required.

Question: 84

Given the following conditions:

- A Loss of Offsite Power has occurred.
- #1 EDG and #3 EDG have failed to start.
- The team is performing 1-ECA-0.0, Loss of All AC Power.
- “A” and “B” Station Batteries have reached 105 VDC.

In accordance with 1-ECA-0.0, a complete loss of a DC bus could occur within a minimum of __(1)__ minutes.

A __(2)__ Fire Watch must be established in the areas served by LP CO_2 within 1 hour due to loss of fire protection.

(REFERENCE PROVIDED)

A. 1) 20 - 30
   2) Continuous

B. 1) 20 - 30
   2) Shiftly

C. 1) 120 - 130
   2) Continuous

D. 1) 120 - 130
   2) Shiftly

Question: 85

Chemistry reports the following related to a Unit 1 RCS sample:

- Area Radiation measurements 1 foot away from a 1ml RCS sample indicate 13.9 mr/hr.
- RCS Activity also rose to 10.2 µCi/cc and has now been > 1.0 µCi/cc for the last 36 hours.

Which of the following completes the following statements?

1) Per Technical Specifications the reactor __(1)__ required to be shut down and cooled to 500°F or less within 6 hours.
2) The NRC must be notified of this event within a maximum time of __(2)__ hour(s).

(REFERENCE PROVIDED)

A. 1) is
   2) four

B. 1) is not
   2) four

C. 1) is not
   2) one

D. 1) is
   2) one

Question: 86

Initial conditions:

- Unit 1 and 2 are operating at 100% power.
- Annunciator VSP-L7, LLIS TROUBLE alarms.
- The RO reports that 4160 V bus 1G has lost power.

Current conditions:

- Intake Canal level is 26 feet and lowering.
- The Electricians report there is a failed trip coil for breaker 15-G1, Supply to bus 1G.
- Power has just been restored to bus 1G per 0-AP-12.01, Loss of Intake Canal Level.

Which ONE of the following identifies:

1) Per 0-AP-12.01 the crew is required to wait 5 minutes before starting a circulating water pump that has just tripped. The reason for this is to allow time for _____.
2) The minimum intake canal level required per TS 3.14 (Circulating and SW) Bases to provide adequate design flow through RS SW heat exchangers is ____ feet.

A. 1) the motor to stop rotating backwards
   2) 23.5

B. 1) the motor windings to cool
   2) 23.5

C. 1) the motor to stop rotating backwards
   2) 17.2

D. 1) the motor windings to cool
   2) 17.2

Question: 87

Initial Conditions:

- A loss of offsite power has occurred.
- #1 and #3 EDGs fail to start and load.
- Unit 1 RCS pressure is 2100 psig and lowering.
- Containment sump level is 1.5 feet and rising.
- The crew enters 1-ECA-0.0, Loss of All AC Power.

Current Conditions (20 minutes):

- Crew is at ECA-0.0 step 33 to Check if 4160V AC Emergency Power is restored.
- Substation personnel estimate re-energizing Bus 5 and Bus 6 within 15 minutes.
- RCS pressure is 1800 psig.
- Core Exit Thermocouples are 1205°F and rising.
- RVLIS full range level is 29%.

Which of the following procedures is required to be entered?

A. 1-FSG-1, Long Term RCS Inventory Control.

B. 1-SACRG-1, Severe Accident Control Room Guideline Initial Response.

C. 1-FR-C.1, Response to Inadequate Core Cooling.

D. 1-SACRG-2, Severe Accident Control Room Guideline for Transients After TSC is Functional.

Question: 88

Given the following:

- Chemicals are being off-loaded in Unit 1 Alleyway.
- A leak in the lines causes Toxic fumes to enter the Main Control Room, and the Emergency Switchgear Room.
- Safety and Loss has determined the MCR and ESGR rooms are inaccessible until rooms can be ventilated (approx. 1 hour).
- The SM has directed evacuation of Main Control Room, and the Emergency Switchgear Room.
- The Reactor Operator have assembled in the Cable Spreading Room.

Which of the following describes:

1) The EAL classification is __(1)__.
2) When control room has been evacuated, SG pressure will be monitored at the __(2)__.

(REFERENCE PROVIDED)

A. 1) HA 5.1
   2) Remote Monitoring panel

B. 1) HA 5.1
   2) Aux Shutdown panel

C. 1) HS 5.1
   2) Aux Shutdown panel

D. 1) HS 5.1
   2) Remote Monitoring panel

Question: 89

Given the following:

- Unit 1 is at 100% power.
- Unit 2 is at 300ºF, 400 psig, and is cooling down for a Refueling outage.
- Annunciator 0-VSP-M6, ESW PP HSE LO TEMP is received.
- An Operator is dispatched and reports that ESW pump house temperature is 38°F, the heating system has failed, and no ESW pumps are running.

With the present conditions which of the following completes the below statements:

1) The ESW pumps are __(1)___.
2) The minimum number of ESW pumps that must be operable per Tech Specs are __(2)__ ESW pumps.

A. 1) inoperable
   2) three

B. 1) operable
   2) three

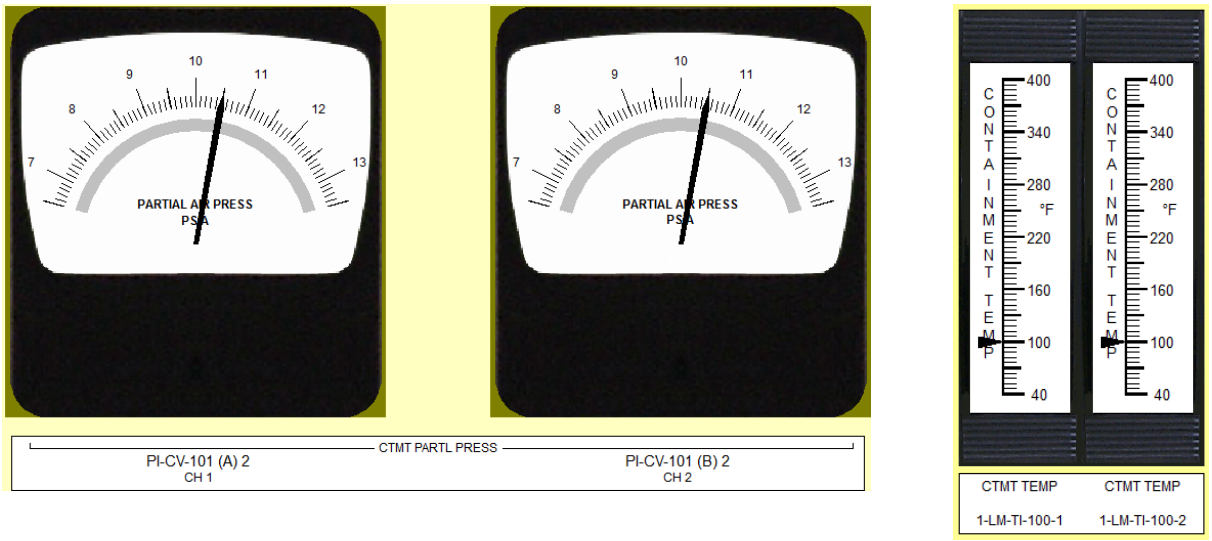
C. 1) inoperable
   2) two

D. 1) operable
   2) two

Question: 90

The following conditions exist on Unit 1:

- Circulating/Service Water temperature is 68°F.
- Containment conditions are as indicated below:



Given the above conditions:

- Reactor Coolant system temperature and pressure __(1)__ (can/cannot) exceed 350°F/450 psig per Tech Specs 3.8.1 D.
- The basis for the maximum Containment air partial pressure is __(2)__.

(REFERENCE PROVIDED)

A. (1) cannot; (2) MSLB peak calculated pressure criteria

B. (1) can; (2) MSLB peak calculated pressure criteria

C. (1) cannot; (2) LOCA depressurization criteria

D. (1) can; (2) LOCA depressurization criteria

Question: 91

In accordance with 1-OSP-ZZ-004, which one of the following will require Fuel movement to cease:

A. RCS Cavity level equal to 23.5 feet.

B. Process Vent Gaseous RM in ALERT.

C. Equipment Hatch is opened.

D. Source Range Detector N-31 Failed Low.

Question: 92

Initial Conditions

Unit 1 is stable at 100% reactor power.

- Control Rod E-5, Shutdown Bank “B” dropped, “0” steps indicated.
- The Team responds per 0-AP-1.00, Rod Control System Malfunction.
- 0-AP-1.00, Attachment 6, Calculation of Excore Quadrant Power Tilt Ratios, has been completed with a result of 9% calculated quadrant power tilt.
- Power is stabilized at 95% of rated power.

Current Conditions

- The control rod is not recovered and quadrant power tilt does not change,

1. After one hour elapses, the maximum allowed Tech Spec reactor power level is _____.
2. After four hours elapse, the maximum allowed value of the high flux power range trip setpoint is _____.

(REFERENCE PROVIDED)

A. 1) 77%
   2) 89%.

B. 1) 75%
   2) 85%.

C. 1) 77%
   2) 85%.

D. 1) 75%
   2) 89%.

Question: 93

A Tagout is being generated using a Relief Valve as part of the boundary with two breakers that may require grounding devices.

In accordance with OP-AA-200, Equipment Clearances:

1) Using relief valves as part of the boundary requires ____ approval.
2) The minimum voltage that requires grounding devices when working on electrical conductors, are those conductors that operate greater than ____ volts.

A. 1) Licensed SRO
   2) 600

B. 1) Licensed SRO
   2) 150

C. 1) Operations Manager on Call (OMOC)
   2) 600

D. 1) Operations Manager on Call (OMOC)
   2) 150

Question: 94

Given the following:

- Unit is operating at 100%. Current date is 4/1.
- 0745: Breaker 14J1 (480V Bus 1J supply breaker) trips open. Electrical Department reports a fault on the actual 1J 480V bus bar.
- 0800: Shift Manager declares 480V Bus 1J inoperable. Tech Spec 3.16, Emergency Power System, does not specify any time limit with unit at 100% (no “B” spec).
- 0900: Unit Shutdown commenced.
- 1200: Hot Shutdown mode achieved.

Which of the following state the MAXIMUM time the team has to achieve Cold Shutdown?

A. 4/2, 1800.

B. 4/2, 2000.

C. 4/2, 2100.

D. 4/3, 0000.

Question: 95

Initial Conditions:

- Unit 1 is in Refueling Shutdown with defueling operations in progress.
- The tenth fuel assembly has been lifted into the Manipulator crane.
- A catastrophic failure of the cavity seal results in cavity level lowering.
- Cavity level is 26 feet and lowering rapidly.
- Annunciator 1-RM-J8 Manipulator crane Alert/Failure has just alarmed.

Current Conditions:

- All Containment personnel have been evacuated.
- Fuel assembly has been placed in vessel, and all fuel assemblies are covered.
- The following Annunciators have just alarmed:
  - 1-RM-K8, 1-RM-RI-162, Manipulator Crane HIGH.
  - 1-RM-M7, 1-RM-RI-163, Rx. Containment HIGH.

1) The maximum allowable dose that can be authorize by the SEM to repair the cavity seal, per EPIP-4.04, Emergency Personnel Radiation Exposure is __(1)__.

2) The classification for this event in accordance with the EAL matrix is __(2)__.

(REFERENCE PROVIDED)

A. 1) 10 REM
   2) Alert, RA2.1

B. 1) 10 REM.
   2) NOUE, RU2.1

C. 1) 25 REM.
   2) NOUE, RU2.1

D. 1) 25 REM.
   2) Alert, RA2.1

Question: 96

- Unit 1 has the following indications:
  - "A" S/G – 200 psig, lowering
  - "B" S/G – 210 psig, lowering
  - "C" S/G – 205 psig, lowering
  - CETC - 397°F, lowering
  - RCS pressure – 900 psig, lowering
  - CTMT sump level – 1.8 feet, rising
  - CTMT pressure – 58 psia, lowering
- The following annunciators are lit:
  - 1E-B9, CTMT HI PRESS – RED
  - 1A-A1, RWST TECH SPEC LO LVL
    1B-A3, CTMT SUMP HI LVL
  - 1B-C4, CLS HI-HI TR A
  - 1B-C5, CLS HI-HI TR B
  - 1C-B8, PRZR LO PRESS
  - 1G-B1, APPROACH TO SATURATION TEMP ALARM

1) Are the listed annunciators consistent with the plant event in progress?
2) What are the procedure transitions for the plant event in progress?

(REFERENCE PROVIDED)

A. 1) No.
   2) E-0 → E-2 → ECA-2.1.

B. 1) No.
   2) E-0 → E-1 → ES-1.3 → E-1.

C. 1) Yes.
   2) E-0 → E-2 → ECA-2.1.

D. 1) Yes.
   2) E-0 → E-1 → ES-1.3 → E-1.

Question: 97

Initial Conditions:

- Unit 1 RCS is solid, making preparations to draw a bubble in accordance with 1-GOP-1.1, Unit Startup from Ambient to 195ºF.
- RCS temperature is 190°F and rising.
- RCS pressure is 320 psig and stable.
- 'A' RHR pump is in service.
- Loss of 'E' and 'F' Transfer busses occurs.

Current Conditions (12 minutes later):

- RCS temperature is 205°F and rising.

Which ONE of the following identifies:

1) The procedure that the crew shall use to restore RCS temperature to < 200°F is _____.
2) The EAL that shall be declared is NOUE ____.

(REFERENCE PROVIDED)

A. 1) 1-AP-10.27, Loss of All AC Power While on RHR
   2) CU 3.1

B. 1) 1-AP-27.00, Loss of Decay Heat Removal Capability
   2) CU 1.1

C. 1) 1-AP-27.00, Loss of Decay Heat Removal Capability
   2) CU 3.1

D. 1) 1-AP-10.27, Loss of All AC Power While on RHR
   2) CU 1.1

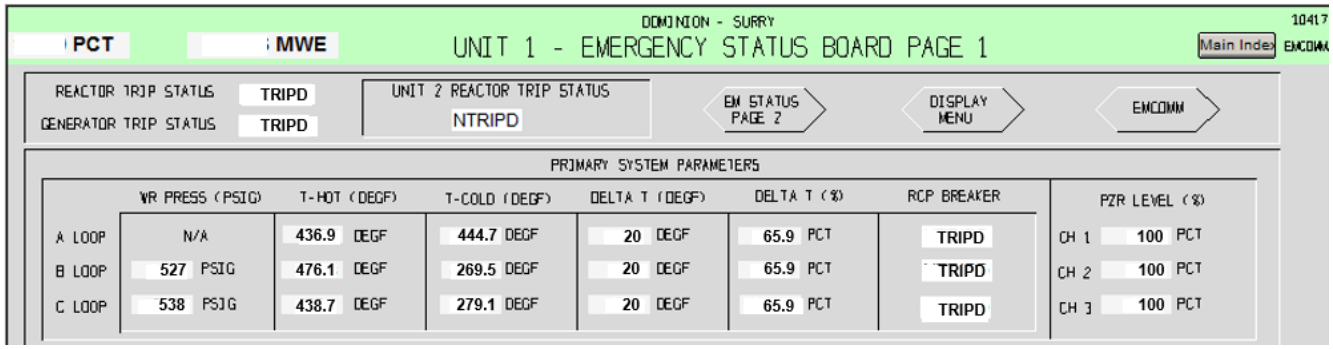
Question: 98

Initial Conditions:

- Unit 1 has experienced a Reactor Trip and SI.
- Security reports steam exiting the Unit 1 Safeguards Louvers.

Current Conditions:

- 1-E-2 steps that do not require Safeguards entry have been performed, and you have just directed transitioning to 1-E-1, Loss of Reactor or Secondary Coolant.
- Annunciator 1H-C8, AFW PP 3B LOCKOUT OR TRIP has just alarmed.
- The STA relays the following information from PCS.



Based on Current Conditions:

1) What procedure sequence should the SRO direct?
2) What EAL should be declared?

(REFERENCE PROVIDED)

A. 1) Go to FR-P.1, Response to Imminent Pressurized Thermal Shock Condition and perform the steps as directed.
   2) HA 2.1.

B. 1) Remain in 1-E-1, Loss of Reactor or Sec. Coolant and perform the steps as directed.
   2) HU 2.2.

C. 1) Go to FR-P.1, Response to Imminent Pressurized Thermal Shock Condition and perform the steps as directed.
   2) HU 2.2.

D. 1) Remain in 1-E-1, Loss of Reactor or Sec. Coolant and perform the steps as directed.
   2) HA 2.1.

Question: 99

Given the following conditions:

- Unit-1 tripped from 100% power due to a lightning strike.
- At least one safety valve is stuck open on each S/G.
- The crew is performing 1-ECA-2.1, Uncontrolled Depressurization of all SGs.
- The RO reports that RCS cooldown rate is 250°F/hr.
- The BOP has throttled AFW flow to 65 gpm to each SG.
- SG narrow-range levels are off-scale low.
- The STA reports that a red-path exists on the Heat Sink CSF status tree.
- The SRO transitions to 1-FR-H.1, Response to Loss of Secondary Heat Sink

Which ONE of the following describes:

(1) The **next action** required is to _____.

(2) Following this action, the team will _____.

A. (1) raise total AFW flow to at least 350 gpm
(2) remain in 1-FR-H.1

B. (1) maintain AFW flow throttled to 65 gpm to each SG
(2) remain in 1-FR-H.1

C. (1) raise total AFW flow to at least 350 gpm
(2) return to 1-ECA-2.1

D. (1) maintain AFW flow throttled to 65 gpm to each SG
(2) return to 1-ECA-2.1

Question: 100

Initial Conditions:

- Unit 2 operating at 100% power.
- Reactor trip caused by Loss of All AC.
- The Team has restored power to an Emergency bus, and has transitioned to 2-ES-0.2, Natural Circulation Cooldown.

Current Conditions:

- SG NR Levels: "A" - 68%, "B" - 65%, "C" – 63%.
- SG Pressures: "A" – 1150 psig, "B" – 1090 psig, "C" – 1050 psig.

1) The terminus (end point) of the Heat Sink Status Tree will be "Yellow – Go To _____".
2) What action would the stated procedure direct to alleviate the given conditions?

A. 1) FR-H.2, Response to Steam Generator Overpressure.
   2) Locally operate SG PORV to reduce pressure.

B. 1) FR-H.2, Response to Steam Generator Overpressure.
   2) Align Blowdown to lower SG Level.

C. 1) FR-H.3, Response to Steam Generator High Level.
   2) Locally operate SG PORV to reduce inventory.

D. 1) FR-H.3, Response to Steam Generator High Level.
   2) Align Blowdown to lower SG Level.

Question #	Answer
SRO	
76	A
77	B
78	D
79	C
80	C
81	C
82	A
83	C
84	A
85	D
86	C
87	B
88	D
89	A
90	B
91	D
92	B
93	C
94	B
95	B
96	A
97	C
98	A
99	D
100	A

SRO EXAM

References

Attachment #	Attachment Description
1	VPAP-2802, 6.3.3, 6.3.4, 6.3.5
2	TS Figure 3.8-1
3	TRM, section 3.7, Plant Systems (3.7.1 - 3.7.6)
4	TRM, section 5.2, APP R and Fire Protection Compensatory Measures/Fire Watch Requirements
5	TS 3.12 (partial)
EAL	EAL Charts
	STEAM TABLES