Question: 76

Initial Conditions:

- Unit 1 and Unit 2 were operating at 100%.
- Loss of offsite power to the station.
- # 2 EDG started and loaded.
- #1 and #3 EDGs tripped on overspeed and both have extensive crankcase damage.
- Crew enters 1-ECA-0.0, Loss of All AC.

Current Conditions (5 minutes later):

- Unit 1 RCS pressure is 1600 psig and lowering slowly.
- Unit 1 Containment Pressure is 10.4 psia and steady.
- Annunciator 1B-F3, SFGDS AREA SUMP HI LVL is LIT.
- Annunciator 0-RMA-D6, VENT STACK #2 PART ALERT/HI is LIT.

Per ECA-0.0 which ONE of the following describes:

1) What procedural guidance will the crew use to restore power to 1J bus?
2) Following power restoration to 1J bus and subsequent ECA-0.0 steps, which procedure will ECA-0.0 direct entry to?

A. 1) 1-ECA-0.0, Loss of ALL AC Power, step 5.
   2) ECA-0.2, Loss of All AC Power Recovery with SI Required.

B. 1) 1-ECA-0.0, Loss of ALL AC Power, step 5.
   2) ECA-1.2, LOCA Outside Containment.

C. 1) 0-AP-17.06, AAC Diesel Generator – Emergency Operations.
   2) ECA-0.2, Loss of All AC Power Recovery with SI Required.

D. 1) 0-AP-17.06, AAC Diesel Generator – Emergency Operations.
   2) ECA-1.2, LOCA Outside Containment.

Question: 77

Given the following:

- Unit 1 and Unit 2 are at 100% power:
- Component Cooling pumps, 1-CC-P-1B, and 1-CC-P-1D are running with normal CC lineup.
- The following annunciators alarm at the same time:
  - 1K-H4, 4KV EMERG BUS STUB BUS TIE BKR TRIP.
  - 1K-E7, CC PPS DISCH HDR LO PRESS.
- The BOP reports that the 1J Stub bus tie breaker has tripped open.

Which ONE of the following completes the following statement:

To comply with Technical Specifications, power must be restored to the affected RHR pump within a maximum time of __(1)__ days. The basis of the RHR system is to____(2)____.

A. 1) 14
   2) provide cooling water (heat sink) for the removal of residual and sensible heat from the Reactor Coolant system

B. 1) 7
   2) bring the RCS from conditions of 350°F and pressures between 400 and 450 psig to cold shutdown conditions

C. 1) 7
   2) provide cooling water (heat sink) for the removal of residual and sensible heat from the Reactor Coolant system

D. 1) 14
   2) bring the RCS from conditions of 350°F and pressures between 400 and 450 psig to cold shutdown conditions

Question: 78

Initial Conditions:

- Unit 1 is in Refueling Shutdown with the "B" RHR HX and "B" RHR pump in service.
- Component Cooling pumps 1-CC-P-1A and 1-CC-P-1B are running.
- The following Annunciators are LIT:
  - 0-VSP-D7, CC SURGE TK HI-LO-LVL
  - 1K-E7, CC PPS DISCH HDR LO PRESS
- FI-1-100B, CC Supply Hdr Flow – HDR 'B', has risen.
- FI-1-110B, RHR HX 'B' CC Outlet Hdr "B" Flow, is stable.
- 1-DG-P-1A, Primary Drain Xfer Pump, is in "Hand" and running continuously.
- CC Surge Tank level is lowering.
- Refueling Cavity level is 26 feet and stable.

Current Conditions:

- In accordance with ARP 1K-E7, the following actions are complete:
  - All CC pumps are in PTL
  - Charging and Letdown have been secured.
  - CC Surge Tank level continues to lower.
  - Local actions have been directed to establish makeup to the CC System and isolate the leak.

Which ONE of the following describes:

1) The component that must be isolated to stop the leak.
2) The procedure used to control RCS Temperature.

A. 1) "B" RHR pump seal cooler.
   2) 1-AP-27.00, Loss of Decay Heat Removal Capability.

B. 1) Primary Drain Transfer Tank Vent Chiller Condenser.
   2) 1-AP-15.00, Loss of Component Cooling.

C. 1) Primary Drain Transfer Tank Vent Chiller Condenser.
   2) 1-AP-27.00, Loss of Decay Heat Removal Capability.

D. 1) "B" RHR pump seal cooler.
   2) 1-AP-15.00, Loss of Component Cooling.

Question: 79

Unit 1 and Unit 2 were operating at 100% when the following occurred:

0700: A spurious SI caused Unit 1 Reactor Trip and SI.

0702: A tornado touched down in the switchyard causing a loss of offsite power to both Units.

0703: Annunciator 2K-H2, BUS 2H UNDERVOLT alarmed, and an NLO was sent to investigate.

0709: NLO reports:

- EDG 2 supply breaker 25-H3 has a lockout indicated.
- 2H switchgear has heavy smoke coming from it, and appears to be damaged.
- No fire is present.

0710: Crew has transferred EDG 3 to supply 2J bus.

0717: Control Ops personnel in the switchyard reports the following:

- Extensive damage to Transformers #1, #2, and 34.5 KV switchyard.
- Time to restore offsite power is unknown at this time.

Which ONE of the following answers the questions below?

1) What is the highest EAL the Shift Manager will declare?
2) After bus 1H is reenergized, when will AFW pump 1-FW-P-3A auto-start?

(REFERENCE PROVIDED)

A. 1) Alert. 2) 140 seconds.

B. 1) Alert. 2) 10 seconds.

C. 1) Unusual Event. 2) 10 seconds.

D. 1) Unusual Event. 2) 140 seconds.

Question: 80

Initial Conditions:

- Unit 2 operating at 70% power.
- A non-isolable rupture occurs on Unit 2 Instrument Air header.
- The reactor automatically trips.
- The Crew transitions to 2-ES-0.1, Reactor Trip Response.
- A Loss of Off-Site power occurs on swapover to the RSSTs.

Current Conditions: (2 minutes later)

- The Crew has taken no action since entry into 2-ES-0.1.

Which ONE of the following states the FIRST Function Restoration Procedure whose entry conditions will be met?

A. 2-FR-C.3, Response to Saturated Core Cooling.

B. 2-FR-H.4, Response to Steam Generator High Pressure.

C. 2-FR-I.1, Response to Pressurizer High Level.

D. 2-FR-H.5, Response to Steam Generator Low Level.

Question: 81

The Crew has completed actions of ECA-1.2, LOCA Outside Containment.

- Pressurizer level is 35% and lowering.
- Steam Generator Narrow Range levels are 30% and rising.
- Subcooling is 35 °F and slowly lowering.
- RCS pressure is 1400 psig and lowering.

Which ONE of the following procedures will be performed next?

A. ES-1.1, SI Termination.

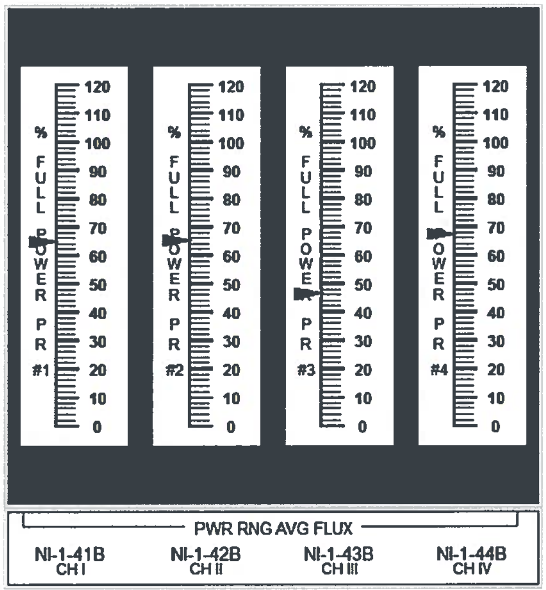
B. ES-1.2, Post LOCA Cooldown and Depressurization.

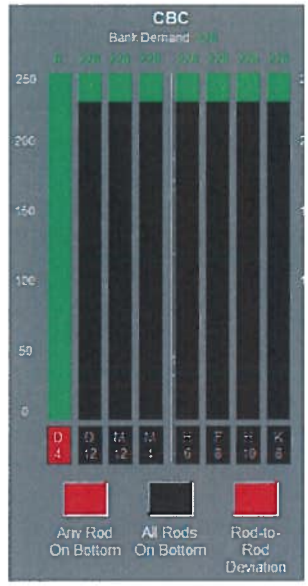
C. ECA-1.1, Loss of Emergency Coolant Recirculation.

D. E-1, Loss of Reactor or Secondary Coolant.

Question: 82

Given the following indications:





Which ONE of the following describes:

1) The status of control rod D4.
2) LCO requirements.

A. 1) Dropped.
   2) Reduce Hi Flux Trip setpoint ≤85% in 4 hours.

B. 1) Dropped
   2) Verify position using in-core detectors once per 8 hours.

C. 1) CERPI Failed.
   2) Verify position using in-core detectors once per 8 hours.

D. 1) CERPI Failed.
   2) Reduce Hi Flux Trip setpoint ≤85% in 4 hours.

Question: 83

Initial Conditions:

- Unit 1 is operating at 100%.
- PRZR LVL-CH SEL switch positioned to CH3/CH2.
- PRZR Level channels all reading 53% and stable.
- CHG LINE FLOW 1-CH-FI-1122A reads 85 gpm and stable.
- CHG FLOW CNTRL 1-CH-FC-1122C indicates as shown.

Current Conditions:

- The following annunciators alarm at the same time:
  - 1C-C6, PRZR HTRS CONT GRP CAB LO AIR FLOW.
  - 1C-E8, PRZR LO LVL HTRS OFF & LETDOWN ISOL.
  - 1E-G6, PRZR LO LVL CH 2.
- 1-RC-LI-1460, PRZR LEVEL CH 2 indicates pegged low.
- All Pressurizer Heaters have deenergized.
- Pressurizer pressure is 2220 psig and slowly lowering.

With no operator actions, which ONE of the following completes the following statements?

1) Over the next several minutes the Demand signal of CHG FLOW CNTRL, 1-CH-FC-1122C will __(1)__ from its initial value.

2) Per Tech Specs: If Pressurizer pressure exceeds its DNB limit, then pressure must be restored within a maximum time of __(2)__ hour(s) or power must be reduced to less than 5%.

A. 1) rise 2) 2

B. 1) rise 2) 1

C. 1) lower 2) 2

D. 1) lower 2) 1

Question: 84

Given the following:

- Both Units are at 100% power.
- A fire in the Main Control Room (MCR) results in heavy smoke in the MCR.
- MCR ventilation is secured, and the heavy smoke is limited to the MCR.
- The Crew enters 0-AP-48.00, Fire Protection – Operations Response.

If Main Control Room Evacuation becomes necessary which ONE of the following describes:

1) __(1)__ will be used to direct actions for MCR Evacuation.
2) The EAL classification is __(2)__.

(REFERENCE PROVIDED)

A. 1) 0-FCA-1.00, Limiting MCR Fire
   2) Unusual Event

B. 1) LFFG1 – Operations Response
   2) Alert

C. 1) LFFG1 – Operations Response
   2) Unusual Event

D. 1) 0-FCA-1.00, Limiting MCR Fire
   2) Alert

Question: 85

Initial Conditions:

- Unit 1 has experienced a Loss of All AC Power.
- 1-ECA-0.1, Loss Of All AC Power Recovery Without SI Required, is complete.

Current Conditions:

- Tave is 547°F.
- Annunciator 1D-B5, ICCM SYSTEM FAILURE, is LIT due to failed power supplies on Channels A and B.
- All Reactor Coolant Pumps are unavailable due to a prolonged loss of seal cooling.
- The Shift Manager has directed a cooldown to less than 200°F within 10 hours due to impending severe weather conditions.

Which of the following states the required procedural transition for Unit 1?

A. Go to 1-ES-0.2, Natural Circulation Cooldown. Initiate RCS cooldown, then transition to 1-ES-0.4, Natural Circulation Cooldown with Steam Void in Rx Vessel (W/O) RVLIS.

B. Go to 1-ES-0.4, Natural Circulation Cooldown with Steam Void in Rx Vessel (W/O RVLIS).

C. Go to 1-ES-0.2, Natural Circulation Cooldown. Initiate RCS cooldown, then transition to 1-ES-0.3, Natural Circulation Cooldown with Steam Void in Rx Vessel

D. Go to 1-ES-0.3, Natural Circulation Cooldown with Steam Void in Rx Vessel.

Question: 86

Given the following:

0800: Unit 1 is operating at 100%.
0805: VCT pressure is 15 psig and lowering rapidly due to an un-isolable leak.
0807: RCP Seal Injection flow is 2.5 gpm/RCP and fluctuating.
0807: The following Annunciators are LIT:

- 1D-E1, VCT HI-LO PRESS.
- 1D-H1, VCT LO-LO LVL.
- 1C-D3, E3, F3 RCP 1A (B,C) SHAFT SEAL WTR LO INJ FLOW.

0810: All Charging pump Red Bkr lights are lit, and all Charging pumps are fluctuating between 20 - 60 amps.
0845: The Crew trips the reactor to comply with Technical Specifications.

Which of the following completes the statements below?

1) Immediately after E-0 immediate actions are complete , 1-AP-9.00, RCP ABNORMAL CONDITIONS, __(1)__ **require** the RCPs to be secured.
2) In accordance with VPAP-2802 the NRC should be notified no later than__(2)__ of the same day.

(REFERENCE PROVIDED)

A. 1) does 2) 1610

B. 1) does not 2) 1610

C. 1) does 2) 1245

D. 1) does not 2) 1245

Question: 87

Given the following:

- The reactor is operating at 100% power.
- "A" SG Faults inside Containment.
- Containment pressure rapidly rises to a peak of 40 psia.
- All attempts of the Crew to trip the reactor from the MCR FAIL.

Which ONE of the following states:

1) The criteria that must be met that will allow exit from FR-S.1, Response to Nuclear Generation/ATWS?
2) EAL Classification.

REFERENCE PROVIDED

A. 1) Gamma-Metric Wide Range <5% AND lowering.
   2) Alert, SA2.1.

B. 1) PR NIs <5% AND IR SUR -0.5 DPM.
   2) Alert SA2.1.

C. 1) Gamma-Metric Wide Range <5% AND lowering.
   2) SAE, SS2.1.

D. 1) PR NIs <5% AND IR SUR -0.5 DPM.
   2) SAE, SS2.1.

Question: 88

Initial Conditions:

- Unit 1 is operating at 10% power with a startup on hold.
- 1-SV-RI-111, Condenser Air Ejector RM, Alert and High alarms received.
- The RO notes RCS pressure and PRZR level dropping rapidly, trips the reactor and initiates SI.

Current Conditions:

- RWST level 95%, and lowering.
- RCS Pressure 1460 psig, and lowering.
- RCS Subcooling 119°F, and lowering.

Parameter	S/G A		S/G B		S/G C	
NR Level (%)	0	stable	37	rising	36	rising
WR Level (%)	48	lowering	68	rising	67	rising
Pressure (psig)	445	lowering	985	lowering	985	lowering
AFW Flow (gpm)	205	stable	193	stable	194	stable

Which ONE of the following states the procedure used to bring the Unit to CSD?

A. ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery.

B. ECA-3.2, SGTR with Loss of Reactor Coolant – Saturated Recovery.

C. ES-3.1, Post - SGTR Cooldown Using Backfill.

D. ES-3.2, Post - SGTR Cooldown Using Blowdown.

Question: 89

Initial Conditions:

- Unit 1 operating at 100% power.
- Unit 2 is in CSD with RCS temperature 186°F, making preparations for refueling.
- The Main Steam tag-out has been hung and verified.
- Flooding is reported in Unit 1 Turbine Basement, Southeast corner.
- The Crew Enters 0-AP-13.00, Turbine Building or MER 3 Flooding.

Current Conditions:

- The Crew has closed the CC HX SW Supply MOVs, 1-SW-MOV-102A and 1-SW-MOV-102B.
- A report is received that flooding has stopped.
- Mechanical Maintenance estimates 4 hours to repair.
- Unit 2 RCS temperature 192°F and rising at 40°F/hr.

Which ONE of the following describes the EAL classification for this event?

REFERENCE PROVIDED

A. Alert, CA 3.1.

B. NOUE, CU 3.1.

C. Alert, HA 1.4.

D. NOUE, HU 1.4.

Question: 90

Given the following:

- Unit 1 has completed a refueling outage and has commenced startup.
- The crew is ready to start 1-GOP-1.2, Unit Startup, RCS Heatup from 195°F to 345°F.
- RCS temperature is being maintained 190°F to 195°F.
- RCS pressure is being maintained 300 psig to 350 psig.

Which one of the following describes:

1) How Containment Vacuum is initially established?
2) Why Containment Vacuum is required to be established prior to exceeding 350 °F/450 psig?

A. 1) Containment Vacuum pumps.
   2) Above this temperature and pressure, containment integrity is required to ensure that any release from containment will be restricted to those leakage paths and leak rates assumed in the accident analysis.

B. 1) Containment Vacuum pumps.
   2) Below this point there is no significant amount of flashing steam and therefore there would be no significant pressure buildup in containment if there is a LOCA.

C. 1) Containment Hogger.
   2) Above this temperature and pressure, containment integrity is required to ensure that any release from containment will be restricted to those leakage paths and leak rates assumed in the accident analysis.

D. 1) Containment Hogger.
   2) Below this point there is no significant amount of flashing steam and therefore there would be no significant pressure buildup in containment if there is a LOCA.

Question: 91

Initial Conditions:

- Unit 1 just lowered to 70% reactor power due to control rod H14, Control Bank D, Group 1, dropping to 181 steps.
- At the end of the down power, "D" control bank rods are at 168 steps; control rod H14 is at 122 steps.

Current Conditions (14 hours later):

- Reactor power and "D" bank control rod positions have been maintained constant.
- Control rod H14 has been repaired.
- Control rod recovery begins at time 0500.

Which ONE of the following identifies:

1) The time control rod H14 will be considered OPERABLE.
2) The Basis for the speed of rod recovery is to prevent exceeding _______ in the affected fuel assembly.

A. 1) 2200.
   2) $F^N_{\Delta H}$, Enthalpy Rise Hot Channel Factor

B. 1) 1600.
   2) $F_Q(Z)$, Heat Flux Hot Channel Factor

C. 1) 2200.
   2) $F_Q(Z)$, Heat Flux Hot Channel Factor

D. 1) 1600.
   2) $F^N_{\Delta H}$, Enthalpy Rise Hot Channel Factor

Question: 92

Concerning the Discharge Tunnel Radiation Monitor, 1-SW-RM-120.

Which ONE of the following describes the guidance for:

1) The frequency of required surveillance testing.
2) Alternative means of monitoring following Radiation Monitor failure.

A. 1) Off Site Dose Calculation Manual (ODCM).
   2) Tech Spec Table 3.7-5, Automatic Functions Operated from Radiation Monitor Alarm.

B. 1) Off Site Dose Calculation Manual (ODCM).
   2) Off Site Dose Calculation Manual (ODCM).

C. 1) Tech Spec 4.18, MCR Emergency Ventilation System Testing
   2) Tech Spec Table 3.7-5, Automatic Functions Operated from Radiation Monitor Alarm.

D. 1) Tech Spec 4.18, MCR Emergency Ventilation System Testing
   2) Off Site Dose Calculation Manual (ODCM).

Question: 93

Given the following:

- "A" WGDT is in service (lined up).
- "B" WGDT release is in progress in accordance with OP-23.2.4, "Release of Waste Gas Decay Tank 1B."
- Annunciator 0-RMA-C5, "Process Vent Rad Mon Trbl" is received.
- The BOP reports that the 1-GW-RI-130A, Process Vent Particulate Indicator, green "Operate" light is NOT LIT.

Which ONE of the following completes the statements:

1) ______ will automatically isolate to STOP the WGDT release flow path. AND

2) The Tech Spec Basis for the quantity of radioactivity in the Waste Gas Decay Tanks is based on providing assurance that in the event of an uncontrolled release of the WGDT, the resulting total body exposure at the exclusion boundary will not exceed ____ in an event of 2 hours.

A. 1) 1-GW-FCV-101, Process Vnt WGDT Effluent Flow Controller
   2) 5.0 rem

B. 1) 1-GW-FCV-160, Ctmt Vac Pump Disch Hdr Isol
   2) 0.5 rem

C. 1) 1-GW-FCV-160, Ctmt Vac Pump Disch Hdr Isol
   2) 5.0 rem

D. 1) 1-GW-FCV-101, Process Vnt WGDT Effluent Flow Controller
   2) 0.5 rem

Question: 94

Unit 1 is shutdown with a Cooldown to CSD in progress.

- RCS pressure is at 1900 psig.
- "C" RCS loop Tc is 500 °F.

Which ONE of the following completes the statements:

1) When 1-FW-P-2, TDAFW pump, is started the FEED PRESS light should be LIT when discharge pressure is at least _____ psig.
2) In accordance with Tech Spec 3.6 Basis, the Emergency Condensate Storage Tank, 1-CN-TK-1, has sufficient capacity to remove residual heat for _____ hours.

A. 1) 500
   2) 12

B. 1) 800
   2) 12

C. 1) 500
   2) 8

D. 1) 800
   2) 8

Question: 95

Given the following:

- Unit 2 is in Refueling with core off-load in progress.
- The Manipulator Crane is enroute to the Upender with a Fuel Assembly.
- Halfway to the Upender the following occur:
    - Annunciator 2B-A3, CTMT SUMP HI LVL.
    - 2-RM-J2, MANPLTR CRN ALERT.
    - The Refueling SRO reports that Refueling cavity is dropping rapidly.

In accordance with 2-AP-22.01, Loss of Refueling Cavity Level which of the following describes:

1) The preferred location where the fuel assembly shall be placed.
2) The maximum time the closure team has to establish containment closure?

A. 1) In a horizontal position in the upender. 2) 45 minutes

B. 1) Back into the Reactor Vessel. 2) 45 minutes

C. 1) In a horizontal position in the upender. 2) 60 minutes

D. 1) Back into the Reactor Vessel. 2) 60 minutes

Question: 96

Given the following:

- Unit 1 is in CSD with all the RCS loops isolated.
- Pressurizer level is being maintained at 60%.
- Seal injection is in service to the “A” RCP.

Which ONE of the following completes the following statements in accordance with 1-OP-RC-016, Reactor Coolant System Loop A Fill?

1) In accordance with 1-OP-RC-016, Reactor Coolant System Loop A Fill, ______ SR channel(s) must be OPERABLE during the fill of “A” Loop.
2) In accordance with Tech Specs, the loop stop valves must be opened within two (2) hours of the _____ of “A” Loop fill.

A. 1) both
   2) completion

B. 1) both
   2) start

C. 1) one
   2) completion

D. 1) one
   2) start

Question: 97

Initial Conditions for Unit 1:

- Unit 1 at 100% power.
- Delta Flux is at -2.4% with a target of -1%.
- Spurious Turbine Runback occurs causing Tave to increase rapidly.

Current Conditions:

- Reactor Power is 91% and stable.
- Delta Flux is at -16%.
- Tave is 571.5 °F, Tref is 571.0 °F.
- Annunciator 1E-E3, Delta Flux Deviation, is lit.
- Annunciator 1G-H8, Rod Bank D Extra Lo Limit, is lit.

The SRO directs Emergency Boration to be performed per 1-AP-3.00, Emergency Boration. When the RO attempted to open 1-CH-MOV-1350, Emergency Borate MOV; the MOV's breaker tripped on overcurrent.

Based on the current conditions, which ONE of the following states:

1) The **next** actions to be taken to start Emergency Boration in accordance with 1-AP-3.00.
2) The **most restrictive** LCO, for this CONDITION?

(REFERENCE PROVIDED)

A. 1) Manually open 1-CH-FCV-1113A, Boric Acid to Blender, and locally open 1-CH-228, Manual Boration valve.
   2) Delta flux.

B. 1) Manually align Charging pump suction to the RWST.
   2) Delta flux.

C. 1) Manually open 1-CH-FCV-1113A, Boric Acid to Blender, and locally open 1-CH-228, Manual Boration valve.
   2) Insertion limits.

D. 1) Manually align Charging pump suction to the RWST.
   2) Insertion limits.

Question: 98

Two workers have been assigned to repair a broken cable on the fuel transfer cart.

- Worker #1 worked the spring outage at North Anna and received 763 mrem. Dose from Surry is 400 mrem. Total dose (TEDE) to date is 1163 mrem.
- Worker #2 works only at Surry. Total dose (TEDE) to date is 800 mrem.
- The cable repair is estimated to take 3.5 hours to complete.
- Per the RWP, the general area dose rate at the repair site is 350 mrem/hr.
- The Department Manager, and the Manager, Radiological Protection and Chemistry approval has been granted.

Which ONE of the following states:

1) Which worker will require a dose upgrade prior to performing the work?
2) The Site VP ____ required to approve the dose upgrade.

(REFERENCE PROVIDED)

A. 1) #1.
   2) is not

B. 1) #1.
   2) is

C. 1) #2.
   2) is not

D. 1) #2.
   2) is

Question: 99

Initial Conditions:

- EDG 2 is out of service for maintenance.
- A Loss of Offsite Power occurs.
- EDG 3 fails to start.
- 2-ECA-0.0, Loss of All AC Power, is entered by the crew.

Current Conditions

- All SG levels are at 15% NR and stable.
- Annunciator 2B-E6, IA LO HDR PRESS / IA COMPR1 TRBL, has alarmed.
- Instrument air pressure on PI-IA-100 is 50 psig and lowering rapidly.
- The crew is at 2-ECA-0.0 Step 25, "Depressurize All Intact SGs to 300 psig."

The SRO has directed the operator to dump steam from S/G A per ECA-0.0, Attachment 8, LOCAL OPERATION OF SG PORV(s).

Which ONE of the following answers the questions below:

1) The preferred method for local operation of SG PORV(s) involves aligning the bottled air supply and controlling a pressure control valve located in the __(1)__?

AND

2) What is the reason for stopping the depressurization at 300 psig?

A. 1. Main Steam Valve House
   2. Preclude injection of accumulator nitrogen into the RCS.

B. 1. Containment Spray Pump House.
   2. Preclude injection of accumulator nitrogen into the RCS.

C. 1. Main Steam Valve House.
   2. Minimize RCS inventory loss.

D. 1. Containment Spray Pump House.
   2. Minimize RCS inventory loss.

Question: 100

An Alert has been declared.

Which ONE of the following responsibilities can the Station Emergency Manager (SEM) delegate prior to TSC and LEOF Activation?

A. Authorization of Emergency Exposure to Plant Personnel.

B. Declaration of the Emergency Classification Upgrade.

C. Initiation of EPIP-1.02, Response to Alert.

D. Protective Action Recommendations (PAR) to the State.

SRO EXAM

LIST OF ATTACHMENTS

Attachment #	Attachment Description
1	VPAP-2802: 6.3.4, 6.3.5
2	TS FIG 3.12-3 AFD LIMTS
3	VPAP-2101
Separate	EAL Charts
Separate	STEAM TABLES

i. Discovery that an undeclared or misclassified event or condition met all the following criteria: [10 CFR 50.72(a)(1)(ii)]
   - Exceeded an Emergency Action Level (EAL) as specified in EPIP-1.01, Emergency Manager Controlling Procedure
   - The basis for the emergency class no longer exists at the time of discovery
   - No other reasons exist for an emergency declaration

   In addition, the following shall be notified:

   - Department of Emergency Management (at approximately the same time)
   - Director Nuclear Protection Services and Emergency Preparedness
   - Louisa/Surry County Administrator

j. A cyber attack that adversely impacted safety-related or important to safety functions, security function, or emergency preparedness functions (including offsite communications); or that compromised support systems and equipment resulting in adverse impacts to safety, security, or emergency preparedness functions within the scope of 10 CFR 73.54. [10 CFR 73.77(a)(1)].

6.3.4 **Four-hour Notifications**

NOTE: Some conditions, indicated by "See EPIP-1.01," may exceed an Emergency Action Level (EAL) as specified in EPIP-1.01, Emergency Manager Controlling Procedure. If a condition exceeds an EAL, EPIPs control State and Federal agency notifications. If an event or condition does not exceed an EAL, it may still be reportable in accordance with this procedure.

a. As soon as practical, but within four hours, the Shift Manager shall notify the NRC Operations Center via the ENS of:

NOTE: If a unit enters a limiting condition for operation (LCO) and a unit shutdown is started due to the LCO, the event is reportable even if shutdown is not completed. LCOs terminated by a unit shutdown for an unrelated reason are still reportable if the condition would not have been corrected within the LCO time limit for shutdown.

1. Initiation of plant shutdown (reduction of power or temperature) required by Technical Specifications. The initiation of plant shutdown does not include mode changes required by Technical Specifications if initiated after the plant is already in a shutdown condition. See EPIP-1.01. **[10 CFR 50.72(b)(2)(i), 10 CFR 50.36 (c)(2)(i), NUREG 1022 Item 3.2.1]**
2. Any event that results in a Technical Specifications safety limit violation and requires a reactor shut down shall be reported in accordance with 10 CFR 50.72(b)(2)(i); see also Steps 6.24.3 **(North Anna)** and 6.25.3 **(Surry)** **[10 CFR 50.36(c)(1)(i)(A)]**
3. Any event that results or should have resulted in ECCS discharge into the RCS as a result of a valid signal except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation. **[10 CFR 50.72(b)(2)(iv)(A)]**
4. Any event or condition that results in actuation of the reactor protection system (RPS) when the reactor is critical except when actuation results from and is part of a pre-planned sequence during testing or reactor operation. **[10 CFR 50.72(b)(2)(iv)(B)]**

NOTE: "Notification to other government agencies has been or will be made" is not necessarily an automatic notification to the NRC. Refer to NUREG – 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73, for discussions and examples (e.g., newsworthy events, environmental events, spurious, emergency siren actuations) or contact Station Licensing if clarification is needed. **[NUREG-1022, Section 3.2.12]**

5. Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned, or notification to other government agencies has been or will be made. Such an event may include an onsite fatality or inadvertent release of radioactively contaminated materials. **[Commitment 3.2.12]** **[10 CFR 50.72(b)(2)(xi)]**

6. ISFSI Non-emergency Four-Hour Notifications shall include, if available at time of notification: [10 CFR 72.75(e)(3)]
   - The caller's name and call back telephone number
   - A description of the event, including time and date
   - The exact location of the event
   - The quantities, and chemical and physical forms of the spent fuel, HLW or reactor related Greater than Class C (GTCC) waste involved
   - Any personnel radiation exposure data
7. An action taken in an emergency that departs from a license condition, technical specification, or certificate of compliance when the action is immediately needed to protect the public health and safety and no licensed action that provides adequate or equivalent protection is immediately apparent—see Step 6.15.7.f. [10 CFR 72.75(b)(1)]
8. Groundwater Protection Voluntary Communication Notifications to other government agencies may be reportable under 10 CFR 50.72(b)(2)(xi) requirement for a 4-hour notification to the NRC operations center based upon the following guidance:
   - If a licensee is notifying a local, state, or other federal agency in accordance with an existing law, regulation, or ordinance, then the licensee should make its notification to the NRC under the 50.72 notification requirement.
   - If a licensee is informally communicating with a local, state, or other federal agency (i.e., not under a specific law, regulation or ordinance), then the licensee has discretion as to whether to informally communicate with NRC (e.g., through the site resident inspector and/or regional NRC office) or formally through the 50.72 notification process. If due to the site-specific circumstances or heightened sensitivity to the issue at that site, the issue is likely to produce strong media interest, then the licensee should consider notifying NRC under the 50.72 requirement because this is actually the underlying intent of the regulation.

b. Any person at the Station who observes smoke originating from Station equipment being released into the outdoor atmosphere shall notify the Shift Manager as soon as possible.

1. If the smoke is not from a fire and there are no certified visible emissions evaluators available to determine the opacity of the smoke being released to the outdoor atmosphere, the Shift Manager or other Station personnel shall take the appropriate steps to determine the source, cause, and duration of the smoke being released.
   - Once all of the pertinent information regarding the release of smoke has been obtained, the Electric Environmental Services (ESS) must be notified immediately.
   - The ESS will report the release of smoke into the outdoor atmosphere to the appropriate DEQ regional office as soon as practical, but no later than four daytime business hours of the occurrence, with all of the pertinent information. If the DEQ regional office determines that it is necessary to obtain smoke readings after receiving all of the pertinent information, the ESS will dispatch a certified visible emissions evaluator to the Station to determine the opacity of the smoke being released into the outdoor atmosphere.
2. The ESS will prepare and submit any written reports to the DEQ regional office regarding the release of smoke into the outdoor atmosphere.

c. When informed by Security or Radiation Protection of events related to the shipment or onsite storage of Category 1 or Category 2 radioactive material (refer to Appendix A to 10 CFR Part 37 - Physical Protection of Category 1 and Category 2 Radioactive Materials), notify the NRC's Operations Center (301–816–5100) upon:

1. Determination that a shipment of Category 2 quantities of radioactive material is lost or missing [10 CFR 37.81(b)]

   and

   If after 24 hours since the determination that the shipment was lost or missing and the radioactive material has not been located and secured, immediately the NRC's Operations Center

2. Discovery of any unauthorized entry that resulted in the actual or attempted threat, sabotage, or diversion of Category 1 or Category 2 quantity of radioactive material [10 CFR 37.57(a)]

3. Discovery of any suspicious activity related to the possible theft, sabotage, or diversion of Category 1 or Category 2 quantities of radioactive material [10 CFR 37.57(b)]

d. When informed by Security of cyber attack that:

1. Could have caused an adverse impact to safety-related or important to safety functions, security function, or emergency preparedness functions (including offsite communications); or that could have compromised support systems and equipment, which if compromised, could have adversely impacted safety, security, or emergency preparedness functions within the scope of 10 CFR 73.54.

2. After discovery of a suspected or actual attack initiated by personnel with physical or electronic access to digital computer and communication system and networks within the scope of 10 CFR 73.54.

3. After notification of a local, State, or other Federal agency of an event related to implementation of the licensee's cyber security program for digital computer and communication system and networks within the scope of 10 CFR 73.54. [10 CFR 73.77(a)(2)]

6.3.5 **Eight-hour Notifications**

NOTE: Any event or condition that occurred within three years of the date of discovery. Applicable to 6.3.5.a.1., 6.3.5.a.2., 6.3.5.a.5. and 6.3.5.a.7.

a. As soon as practical, but within eight hours, the Shift Manager shall notify the NRC Operations Center via the ENS of:

1. Any condition that results in the condition of the Station, including its principal safety barriers, being seriously degraded. [10 CFR 50.72(b)(3)(ii)(A)]

2. Any event or condition that results in the Station being in an unanalyzed condition that significantly degrades plant safety. [10 CFR 50.72(b)(3)(ii)(B)]

3. Any event that results in the Limiting Safety System settings for automatic protective devices to not function as required. [10 CFR 50.36(c)(1)(ii)(A)]

4. Any event or condition that results in valid actuation of any of the following systems, except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation: [10 CFR 50.72(b)(3)(iv)(A)]
   - Reactor Protection System (RPS) - (RPS actuation with the reactor critical may be reportable within 4 hours under 10 CFR 50.72(b)(2)(iv)(B), see Step 6.3.4.a.4.)
   - General containment isolation signals affecting containment isolation valves in more than one system or multiple Main Steam Isolation Valves (MSIVs)
   - Emergency Core Cooling Systems (ECCS) including HHSI and LHSI (Actual discharges are reportable within 4 hours under 10 CFR 50.72(b)(2)(iv)(A), see Step 6.3.4.a.3.)
   - Auxiliary Feedwater System
   - Containment heat removal and depressurization systems including Containment spray and fan cooler systems
   - Emergency Diesel Generators (EDGs)

5. Any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to:
   - Shut down the reactor and maintain it in a safe shutdown condition
   - Remove residual heat
   - Control the release of radioactive material; or
   - Mitigate the consequences of an accident. See EPIP-1.01. [10 CFR 50.72(b)(3)(v)]

6. Any event requiring the transport of a radioactively contaminated person to an off-site medical facility for treatment. See also Step 6.28.2.
   [10 CFR 50.72 (b)(3)(xii) and 10 CFR 72.75 (c)(3)]

7. Any event that results in a major loss of emergency assessment capability, off-site response capability, or off-site communications capability, (e.g., significant portion of control room indication, Emergency Notification System, or offsite notification system). Equipment important to emergency response and emergency response facilities are listed in the attachments of EP-AA-303, Equipment Important to Emergency Response. See Attachment 3, Emergency Response Unavailability Reportable Actions Levels, for reportable action level criteria.
   - Emergency Assessment Capability
   - Offsite Response Capability
   - Offsite Communications Capability

   See EPIP-1.01. [10 CFR 50.72(b)(3)(xiii)]

8. Any instance of:
   - A defect in any spent fuel storage cask structure, system, or component that is important to safety [10 CFR 72.75(c)1]

     or

   - A significant reduction in the effectiveness of any spent fuel storage cask confinement system during use of the storage cask [10 CFR 72.75(c)2

   See EPIP-1.01.

9. After receipt or collection of information regarding observed behavior, activities, or statements that may indicate intelligence gathering or pre-operational planning related to a cyber attack against digital computer and communication system and networks within the scope 10 CFR 73.54. [10 CFR 73.77(a)(3)].

b. If an Alert, Site Area Emergency, or General Emergency is declared:

1. The Station Coordinator Emergency Preparedness shall prepare a Summary Report from information in completed Emergency Plan Implementing Procedures, Control Room logs, and interviews with persons involved with the declaration and response, as appropriate. See Attachment 6, Example DEM Summary Report.

2. The Site Vice President, Director Nuclear Station Safety and Licensing, or Plant Manager (Nuclear) shall approve the report.

3. Within 8 hours after termination of the event, Nuclear Emergency Preparedness shall ensure the report is delivered to the State Coordinator of the Virginia Department of Emergency Management. [NAEP 4.4; SEP 4.4]

c. If, on Dominion property or at Lake Anna Dam, there is a Dominion employee or contractor fatality including cardiac arrest or an event in which three or more Dominion employees or contractors are hospitalized:

1. The Shift Manager shall notify Supervisor Nuclear Site Safety (Station) with the following information:
   - Number of fatalities
   - The employer of those killed
   - The circumstances of the event
   - The extent of injuries

2. Nuclear Site Safety (Station) shall notify OSHA as specified in Step 6.3.5.c.3. See also Step 6.3.4.a.5.

3. Within eight hours after the occurrence, the Supervisor Nuclear Site Safety (Station) (as specified in Step 6.3.5.c.2.) shall notify (See Step 6.3.1.a.) the Area Director of OSHA by telephone or facsimile. See Step 6.1.1.a. [29 CFR 1904.8]

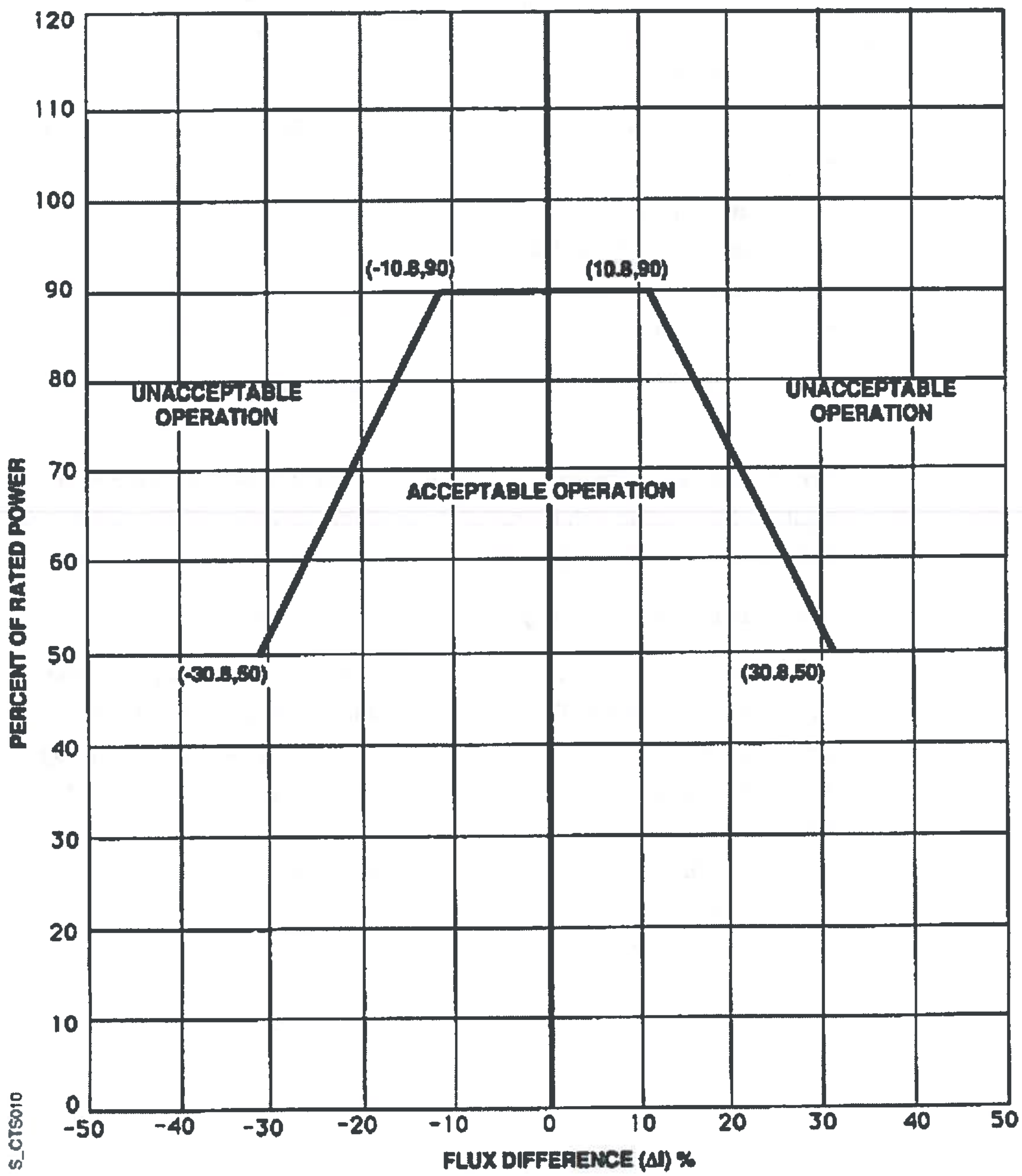
4. Within four hours of notifying OSHA perform Step 6.3.4.a.5.

d. Whenever fire protection systems, portions of a system, or equipment are impaired or reduced in status for other than scheduled maintenance or scheduled testing activities (meaning an unplanned failure or state of degradation), the Shift Manager shall notify the Supervisor Nuclear Site Safety (Station). **[Commitment 3.2.17] (Surry)**
North Anna notification to the Supervisor Nuclear Site Safety (Station) is within 48 hours per TRM requirements.

ATTACHMENT 2

TS FIGURE 3.12-3
02-04-94

AXIAL FLUX DIFFERENCE LIMITS
AS A FUNCTION OF RATED POWER
SURRY POWER STATION



Amendment Nos. 186 and 186

6.3.3 Administrative Dose Limits

NOTE: Dose limits in Step 6.3.3 do not apply to a Declared Pregnant Woman or an Expected Pregnant Woman. Declared Pregnant Woman administrative dose control is addressed in Step 6.3.5 and Expected Pregnant Woman dose control is addressed in Step 6.3.6.

NOTE: Dose limits in Step 6.3.3 are implemented by controls specified in Step 6.3.4.

Administrative dose limits are established to minimize the potential for exceeding federal limits. If a worker exceeds an administrative dose limit without exceeding a 10 CFR 20 or Technical Specifications (TS) limit, the event shall not be considered a violation of either 10 CFR 20 or TS. Exceeding administrative limits shall require a radiological incident investigation and a Condition Report in accordance with PI-AA-200, Corrective Action. Investigation results shall be used to determine reportability and shall become Station records.

a. **Radiation Worker Annual Administrative Dose Limits**

Type	Radiation Worker Annual Administrative Dose Limits
Total Effective Dose Equivalent (TEDE)	2.0 rem/calendar year at the worker's home site
Total Effective Dose Equivalent (TEDE)	3.0 rem/calendar year from all licensees

b. **System Radiation Worker Annual Administrative Dose Limits**

Type	System Radiation Worker Annual Administrative Dose Limits
Total Effective Dose Equivalent (TEDE)	0.750 rem/calendar year per Dominion nuclear site and 3.0 rem/calendar year from all licensees (can be concurrently badged at Dominion sites)

c. **Plant Access Radiation Workers**

Type	**Plant Access Radiation Worker Annual Administrative Dose Limits**
Total Effective Dose Equivalent (TEDE)	0.125 rem/calendar year at each Dominion site and 3.0 rem/calendar year from all licensees (can be concurrently badged at Dominion sites)

d. **Visitors**

Visitor total effective dose equivalent shall be limited to 0.05 rem/calendar year.

6.3.4 **Administrative Dose Controls - General Requirements**

NOTE: An integral part of administrative dose controls is the control of access to RCAs. RCA access control is addressed in Step 6.6.1.

a. The following control is in place to provide reasonable assurance that a worker will not exceed administrative dose limits.

If a worker's annual dose exceeds 85% of an administrative dose limit, the worker will be denied RCA access until an upgrade is approved.

b. Upgrades shall require approvals as follows:

1. TEDE > 2 rem/year per site not to exceed 3 rem/year from all licensees will require upgrade approvals from all of the following:
   - Worker
   - Department Manager
   - Manager Radiological Protection and Chemistry (i.e., the RPM)

2. TEDE > 3 rem/year but ≤ 5 rem/year from all licensees will require upgrade approvals from all of the following:
   - Worker
   - Department Manager
   - Manager Radiological Protection and Chemistry (i.e., the RPM)
   - Site Vice President

c. Each department is responsible for initiating required dose extension requests and obtaining required signature approvals. Upon request, RP shall provide dose extension request forms and provide assistance for the process.

d. RP shall advise the requesting department of dose extension request status. If the authorized dose is less than requested, an explanation shall be provided.

e. RP shall provide summary reports of worker dose for use by Station management and supervision to assist in maintaining cognizance of worker dose for planning and exposure tracking. Reports may include dose estimates pending reading of TLDs for dose of record determinations.

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