

## Question 1

Unit 1 is at 100% power, Main Turbine is in IMP OUT and on the LIMITER.

Given the following occurs:

- T REF/AUCT T AVG DEV alarms 05M2-E6
- U1118 indicates 3870 mwt
- RCS Tavg 589.5 °F

In accordance with 0POP04-MS-0001 Excessive Steam Demand.

Which of the following identifies the correct response by the operator?

Reduce turbine load by using...

- A. the SETPOINT controls at a rate of 2%/min
- B. the GOV VLV CONT close pushbutton
- C. the lower GOV VLV LIMIT pushbutton
- D. the GOV VLV CONT "FAST" pushbutton

## Question 2

An audible alarm is received on the RM-11 system for RT-8035, FHB Exhaust.

Which of the following describes the correct response by the Reactor Operator to this condition?

- A. Silence the alarm at the RM-11 console and then contact Health Physics to determine subsequent actions.
- B. Silence the alarm at the RM-11 console and then use POP04-RA-0001, Radiation Monitoring System Alarm Response, to determine subsequent actions.
- C. Silence the alarm at CP-023 (RM-23) and then contact Health Physics to determine subsequent actions.
- D. Silence the alarm at CP-023 (RM-23) and then use POP04-RA-0001, Radiation Monitoring System Alarm Response, to determine subsequent actions.

## Question 3

Prior to a containment entry at power, Health Physics has requested the Containment Carbon Filter Units be placed in service.

Which of the following describes the purpose for this action?

- A. The High Efficiency Particulate Air (HEPA) Filter contained within the unit will remove airborne radioiodine which is mainly an internal dose hazard.
- B. The Charcoal Filter contained within the unit will remove airborne radioiodine which is mainly an internal dose hazard.
- C. The High Efficiency Particulate Air (HEPA) Filter contained within the unit will remove airborne radioiodine which is mainly an external dose hazard.
- D. The Charcoal Filter contained within the unit will remove airborne radioiodine which is mainly an external dose hazard.

## Question 4

Unit 1 was at 100% power when a Large Break LOCA occurred.

Essential Cooling Water (ECW) Pump 1B was in Auto and started but the ECW Pump 1B discharge valve stopped at 50% open due to mechanical binding.

Which of the following describes the final condition of ECW Pump 1B and the reason why?

ECW Pump 1B...

- A. remains running to continue cooling the train B CCW supplementary cooler.
- B. trips to protect pump casing from over pressure.
- C. remains running to continue cooling to the 1 1B RCB chiller.
- D. trips to protect pump shaft bearings from overheating.

Question 5

Given the following Unit 2 conditions:

- A Small Break LOCA has occurred
- SI has been reset
- Operators have just completed step 1 of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant

The Shift Technical Advisor reports the following:

- RCS Pressure: .....1830 psig
- RCS Subcooling:.....60°F
- Pressurizer Level:.....20%
- SG A NR Level: .....8%
- SG B NR Level: .....10%
- SG C NR Level: .....17%
- SG D NR Level: .....19%
- Total AFW Flow:.....400 gpm
- Containment Pressure:.....4 psig

Which of the following actions should the operators perform?

- A. Manually actuate SI and transition to 0POP05-EO-EO00, Reactor Trip or Safety Injection
- B. Transition to 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink
- C. Transition to 0POP05-EO-FRI2, Response to Low Pressurizer Level
- D. Transition to 0POP05-EO-ES11, SI Termination

## Question 6

The following Unit 1 conditions exist:

- MODE 5, cooling down to Mode 6
- RHR trains A and B are in service in full cooling mode (RHR heat exchanger outlet valve is full open).
- RHR train C is in standby.

A loss of offsite power subsequently occurs.

Without operator action, which of the following describes the final status of RHR?

- A. No RHR Pumps are running.
- B. Only RHR trains A and B are in service in the full cooling mode.
- C. RHR trains A and B are in service in the full cooling mode and RHR pump C is running in recirculation mode.
- D. All three RHR trains are in service in the full cooling mode.

## Question 7

Which of the following is the BASIS for depressurizing intact Steam Generators to 355 psig at the maximum controllable rate during performance of OPOP05-EO-EC00, Loss of All AC Power?

- A. To ensure that a heat sink is maintained due to loss of control of the SG PORVs.
- B. To maximize Operator control of secondary pressure.
- C. To minimize RCS inventory loss through the RCP seals.
- D. To prevent challenging the pressurizer safety valves.

## Question 8

A reactor trip has occurred on Unit 2.

During the performance of the Immediate Operator actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection, the Reactor Operator notes that the Reactor Trip Breakers are both open, but 4 Control Rods are indicating 30 steps withdrawn.

The crew transitions to 0POP05-EO-ES01, Reactor Trip Response.

Which of the following describes the MINIMUM amount of Boric Acid in gallons that must be added to the RCS and the BASIS for the Boric Acid addition?

Emergency Borate...

- A. 3760 gallons to lower upper range flux to less than 5%.
- B. 3760 gallons to account for the reactivity worth of the stuck rods.
- C. 14400 gallons to lower upper range flux to less than 5%.
- D. 14400 gallons account for the reactivity worth of the stuck rods.



## Question 9

Chemistry has reported a rise in reactor Coolant activity and the Unit Supervisor has entered OPOP04-RC-0001, High Reactor Coolant System Activity.

Which of the following correctly describes an action that should be taken and the reason for the action?

- A. Start a second Centrifugal Charging Pump and place all letdown orifices in service to maximize purification flow through the in service Mixed Bed Demineralizer.
- B. Start a second Centrifugal Charging Pump and place all letdown orifices in service to maximize filtration by the reactor coolant filter.
- C. Place a Cation Bed Demineralizer in service to remove lithium which reduces RCS pH and minimizes the chances of an RCS crud burst.
- D. Place a Cation Bed Demineralizer in service to maximize effective purification.

## Question 10

Unit 2 is operating in Mode 1 with the following Component Cooling Water (CCW) Pump lineup:

- CCW Pump 2A – running
- CCW Pump 2B – standby
- CCW Pump 2C – tagged out for maintenance

Subsequently:

- A failure of CCW Pump 2A discharge valve causes it to drift partially closed.
- CCW Header pressure drops to 85 psig.
- Normal letdown has remained in service.

Which of the following describes the system response an operator should expect to observe?

- A. Letdown flow diverts to the Recycle Holdup Tank (RHUT)
- B. Initial rise then return to normal in letdown temperature downstream of the Letdown Heat Exchanger
- C. Initial rise then return to normal in seal water return temperature downstream of the Seal Water Heat Exchanger
- D. Letdown flow diverts to the Reactor Coolant Drain Tank (RCDT)

## Question 11

An operator action of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS, is to “Ensure 480V LC 1K1 (2K1) and 1L1 (2L1) feeder breakers open”.

This step will de-energize power to the....

- A. Rod Drive MG Set motors. Opening only one of the breakers will cause a reactor trip.
- B. Rod Drive MG Set motors. Both breakers must be opened to cause a reactor trip.
- C. Reactor Trip Breaker shunt trip coils. Opening only one of the breakers will cause a reactor trip.
- D. Reactor Trip Breaker shunt trip coils. Both breakers must be opened to cause a reactor trip.

## Question 12

A liquid release is in progress from a Waste Monitor Tank (WMT).

Which of the following correctly describes operation of the system if the Liquid Release Rad Monitor, RT-8038 reaches its HIGH alarm setpoint?

Liquid Waste Discharge Valve, FV-4077, should...

- A. CLOSE to stop flow from the WMT. If the valve fails to close, the Control Room operator must manually close the valve from the RM-11 console.
- B. RE-POSITION to recirc the contents of the WMT. If the valve fails to re-position, the Control Room operator must manually re-position the valve to recirc from the RM-11 console.
- C. CLOSE to stop flow from the WMT. If the valve fails to close, a Plant Operator will have to be dispatched to close the valve using handswitch on Rad Waste Controlroom panel.
- D. RE-POSITION to recirc the contents of the WMT. If the valve fails to re-position, a Plant Operator will have to be dispatched to re-position the valve using handswitch on Rad Waste Controlroom panel.

Question 13

Unit 1 is at 15% reactor power during a plant shutdown.

The Main Generator is at 210 MWe.

A large transient on the grid causes switchyard frequency to lower to 57.5 Hz.

Assuming no operator action, which of the following correctly identifies the status of the reactor coolant pump breakers and reactor trip breakers following the grid transient?

	Reactor Coolant Pump Breakers	Reactor Trip Breakers
A.	Open	Open
B.	Open	Closed
C.	Closed	Closed
D.	Closed	Open

## Question 14

Given the following:

- Unit 1 is operating at full power.
- 480V LC E1A2 TRBL alarm occurs.
- 480V Load Center E1A2 Bus Volts = 0 volts
- Annunciator 125 VDC SYSTEM E1A11 TRBL alarms.
- Channel 1 BATT CUR indicates 30 amps discharge.

Assuming the plant responds as designed and without operator action, ...

- A. DP001 is now powered from its Voltage Regulating Transformer.
- B. DP1201 is now powered from its Voltage Regulating Transformer.
- C. Bus E1A11 is being powered from its respective ESF Battery.
- D. Bus E1A11 is being powered from its Standby Battery Charger.

## Question 15

Given the following conditions:

- Unit 1 is raising Reactor Power and is currently at 40% power.

Subsequently:

- Instrument Air pressure began to lower and is currently at 95 psig and trending down slowly.
- The Control Room Crew is working through 0POP04-IA-0001, Loss of Instrument Air.

Based on current given conditions, which of the following describes the NEXT appropriate crew response in accordance with 0POP04-IA-0001, Loss of Instrument Air?

- A. Isolate CVCS Charging and Letdown flow.
- B. Trip the Main Turbine and Isolate Main Steam.
- C. Trip the Reactor and Ensure the Main Turbine is tripped.
- D. Verify that the Instrument Air to Service Air Isolation Valve has closed.

## Question 16

Unit 1 has entered OPOP05-EO-FRH1, LOSS OF SECONDARY HEAT SINK. Step 4 has been performed which stops all RCP's.

Which of the following statements is correct concerning the basis for this action?

The RCP's are stopped to...

- A. preserve them for use when a secondary heat sink is restored.
- B. preserve RCS inventory during feed and bleed.
- C. reduce the risk of a LOCA through the RCP seals.
- D. reduce heat input to the RCS.



## Question 17

Given the following:

- Unit 1 is operating at 100% power
- All control systems are operating in automatic
- One Pressurizer Power Operated Relief Valve (PORV) fails full open
- No Operator actions are taken

Considering the leak rate through the open Pressurizer PORV, which of the following describes the plant response to this event?

The Reactor will trip on...

- A. Over-Temperature Delta-T. RCS pressure will stabilize above the shutoff head for the LHSI Pumps.
- B. Over-Temperature Delta-T. RCS pressure will stabilize below the shutoff head of the LHSI Pumps.
- C. Over-Power Delta-T. RCS Pressure will stabilize above the shutoff head of the LHSI Pumps.
- D. An Over-Power Delta-T. RCS pressure will stabilize below the shutoff head of the LHSI Pumps.

Question 18

OPOP05-EO-0010, LOSS OF REACTOR OR SECONDARY COOLANT step 2 has you depressurize intact SG's to 1000 psig.

Which of the following correctly states the accident this is intended to mitigate and the basis for this action?

	ACCIDENT	BASIS
A.	SBLOCA	Ensure clad temperature remains below 2200 °F ECCS acceptance criteria
B.	SBLOCA	To ensure maximum flow from the AFW Pumps to the steam generators
C.	LBLOCA	Ensure clad temperature remains below 2200 °F ECCS acceptance criteria
D.	LBLOCA	To ensure maximum flow from the AFW Pumps to the steam generators

Question 19

Given the following:

- Unit 2 is operating at 100% power
- OPOP04-RC-0002, Reactor Coolant Pump Off Normal has been entered
- Plant Computer has been lost
- ICS annunciator functions are still working

Under these conditions, the procedure directs the operators to verify the status of RCP oil reservoir annunciators and if necessary, enter the containment and inspect the RCP.

Which of the following is true concerning the performance of these actions?

	Oil Reservoir Annunciator Verification	RCP Inspection
A.	CAN be performed from within the Control Room Horseshoe area	CAN be performed under these plant conditions
B.	CANNOT be performed from within the Control Room Horseshoe area	CAN be performed under these plant conditions
C.	CAN be performed from within the Control Room Horseshoe area	CANNOT be performed under these plant conditions
D.	CANNOT be performed from within the Control Room Horseshoe area	CANNOT be performed under these plant conditions

Question 20

Pressurizer backup heaters have been energized to recover from a Pressurizer Pressure Control malfunction that resulted in Pressurizer pressure lowering 30 psig.

During the recovery, \_\_\_(1)\_\_\_ heat is being added to raise the fluid temperature in the Pressurizer and \_\_\_(2)\_\_\_ heat is being added to change saturated liquid into a saturated vapor. It takes \_\_\_(3)\_\_\_ energy to change 1 (one) pound of saturated fluid to saturated vapor than it does to raise 1 (one) pound of saturated liquid 1°F.

	(1)	(2)	(3)
A.	sensible	latent	less
B.	latent	sensible	less
C.	latent	sensible	more
D.	sensible	latent	more

## Question 21

Given the following:

- Unit 1 was operating at 100% power.
- A Main Steam leak occurred inside containment.
- Containment reached a peak pressure of 8 psig.
- Containment pressure and temperature are now slowly lowering.

Which of the following describes the reason for the current containment pressure and temperature response?

Heat is being removed from the containment atmosphere by ...

- A. both the Containment Spray System and the RCB Chilled Water System flowing through the RCFC cooling coils.
- B. only the RCB Chilled Water System flowing through the RCFC cooling coils.
- C. both the Containment Spray System and the Component Cooling Water System flowing through the RCFC cooling coils.
- D. only the Component Cooling Water System flowing through the RCFC cooling coils.

## Question 22

OPOP05-EO-EC11, Loss of Emergency Coolant Recirculation, instructs the operators to depressurize the RCS to minimize subcooling while maintaining at least 45° [55°] of subcooling margin.

Prior to this step, the procedure contains a Note which states: “The upper head region may void during RCS depressurization if RCPs are not running.”

In accordance with the Westinghouse Owners Group Background Documents, which of the following describes the basis for this Note?

To inform the operator that ...

- A. pressurizer level may rise rapidly making Pressurizer Spray ineffective at controlling Pressurizer pressure.
- B. pressurizer level may rise rapidly creating the potential for water relief through the Pressurizer PORVs.
- C. upper head cooling may be lost requiring the need to vent the head to restore head temperatures.
- D. upper head cooling may be lost causing the Core Exit Thermocouples (CETs) to become unreliable.

## Question 23

Given the following:

- Unit 2 is at 60% power and raising power to 90% at 10%/hour
- Generator Voltage Regulator is ON (auto)
- Inclement weather has caused a grid disturbance
- GEN MAX EXCT alarm on annunciator panel 7M01 illuminates

Which of the following describes the grid disturbance that has occurred and the required operator action in response to the alarm?

- A. Grid voltage has risen causing the generator voltage regulator to raise excitation. Lower excitation using the “VOLTAGE ADJUSTER” control.
- B. Grid voltage has risen causing the generator voltage regulator to raise excitation. Lower excitation using the “BASE ADJUSTER” control.
- C. Grid voltage has lowered causing the generator voltage regulator to raise excitation. Lower excitation using the “VOLTAGE ADJUSTER” control.
- D. Grid voltage has lowered causing the generator voltage regulator to raise excitation. Lower excitation using the “BASE ADJUSTER” control.

Question 24

The table below lists Intermediate Range NI readings before and after a unit trip.

	100% power	10 minutes after trip	30 minutes after trip
NI-35	4x10 <sup>-4</sup> amps stable	8x10 <sup>-10</sup> amps lowering	6x10 <sup>-10</sup> amps stable
NI-36	4.5x10 <sup>-4</sup> amps stable	1.5x10 <sup>-10</sup> amps lowering	2x10 <sup>-11</sup> amps stable

Which of the following is true regarding the current status of the Intermediate Range NIs?

- A. NI-35 is UNDER compensated
- B. NI-35 is OVER compensated
- C. NI-36 is UNDER compensated
- D. NI-36 is OVER compensated



## Question 25

OPOP05-EO-FRC1 RESPONSE TO INADEQUATE CORE COOLING Step 13 instructs operators to stop ALL Reactor Coolant Pumps prior to depressurizing ALL Intact SG's to Atmospheric Pressure.

Per the Westinghouse Owners Group ERG background documents, select the RCP parameter that is of the MOST concern.

- A. Motor Stator Winding Temperature
- B. Case Vibration
- C. Seal Leakoff Flow
- D. Number 1 Seal Differential Pressure

## Question 26

Given the following:

- Unit 1 is in Mode 6 during a rapid refueling outage
- Core reload has just been completed
- 2 assemblies were placed in the wrong core location during the reload resulting in  $K_{eff}$  being higher than predicted

Which of the following is true concerning Shutdown Margin (SDM) as a result of this event?

- A. SDM has not changed assuming boron concentration has remained the same.
- B. SDM has not changed because the core still has the same overall Fuel Assemblies.
- C. SDM is larger.
- D. SDM is smaller.

## Question 27

With the plant operating at 100% power, which of the following would violate the definition of containment integrity?

A loss of containment integrity would occur if .....

- A. the Supplementary Containment Purge exhaust OCIV and ICIV are opened to reduce containment pressure.
- B. BOTH doors of the Auxiliary Airlock are opened for material passage.
- C. a normally closed air operated containment isolation valve for RCS sampling is opened for chemistry to grab a sample.
- D. an automatic containment isolation valve is closed and de-energized for maintenance on the control circuit.

## Question 28

Given the following:

- A Loss of Offsite Power (LOOP) has occurred on Unit 1 while operating at 100% power.
- The secondary RO reports that all Motor Driven Auxiliary Feedwater (AFW) pumps and the Turbine Drive Auxiliary Feedwater (TDAFW) Pump are running.
- The Secondary RO also notes the following AFW Pump flows:
  - AFW Pump 11.....570 gpm
  - AFW Pump 12.....600 gpm
  - AFW Pump 13.....0 gpm
  - TDAFW Pump.....560 gpm

Which of the following describes the reason for the given indications?

Steam Generator 'C'....

- A. OCIV, MOV-0065, failed to receive an actuation signal.
- B. AFW REG, FV-7523, failed to receive a control signal from QDPS.
- C. NARROW RANGE level has not yet lowered to less than 20%.
- D. AFW AUTO FLOW CONT RESET pushbutton has NOT been depressed.

## Question 29

With a containment purge in progress in Mode 3, high radiation in containment caused a high alarm on RT-8012, RCB Purge Exhaust.

A note in OPOP04-RA-0001, Radiation Monitoring System Alarm Response, states the following:

A high alarm on RT-8012 or RT-8013 will cause a Containment Ventilation Isolation (CVI). This, in turn, causes RT-8011 sample lines to be isolated and renders RT-8011 radiation monitor inoperable.

Which of the following describes the implications of the note?

With the RT-8011 sample lines isolated, the sample pump ...

- A. may run indefinitely on recirculation flow. Technical Specifications are NOT affected.
- B. must be secured to prevent damage. Technical Specifications are NOT affected.
- C. may run indefinitely on recirculation flow. Technical Specification entry WILL be required.
- D. must be secured to prevent damage. Technical Specification entry WILL be required.

Question 30

Given the following:

- A Loss of Coolant Accident (LOCA) has occurred
- Operators are performing the steps of POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- SG A, B, C and D pressures are 800, 810, 790 and 450 psig respectively and slowly lowering
- LOOP A, B, C, and D Tcold are 450, 435, 330 and 440 °F respectively and slowly lowering
- Reactor Vessel Plenum level indicates 20%
- CETs are approximately 375 °F and slowly lowering

Which of the following indicates the status of natural circulation cooling and the expected action for these conditions?

	Natural Circulation	Action
A.	Adequate natural circulation cooling exists.	Maintain operation of ECCS pumps.
B.	Adequate natural circulation cooling exists.	Open SG PORVs to raise steam flow.
C.	Adequate natural circulation cooling does NOT exist.	Maintain operation of ECCS pumps.
D.	Adequate natural circulation cooling does NOT exist.	Open SG PORVs to raise steam flow.

Question 31

In accordance with OPOP05-EO-EO00, Reactor Trip or Safety Injection, which one of the following cases allows AFW flow to be reduced to Less Than 576 gpm?

	SG NR Level	Ctmt Press.	Ctmt Rad.
A.	A: 30%    C: 24% B: 29%    D: 33%	7 psig	1 R/hr
B.	A: 3%    C: 17% B: 2%    D: 6%	3 psig	10 R/hr
C.	A: 17%    C: 18% B: 14%    D: 21%	5 psig	1 x 10 <sup>6</sup> R/hr
D.	A: 12%    C: 10% B: 13%    D: 6%	3 psig	1 x 10 <sup>4</sup> R/hr

## Question 32

A licensed individual has worked the following daytime schedule:

- Primary Operator - 11/6
- Primary Operator - 11/7
- OFF - 11/8
- Training - 11/9
- Training - 11/10
- Training - 11/11

Which of the following correctly identifies the logbook entries the individual is REQUIRED to review per OPOP01-ZQ-0022, Plant Operations Shift Routines, during shift turnover as Primary Operator on 11/12?

Review of Control Room Logbook entries is required at a MINIMUM of the...

- A. previous 24 hours.
- B. previous 48 hours.
- C. previous 72 hours.
- D. individuals last on-shift duty.



## Question 33

Given the following:

- Assume that today is January 15 of the current year.
- A Staff RO, maintaining an “ACTIVE” license, has performed the functions of an RO during one 12 hour shift since January 1.

Which of the following is the MINIMUM number of watches the RO can cover to maintain his/her license “ACTIVE” through June of the current year in accordance with OPOP01-ZA-0014, Licensed Operator License Maintenance?

- A. One more 12 hour shift performing RO functions during January.  
Two more 12 hour shifts performing RO functions during February.
- B. Two more 12 hour shifts performing RO functions during February.  
Two more 12 hour shifts performing RO functions during March.
- C. Two more 12 hour shifts performing RO functions during March.  
Four more 12 hour shifts performing RO functions during April.
- D. Four more 12 hour shifts performing RO functions during April.  
Four more 12 hour shift performing RO functions during May.

## Question 34

Given the following:

- A Reactor Trip occurs due to a Loss of Offsite Power
- The ESF Diesel Generators have all started and restored power to their ESF buses
- The Control Room crew has just completed the Immediate Actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection

Which of the following correctly identifies the status of Containment Cooling?

- A. The RCFCs are running and CCW is flowing through the cooling coils.
- B. The RCFCs are running and there is NO flow through the cooling coils.
- C. The RCFCs are NOT running and CCW is flowing through the cooling coils.
- D. The RCFCs are NOT running and there is NO flow through the cooling coils.

## Question 35

Unit 1 Train A AND Train C 4.16 KV ESF Busses were de-energized with an expected duration of 7 hours.

Train A 4.16 KV ESF Bus has been re-energized using the Train B ESF Diesel Generator per OPOP04-AE-0004, Loss of Power To One or More 4.16 KV ESF Bus.

Which of the following describes the BASIS for this action?

- A. To enable the start of CCP A for RCS Inventory Control.
- B. To enable the start of CCW Pump A for Spent Fuel Pool cooling.
- C. To extend the use of the Plant Computer System for accident monitoring.
- D. To maintain accident monitoring instruments energized by getting a Train A charger in service.

## Question 36

A tube leak has occurred in 1D Steam Generator. The Unit is currently performing a rapid plant shutdown for repair.

Under these conditions, failure of which of the following Process and Effluent radiation monitors would allow a release to the environment that would otherwise be automatically prevented?

- A. Condenser Air Removal System Monitor (RT-8027)
- B. Steam Generator 1D Blowdown Monitor (RT-8025)
- C. Turbine Generator Building Drain Monitor (RT-8041)
- D. Main Steam Line "D" Monitor (RT-8049)

## Question 37

Conditions have occurred while responding to a Reactor Trip which requires Emergency Boration be initiated. The operator attempts to emergency borate using the Normal Emergency Boration Flowpath, but is unsuccessful at starting a Boric Acid pump.

Which of the following contains two flowpaths, each of which would independently meet the Emergency Boration requirements of OPOP04-CV-0003, Emergency Boration, for the given condition?

- A. Emergency Boration through "1(2)-CV-0221 MANUAL ALTERNATE IMMEDIATE BORATE" OR Boration through Normal Boration Flowpath
- B. Emergency Boration from RWST OR Emergency Boration via Gravity Feed
- C. Emergency Boration through "1(2)-CV-0221 MANUAL ALTERNATE IMMEDIATE BORATE" OR Emergency Boration via Gravity Feed
- D. Emergency Boration from RWST OR Boration through Normal Boration Flowpath

## Question 38

While operating in Mode 4, annunciator window 5M02-B-7, RCS COLD OVERPRESS ALERT-TRN B, illuminates. The operator notes that COMS has NOT actuated.

Which of the following instrument failures should be the cause of the annunciator?

- A. Loop C WIDE range cold leg temperature failed High (TE-434)
- B. Loop C WIDE range cold leg temperature failed Low (TE-434)
- C. Loop C NARROW range cold leg temperature failed High (TE-430)
- D. Loop C NARROW range cold leg temperature failed Low (TE-430)

## Question 39

What is the MINIMUM configuration of ECCS equipment assumed by the FSAR to inject into the reactor vessel to assure adequate core cooling in the event of the design basis LOCA?

- A. Two HHSI pumps, two LHSI pumps, two Accumulators
- B. Two HHSI pumps, two LHSI pumps, one Accumulator
- C. One HHSI pump, one LHSI pump, two Accumulators
- D. One HHSI pump, one LHSI pump, one Accumulator

Question 40

Which of the following states the source of the Emergency Diesel Generator Trip Solenoids Control Power?

	<b>Class 1E</b> Control Power	<b>Non-Class</b> Control Power
A.	Class 1E 120 Volt Vital AC	Non-Class 125 Volt DC
B.	Class 1E 125 Volt DC	Non-Class 125 Volt DC
C.	Class 1E 120 Volt Vital AC	Non-Class 120 Volt Vital AC
D.	Class 1E 125 Volt DC	Non-Class 120 Volt Vital AC



## Question 41

Upon receipt of a Safety Injection signal, Pressurizer heaters that are supplied by ESF busses are de-energized.

Which of the following describes the Pressurizer heaters that will be de-energized?

- A. Proportional Heater Group C and Backup Heaters Group A and B.
- B. Proportional Heater Group C and Backup Heaters Group D and E.
- C. Only Backup Heaters Group A and B.
- D. Only Backup Heaters Group D and E.

## Question 42

OPOP02-AF-0001, Auxiliary Feedwater, requires the following AFW Pump 14 steam supply line drain valves to be OPEN:

- 1(2)-MD-0928, AFPT TO CNDSR 13 (23) ISOL
- 1(2)-MS-0515, MAIN STEAM DRAIN TO CONDENSER FIRST ISOLATION VALVE
- 1(2)-MS-0516, MAIN STEAM DRAIN TO CONDENSER SECOND ISOLATION VALVE

Failure to have these valves in their required position should result in:

- A. A hydraulic transient which can cause an AFW turbine overspeed on startup.
- B. An inadequate AFW turbine exhaust path preventing the turbine from reaching rated speed.
- C. Excessive thermal stresses on startup caused by AFW turbine temperature not equalized with Main Steam temperature.
- D. Overpressurization of the AFW turbine casing during standby conditions.

## Question 43

Which one of the following correctly describes the SEQUENCE of events as Instrument Air pressure lowers from the normal operating value?

- A.    -Service Air Isolation Valve PV-9785 closes.  
      -Instrument Air to Yard Valve PV-8568 closes.  
      -Instrument Air Dryer Bypass Valve PV-9983 opens.
- B.    -IAS HDR PRESS LO annunciator alarms.  
      -Service Air Isolation Valve PV-9785 closes.  
      -Instrument Air Dryer Bypass Valve PV-9983 opens.
- C.    -IAS HDR PRESS LO annunciator alarms.  
      -Instrument Air Dryer Bypass Valve PV-9983 opens.  
      -Service Air Isolation Valve PV-9785 closes.
- D.    -Service Air Isolation Valve PV-9785 closes.  
      -Instrument Air Dryer Bypass Valve PV-9983 opens.  
      -Instrument Air to Yard Valve, PV-8568 closes.

## Question 44

Given the following conditions:

- Unit 1 is in Mode 5
- RHR Train 'A' is in service providing shutdown cooling.
- FV-8565, IA OCIV, subsequently fails closed.

Which of the following correctly describes the effect of the valve failure?

RHR Train 'A' is.....

- A. AVAILABLE to provide shutdown cooling since instrument air accumulator tanks in containment will continue to supply the necessary air and allow normal operation.
- B. AVAILABLE to provide shutdown cooling since the RHR Heat Exchanger Outlet valve fails open and the RHR Heat Exchanger Bypass valve fails closed providing full cooling flow.
- C. NOT available to provide shutdown cooling since the RHR Heat Exchanger Outlet valve fails closed and the RHR Heat Exchanger Bypass valve fails open providing no cooling flow.
- D. NOT available to provide shutdown cooling since the RHR Pump Recirculation valve fails open which would not allow adequate cooling water flow to reach the RCS.

## Question 45

Given the following:

- A reactor startup is in progress on Unit 1.
- SR Channel N-31 indicates  $5 \times 10^4$  cps.
- SR Channel N-32 indicates  $7 \times 10^4$  cps.
- IR Channel N-35 indicates  $2 \times 10^{-8}$  amps
- IR Channel N-36 indicates  $2 \times 10^{-10}$  amps

Which of the following describes the NIS response indicated by these readings?

- A. IR Channel N-35 is reading higher than normal; P-6 permissive is enabled.
- B. IR Channel N-35 is reading higher than normal; P-6 permissive is NOT enabled.
- C. IR Channel N-36 is reading lower than normal; P-6 permissive is enabled.
- D. IR Channel N-36 is reading lower than normal; P-6 permissive is NOT enabled.

## Question 46

Given the following:

- Reactor power is 100%
- Control rods are in AUTO
- Channel II of Pressurizer Pressure is being calibrated and associated bistables have been TRIPPED
- Channel IV T-hot output from QDPS fails high

Which of the following describes the effect of these conditions on the Rod Control System?

- A. Control rods drive in due to auctioneered Tave failed high.
- B. Control rods drive in due to auctioneered  $\Delta T$  failed high.
- C. Reactor trip breakers open due to two channels of OP $\Delta T$  bistables tripped.
- D. Reactor trip breakers open due to two channels of OT $\Delta T$  bistables tripped.

## Question 47

Given the following:

- Unit 1 is at 100% power
- Reactor power is slowly rising
- RCS Tave is 588°F and slowly lowering
- Turbine control is in IMP OUT

Which of the following conditions should cause the above plant transient?

- A. Main Turbine Governor valve #3 has failed closed.
- B. Extraction steam to a feedwater heater string has been isolated.
- C. Main Steam to Deaerator valve has failed closed.
- D. Circulating Water pump #14 has tripped.

## Question 48

Which of the following correctly describes a condition that should cause the DRPI and the step counter for a particular control rod group to disagree AND require a Tech Spec entry?

- A. A Rod Control Logic Cabinet Pulser Failure.
- B. A Rod Control Logic Cabinet loses a DC Power Supply Module.
- C. DRPI has a Control Unit Failure.
- D. DRPI loses a 12 VDC Power Supply.



## Question 49

A fire develops at the Main Generator Seal Oil Skid on the 29' elevation of the TGB.

The Fire Detectors at the skid fail to actuate the Fire Suppression System for Main Generator Seal Oil.

The Fire Suppression System for Main Generator Seal Oil can be manually actuated from \_\_\_\_\_ (1) \_\_\_\_\_ and the fire will be suppressed with \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) the Control Room or the local Pull Station  
(2) a Foam Extinguishing System
- B. (1) the local Pull Station ONLY  
(2) a Fixed Water Spray Deluge
- C. (1) the local Pull Station ONLY  
(2) a Foam Extinguishing System
- D. (1) the Control Room or the local Pull Station  
(2) a Fixed Water Spray Deluge

Question 50

You are performing the actions of Addendum 5, Verification of SI Equipment Operation of 0POP05-EO-EO00, Reactor Trip or Safety Injection.

At Step 6, VERIFY Containment Isolation Phase ‘A’, on the ESF Status Panel, you note the following on the CONTAINMENT ISOLATION PHASE A/B status monitoring panel:

Train	PHASE A ISOL red light	BYP INOP white light	F/ACT white light
A	ON	OFF	ON
B	ON	ON	OFF
C	ON	OFF	OFF

Which of the following correctly describes the status of Phase ‘A’ Isolation and any actions that may be required in accordance with 0POP05-EO-EO00, Reactor Trip or Safety Injection?

- A. At least one Train ‘A’ valve is open; manually close the valve(s).
- B. At least one Train ‘B’ valve is open; manually close the valve(s).
- C. At least one Train ‘A’ valve is open; manually actuate Phase ‘A’ isolation.
- D. At least one Train ‘B’ valve is open; manually actuate Phase ‘A’ isolation.

## Question 51

Unit 1 is in MODE 4 with a plant heat up in progress.

- A Train CCW is out for maintenance.
- Train 'B' and 'C' RHR are in service.
- RCS Temperature is 345°F.

Subsequently one of the suction valves closes on Train 'B' RHR.

Which of the following describes (1) the impact of this malfunction to Train 'B' RHR and (2) the actions that should be taken to prevent an inadvertent entry in to MODE 3?

- A. (1) Train 'B' RHR trips on low flow.  
(2) Use SG PORVs to steam SGs per 0POP03-ZG-0001, Plant Heatup.
- B. (1) Train 'B' RHR trips on low flow.  
(2) Start Train 'A' RHR per 0POP02-RH-0001, Residual Heat Removal System Operation.
- C. (1) Train 'B' RHR miniflow valve automatically opens due to low flow.  
(2) Secure Train 'B' RHR and Start Train 'A' RHR per 0POP02-RH-0001, Residual Heat Removal System Operation.
- D. (1) Train 'B' RHR miniflow valve automatically opens due to low flow.  
(2) Secure Train 'B' RHR and use SG PORVs to steam SGs per 0POP03-ZG-0001, Plant Heatup.

## Question 52

Unit 2 is in MODE 3 with all 4 Reactor Coolant Pumps (RCP) operating, when a breaker fault causes RCP 2A to trip.

Which of the following describes the response of the LOOP A FLOW indicator?

Indication ...

- A. immediately drops to 0% and stabilizes
- B. immediately drops to 0%, then rises to ~20%
- C. drops to 0% over a period of ~20 seconds and stabilizes
- D. drops to 0% over a period of ~20 seconds, then rises to ~20%

## Question 53

Given the following:

- Pressurizer pressure is 2235 psig
- PRT PRESS HI annunciator is in
- PRT TEMP HI annunciator is in
- PRT pressure on CP-04 is indicating 10 psig and slowly rising
- PRT temperature on CP-04 is indicating 110 F and slowly rising

Which of the following is the likely cause for this condition?

- A. Pressurizer PORV seat leakage.
- B. Reactor Vessel Flange is leaking.
- C. Letdown Stop valve leakoff flow high.
- D. RCP #1 seal leakoff flow high.

Question 54

Given the following:

- Unit 1 is at 100% power
- ‘A’ Train ECW/CCW systems are running
- ‘B’ Train ECW is running
- ‘B’ ECW/CCW is the Train selected for STBY.
- ‘A’ CCW HX outlet flow indicates 12,700 gpm

Subsequently, the following occurs:

- CCW HX 1A ‘OUTL FLOW HI/LO’ alarms
- CCW HX 1A ‘OUTL PRESS LO’ alarms
- CCW HX 1A OUTL PRESS PI-4513 indicates 74 psig

Select the malfunction that could have caused the given indications and the automatic action that should occur.

	<b>MALFUNCTION</b>	<b>AUTOMATIC ACTION</b>
A.	A loss of power to ‘RHR 1A CCW Outlet Valve’ caused the valve to fail open.	The 1B CCW Pump will auto start after 15 seconds.
B.	A loss of power to ‘RHR 1A CCW Outlet Valve’ caused the valve to fail open.	The 1B CCW Pump will start immediately.
C.	A loss of power to ‘CCW HX 1A Outlet TCV’ caused the valve to fail open.	The 1B CCW Pump will auto start after 15 seconds.
D.	A loss of power to ‘CCW HX 1A Outlet TCV’ caused the valve to fail open.	The 1B CCW Pump will start immediately.

Question 55

Given the following:

- Unit 1 is at 100% Power.
- All Containment Spray Pumps are in standby.
- Train 'B' ECW/CCW is in standby.

Subsequently the following occur simultaneously:

- A large Steam Line Break in Containment causes automatic Safety Injection and Containment Spray actuations.
- MCC E1B3 loses power.

Which of the following describes an impact due to these events and the actions that will mitigate the consequences?

	<b>IMPACT</b>	<b>ACTIONS</b>
A.	CS Pump 1B discharge valve is CLOSED and will not OPEN.	Place CS Pump 1B in PTL to prevent running the pump at shutoff head.
B.	CS Pump 1B discharge valve is OPEN and will not CLOSE.	Place CS Pump 1B in PTL to prevent runout conditions.
C.	ECW Pump 1B discharge valve is CLOSED and will not OPEN.	Place ECW Pump 1B in PTL to prevent running the pump at shutoff head.
D.	ECW Pump 1B discharge valve is OPEN and will not CLOSE.	Place ECW Pump 1B in PTL to prevent runout conditions.

## Question 56

Unit 1 has experienced a Reactor Trip, Safety Injection and LOOP on Class 1E 4.16 KV Bus Train A. Diesel Generator #11 is supplying power to Class 1E 4.16 KV Bus Train A.

Subsequently AFWP #14 tripped on overspeed. Mechanical Maintenance corrected a mechanical issue with the trip linkage and says that AFWP #14 overspeed trip can now be reset.

Which of the following describes and explains a precaution the Operations Crew should take prior to resetting the overspeed trip for AFWP #14?

- A. Reset ESF Load Sequencer Train A and SG LO-LO Actuators to ensure AF-MOV-0514, TURB TRIP/THROT remains closed during and after the reset.
- B. Reset Safety Injection and SG LO-LO Actuators to ensure AF-MOV-0514, TURB TRIP/THROT remains closed during and after the reset.
- C. Reset Safety Injection and SG LO-LO Actuators to ensure MS-MOV-0143, MN STM ISOL to AFWP #14, remains closed during and after the reset.
- D. Reset ESF Load Sequencer Train A and SG LO-LO Actuators to ensure MS-MOV-0143, MN STM ISOL to AFWP #14, remains closed during and after the reset.



## Question 57

Which of the following describes the BACKUP power supply to Instrument Air Compressor #14 upon loss of power to LC 1U?

- A. TSC diesel generator which energizes LC 1U
- B. TSC diesel generator which energizes MCC 1G5
- C. BOP diesel generator which energizes LC 1U
- D. BOP diesel generator which energizes MCC 1G5

Question 58

Given the Following:

- Unit 2 Control Room is performing 0POP05-EO-EC12 LOCA OUTSIDE CONTAINMENT.
- FHB -4 ft el Area Radiation Monitor is in High Alarm on RM-11
- ‘A’ Train SI/CS Hi/Hi sump alarm on QDPS

Which of the following describes the impact of this condition and the actions the crew should take to mitigate the consequences?

	IMPACT	ACTIONS
A.	RWST inventory will not be available for recirculation phase.	Place ‘A’ Train SI/CS pumps in PTL.
B.	Sump tanks in the FHB will have to be transferred to the RCB for recirculation phase.	Align the ‘A’ Train SI/CS sump to discharge to the Containment Emergency Sump.
C.	RWST inventory will not be available for recirculation phase.	Align the ‘A’ Train SI/CS sump to discharge to the Containment Emergency Sump.
D.	Sump tanks in the FHB will have to be transferred to the RCB for recirculation phase.	Place ‘A’ Train SI/CS pumps in PTL.

## Question 59

Unit 1 has experienced a Reactor Trip from 100% power. The AFW System has actuated but no Operator actions have been performed yet.

Which of the following describes the effect on the AFW System if a QDPS #2 APC were to lose power?

- A. All AFW Pump Flow Regulating Valves should fail in the AS IS POSITION.
- B. Only the AFW Pump Flow Regulating Valve associated with the failed #2 APC should fail in the AS IS POSITION.
- C. All AFW Pump Outside Containment Isolation Valves should fail in the AS IS POSITION.
- D. Only the AFW Pump Outside Containment Isolation Valve associated with the failed #2 APC should fail in the AS IS POSITION.

## Question 60

Following a Loss of Coolant Accident (LOCA) requiring Containment Spray, which one of the following is used to reduce corrosion and maintain iodine in solution?

- A. Minimum boric acid concentration requirements for the Refueling Water Storage Tank (RWST) ensure the proper pH is maintained in the emergency sumps.
- B. Sodium Hydroxide (NaOH) from the Spray Additive Tanks mixes with the Containment Spray Pump discharge.
- C. Powdered trisodium phosphate stored in six baskets located on the -11 foot elevation of the RCB dissolves into the fluid which flows into the emergency sumps.
- D. Lithium Hydroxide (LiOH) is injected into the emergency sumps.

Question 61

During the response to a Unit 2 Reactor Trip, all Auxiliary Feedwater was lost. The crew is performing 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink, Addendum #1, Establishing Main Feedwater Flow.

The following conditions exist:

- RCS Feed and Bleed has been established.
- RCS Wide Range T<sub>H</sub> is 600°F and rising.
- All SG Wide Range levels are 11% and lowering.
- The crew is ready to feed Main Feedwater to the Steam Generators.

In accordance with the Westinghouse Owners Group Background Documents, which of the following describes the MOST significant IMPACT of feeding Main Feedwater to Dry Steam Generators and the REQUIRED ACTION from 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink, which should minimize the IMPACT?

	<b>IMPACT</b>	<b>REQUIRED ACTION</b>
A	Steam Generator integrity will be impacted due to thermal shock.	If CETs are rising establish maximum flow rate to ALL SGs.
B	Reactor Coolant System integrity will be impacted due to a rapid cool down.	If CETs are rising establish maximum flow rate to ONLY ONE SG.
C	Steam Generator integrity will be impacted due to thermal shock.	If CETs are rising establish maximum flow rate to ONLY ONE SG.
D	Reactor Coolant System integrity will be impacted due to a rapid cool down.	If CETs are rising establish maximum flow rate to ALL SGs.

## Question 62

Given the following:

- A Unit 1 Reactor Trip and Safety Injection occurred from 50% power.
- Steam Generator levels lowered to 24% and are now rising.

Subsequently:

- AFW Pump #13 pump coupling sheared and separated from the motor shaft.

Which of the following describes the affect this malfunction has on Auxiliary Feedwater?

- A. AFWP 13 TRIP alarm will annunciate due to motor overspeed after the coupling breaks.
- B. AFWP 13 TRIP alarm will annunciate when pump flow drops to <90 gpm after the coupling breaks.
- C. AFWP 13 DISCH PRESS LO alarm will annunciate. In order to stop the pump by placing the handswitch in the STOP position, you must reset SI and the SG LO-LO AFW Actuation.
- D. AFWP 13 DISCH PRESS LO alarm will annunciate. In order to stop the pump by placing the handswitch in the STOP position, you must reset SI and the ESF Load Sequencer.

## Question 63

A lockout has occurred on 4.16 KV bus E2A. The Unit Supervisor has directed you to determine the E2A11 battery discharge current.

Which of the following correctly describes how you should obtain this information for the Unit Supervisor?

This information can ...

- A. be obtained from CP-003 using the BATT CUR indicator.
- B. be obtained from CP-010 using the BATT CUR indicator.
- C. only be obtained from one of the QDPS plasma displays.
- D. only be obtained locally. A Plant Operator must be dispatched.

Question 64

Given the following:

- Unit 1 is in Mode 3.
- All Shutdown Rods are fully withdrawn preparing for a Reactor Startup.
- Pressurizer Backup Heaters ‘D’ and ‘E’ are energized.

Subsequently:

- “D” RCP Trips

Which of the following describes the correct INITIAL response of Pressurizer Pressure Control and Pressurizer Temperature?

	Pressurizer Pressure Master Controller Output	Pressurizer Temperature
A.	Rise	Rise
B.	Rise	Lower
C.	Lower	Lower
D.	Lower	Rise



Question 65

Unit 1 is at 75% power. The crew is currently raising power at 10%/Hour.

The Primary Reactor Operator over the last 10 minutes has noticed RCP Motor Upper and Lower Radial Bearing Temperatures trending up. The bearing temperatures were all at 140°F and are now stable at the following temperatures:

	Motor Upper Radial Bearing Temperature	Motor Lower Radial Bearing Temperature
RCP 1A	198°F	198°F
RCP 1B	196°F	196°F
RCP 1C	194°F	194°F
RCP 1D	192°F	192°F

Which of the following should the Unit Supervisor have the Reactor Operator perform in accordance with 0POP04-RC-0002, Reactor Coolant Pump Off Normal?

Trip the Reactor, Ensure Main Turbine tripped and at a MINIMUM stop...

- A. RCP 1A ONLY
- B. RCP 1A and 1B ONLY
- C. RCP 1A, 1B and 1C ONLY
- D. RCP 1A, 1B, 1C and 1D

Question 66

Unit 2 is performing a Plant Startup with Reactor Power currently at 8%.

Power Range Channel N41 INSTRUMENT and CONTROL power fuses are removed while maintenance is being performed on the detector. All protective bistables associated with N41 are in the TRIPPED condition.

Subsequently the INSTRUMENT power is lost to Power Range Channel N42.

Which of the following describes the IMPACT of this malfunction and the ACTION taken to mitigate the consequences?

	<b>IMPACT</b>	<b>ACTION</b>
A.	N42 Control Board indication will NOT change.	Perform immediate actions of 0POP04-NI-0001, Nuclear Instrument Malfunction, to respond to the Instrument failure.
B.	N42 Control Board indication will fail low.	Perform immediate actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection, to respond to the Reactor Trip.
C.	N42 Control Board indication will NOT change.	Perform immediate actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection, to respond to the Reactor Trip.
D.	N42 Control Board indication will fail low.	Perform immediate actions of 0POP04-NI-0001, Nuclear Instrument Malfunction, to respond to the Instrument failure.

Question 67

Given the following on Unit 1:

- A LOOP has occurred and all Emergency Diesel Generators (EDG) are running.
- A fire in the relay room has caused a Control Room evacuation and 0POP04-ZO-0001, Control Room Evacuation, is being performed.
- As secondary RO, you have performed the initial actions at ZLP-653 and ZLP-700 in Train 'A' Switchgear Room per 0POP04-ZO-0001, Control Room Evacuation, to transfer equipment control to the local panels.

Which of the following describes actions associated with Essential Cooling Water (ECW) performed at ZLP-653 and 700 in accordance with 0POP04-ZO-0001, Control Room Evacuation, and the resultant affects on ESF Diesel #11 operation?

	Action(s)	Affects
A.	Transferred controls for ECW Pump A and discharge valve.	ECW Pump A remains running and the discharge valve remains open with no affect on the operation of ESF DG #11
B.	Transferred control of ECW Pump A ONLY.	ECW Pump A remains running with no affect on the operation of ESF DG #11
C.	Transferred controls for ECW Pump A and discharge valve.	ECW Pump A trips and the discharge valve remains open requiring the pump to be restarted to restore cooling to the DG.
D.	Transferred control of ECW Pump A ONLY.	ECW Pump A trips requiring the pump to be restarted to restore cooling to the DG.

## Question 68

Which of the following describes the physical location of Core Exit Thermocouples (CETs) and their relationship to the Reactor Coolant System?

CETs are positioned just above the top of a TOTAL of...

- A. 25 Fuel Assemblies and are used to determine Reactor Coolant System Subcooling.
- B. 25 Fuel Assemblies and are used to determine Cold Overpressure Mitigation Actuation Setpoints.
- C. 50 Fuel Assemblies and are used to determine Cold Overpressure Mitigation Actuation Setpoints.
- D. 50 Fuel Assemblies and are used to determine Reactor Coolant System Subcooling.

## Question 69

Unit 1 has just tripped from 100% Power.

The crew tripped the Reactor when it was determined that Control Rods were stepping out in an uncontrolled manner.

Given this condition, Deaerator (DA) level is expected to be...

- A. trending up. Open DA high level dump bypass valves to prevent DA level from trending above 80%.
- B. trending up. Close Condensate to DA inlet valves to prevent DA level from trending above 80%.
- C. trending down. Start available Condensate Pumps to prevent DA level from trending below 30%.
- D. trending down. Stop all Feedwater Booster Pumps to prevent DA level from trending below 30%.

## Question 70

Unit 1 is at 100% Power.

A Condensate Pump trips and the Standby Condensate Pump will not start leaving just one Condensate Pump running.

Which of the following components is affected to the extent that Operator Action is required to maintain proper operation?

Seal Water to the...

- A. Low Pressure Heater Drip Pumps
- B. Feedwater Booster Pumps
- C. Condensate Pumps
- D. Turbine Driven Steam Generator Feed Pumps

## Question 71

A fault in the steam pressure transmitter for the controlling Steam Flow channel on SG 1A causes the pressure indication to drop 50 psig.

Which one of the following describes the Steam Generator Water Level Control System response to this fault?

Assume program  $\Delta p$  for SGFPT speed control does NOT change.

SG 1A Main Feedwater Regulation Valve will initially ...

- A. open to match feedwater flow with indicated steam flow. When stabilized, SG 1A level will be controlling on program.
- B. open to match feedwater flow with indicated steam flow. When stabilized, SG 1A level will be controlling slightly higher than program.
- C. close to match feedwater flow with indicated steam flow. When stabilized, SG 1A level will be controlling on program.
- D. close to match feedwater flow with indicated steam flow. When stabilized, SG 1A level will be controlling slightly lower than program.

Question 72

Given the following:

- During core off load it is reported by the refueling crew that SFP and Rx cavity level is lowering.
- Plant personnel report water coming out of an open Steam Generator manway (nozzle dam failure)
- Control Room operators enter 0POP04-FC-0002, Refueling LOCA.
- A Plant Operator is dispatched to close the ‘FUEL TRANSFER TUBE GATE VALVE’.

In accordance with 0POP02-FC-0002, Refueling LOCA, which of the following describes how the plant operator should close the valve and the resultant effect of the valve closure?

	Valve Closure	Effect
A.	Closed by manually turning local hand wheel.	SFP level stabilizes and In Containment Storage Area level continues to lower.
B.	Closed by manually turning local hand wheel.	SFP and ICSA level stabilize.
C.	Closed by placing local Handswitch to ‘CLOSE’.	SFP level stabilizes and In Containment Storage Area level continues to lower.
D.	Closed by placing local Handswitch to ‘CLOSE’.	SFP and ICSA level stabilize.



Question 73

Unit 2 tripped from 100% Power when all Reactor Coolant Pumps tripped due to an off-site grid frequency perturbation.

With the frequency issue corrected, the Crew is performing 0POP05-EO-ES01, Reactor Trip Response, and is checking to see if Reactor Coolant Pumps can be started.

The following temperatures and pressures are reported by the Reactor Operator:

- PZR Pressure.....1925 psig and lowering
- CET Temperature.....605°F and rising
- S/G Pressures .....1050 psig and lowering
- RCS Hot Leg Temperatures.....600 °F and rising
- RCS Cold Leg Temperatures....595 °F and rising
- RCS subcooling .....27 °F and lowering

Which of the following describes the action and basis the Crew should perform next in accordance with 0POP05-EO-ES01, Reactor Trip Response?

- A. Raise steam dumping rate to aid in establishing natural circulation.
- B. Increase Aux Feedwater flow to aid in establishing natural circulation.
- C. Actuate a Safety Injection due to loss of subcooling.
- D. Energize ALL Pressurizer heaters to raise RCS subcooling.

## Question 74

Given the following:

- New Fuel receipt is in progress in the Fuel Handling Building.
- A New Fuel Assembly is dropped resulting in a breach of the Fuel Cladding.

The resulting radiation hazard is primarily...

- A. EXTERNAL exposure due to the presence of neutron radiation.
- B. EXTERNAL exposure due to the presence of alpha radiation.
- C. INTERNAL exposure due to the presence of neutron radiation.
- D. INTERNAL exposure due to the presence of alpha radiation.

## Question 75

In accordance with Technical Specifications which of the following describes the MAXIMUM pressure the Reactor Coolant System can be maintained at WITHOUT exceeding a Safety Limit.

- A. 2370 psig
- B. 2485 psig
- C. 2785 psig
- D. 3100 psig

## Question 76

The following events occur simultaneously:

- A Fire in the Relay Room Requiring Fire Brigade Response
- A Large Main Steam Line Break in Containment

Which of the following procedures takes precedence?

- A. 0POP05-EO-EO00, Reactor Trip or Safety Injection
- B. 0POP05-EO-FRZ1, Response to High Containment Pressure
- C. 0POP04-ZO-0008, Fire/Explosion
- D. 0POP04-ZO-0001, Control Room Evacuation

Question 77

Authorization has been given to allow work on the packing of a motor operated valve (MOV) using the valve backseat as the boundary.

In accordance with 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions, who was responsible for giving authorization to perform the work and how shall the authorization be documented?

	<b>AUTHORIZATION</b>	<b>DOCUMENTATION</b>
A	Plant Manager and Engineering Division Manager	In the ECO Notes section of the ECO Form
B	Plant Manager and Engineering Division Manager	In the General Information of the Shift Manager Shift Turnover Checklist
C	Unit Operations Manager and Maintenance Division Manager	In the General Information of the Shift Manager Shift Turnover Checklist
D	Unit Operations Manager and Maintenance Division Manager	In the ECO Notes section of the ECO Form

## Question 78

Unit 2 is in Mode 6 when the following occurs:

- CNTMT NORMAL SUMP LVL HI-HI alarm actuates
- CNTMT SEC NORM SUMP LVL HI-HI alarm actuates
- Personnel in the Fuel Handling Building report lowering level in the Spent Fuel Pool

Based on this information, which of the following correctly identifies the location of the leak AND the procedure to be entered by the Unit Supervisor?

- A. Spent Fuel Pool Cooling leak in the Fuel Handling Building; 0POP04-RC-0007, Mode 5 Or Mode 6 LOCA With The Reactor Vessel Head On
- B. Spent Fuel Pool Cooling leak in the Fuel Handling Building; 0POP04-FC-0002, Refueling LOCA
- C. Residual Heat Removal System leak in containment; 0POP04-RC-0007, Mode 5 Or Mode 6 LOCA With The Reactor Vessel Head On
- D. Residual Heat Removal System leak in containment; 0POP04-FC-0002, Refueling LOCA

Question 79

Unit 1 was operating at 100% power when an event occurred that tripped the reactor and initiated a Safety Injection.

The crew is performing 0POP05-EO-EO00, Reactor Trip or Safety Injection.

Based on the following conditions of the Steam Generators and Containment;

<b>Steam Generators</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Pressure	1095 psig Slowly Lowering	1085 psig Slowly Lowering	1090 psig Slowly Lowering	1010 psig Slowly Lowering
Level	20% NR Slowly Rising	19% NR Slowly Rising	29% NR Stable	31% NR Slowly Lowering
AFW Flow	150 gpm	150 gpm	50 gpm	50 gpm

<b>Containment</b>	
Pressure	3.2 psig - Rising
Temperature	130°F - Rising
Humidity	110°F-dew point – Rising

Which of the following procedures should the Unit Supervisor perform next?

- A. 0POP05-EO-EO20, Faulted Steam Generator Isolation
- B. 0POP05-EO-EO30, Steam Generator Tube Rupture
- C. 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- D. 0POP05-EO-FRZ1, Response to High Containment Pressure

## Question 80

A reactor trip has occurred from 2% reactor power.

- The crew is performing Step 1 of 0POP05-EO-ES01, Reactor Trip Response
- Source Range Detectors have not energized yet.

Subsequently a Reactor Operator reports the following;

- Extended Range Startup Rate is 0.1 DPM.
- DRPI shows three control rods at 24 steps.

Which indication should the Unit Supervisor interpret as a priority condition and which procedure should be entered?

- A. Extended Range Startup Rate is 0.1 DPM – Enter 0POP04-CV-0003, Emergency Boration
- B. Extended Range Startup Rate is 0.1 DPM – Enter 0POP05-FO-FRS1, Response to Nuclear Power Generation – ATWS
- C. DRPI indicates three control rods at 24 steps – Enter 0POP04-CV-0003, Emergency Boration
- D. DRPI indicates three control rods at 24 steps – Enter 0POP05-FO-FRS1, Response to Nuclear Power Generation – ATWS



## Question 81

Unit 1 is at 100% Power and stable with all systems in a normal lineup.

An event occurs and an RO reports the following for Steam Generator levels:

- Steam Generator 'A' – 73% and rising.
- Steam Generator 'B' – 73% and rising.
- Steam Generator 'C' – 70% and stable.
- Steam Generator 'D' – 70% and stable.

Which of the following (1) describes a failure that could cause this event and (2) the procedure that has the appropriate actions to control Steam Generator levels?

- A. (1) Loss of power to Feedwater Pump Discharge Pressure Transmitter PT-0558  
(2) Enter 0POP04-VA-0001, Loss of 120 VAC Class Vital Distribution, to manually control SGFP Master Speed Controller.
- B. (1) Loss of power to Feedwater Pump Discharge Pressure Transmitter PT-0558  
(2) Enter 0POP04-FW-0002, Steam Generator Feed Pump Trip, to manually control SGFP Master Speed Controller.
- C. (1) Loss of power to Class 1E 120 VAC DP-1201  
(2) Enter 0POP04-VA-0001, Loss of 120 VAC Class Vital Distribution, to deselect affected channels controlling Steam Generator water level.
- D. (1) Loss of power to Class 1E 120 VAC DP-1201  
(2) Enter 0POP04-FW-0002, Steam Generator Feed Pump Trip, to deselect affected channels controlling Steam Generator water level.

## Question 82

Unit 1 is operating at 100% power when the “CCW SURGE TK LVL LO” annunciator alarms. Given the following conditions:

- The Crew has entered 0POP04-CC-0001, Component Cooling Water System Leak, due to the lowering Component Cooling Water Surge Tank level.
- Plant Operators in the field have NOT identified the source of the leak.
- Component Cooling Water Non-Vital Supply Valves closed as required at 64.6% level.
- Component Cooling Water Surge Tank continued to lower to 60% and is now stable.

Which of the following (1) identifies a possible leak location and (2) the correct action the Unit Supervisor should take based on the EXISTING plant conditions?

- A. (1) A leak in the Letdown Heat Exchanger.  
(2) Isolate letdown and enter 0POP04-CV-0004, Loss of Normal Letdown.
- B. (1) A leak in RCP C Motor Air Cooler.  
(2) Trip the Reactor, Turbine, and Reactor Coolant Pumps, then enter 0POP05-EO-EO00, Reactor Trip or Safety Injection.
- C. (1) A leak in RCP C Motor Air Cooler.  
(2) Enter 0POP04-TM-0005, Rapid Load Reduction and reduce power to less than P8 (40%) to allow tripping RCP C
- D. (1) A leak in the Letdown Heat Exchanger.  
(2) Isolate letdown and enter 0POP04-RC-0008, Boron Dilution Event.

## Question 83

Given the following:

- Unit 1 is in Mode 5
- RCS Boron Concentration is currently at 2810 ppm
- Control Rods are locked in the refueling position
- Preparations are being made for refueling operations
- Reactor Trip breakers are closed for maintenance and testing
- Rod Drive MG Sets are running for maintenance and testing

Subsequently:

- A fire breaks out in the Train C ESF Switchgear room.
- The Fire Brigade Leader reports a concern that the fire appears to be spreading toward the Rod Drive MG Set Room which could threaten the ability to move the Control Rods.

Based on the given information, which of the following describes the actions the Unit Supervisor should perform?

- A. Direct I&C to restore Control Rod operation per 0PMP07-DM-0003, Rapid Refueling Rod Holdout Operation, and then ensure all Control Rods are fully inserted.
- B. Enter 0POP04-RS-0001, Control Rod Malfunction, open the Reactor Trip Breakers and then ensure all Control Rods are fully inserted.
- C. Direct a Plant Operator to secure the Rod Drive MG Sets per 0PMP07-DM-0003, Rapid Refueling Rod Holdout Operation, and then ensure all Control Rods are fully inserted.
- D. Enter 0POP04-RS-0001, Control Rod Malfunction, place all Control Rod Lift Coil Disconnect Switches in the DISCONNECT position and then ensure all Control Rods are fully inserted.

Question 84

Unit 1 is operating at 100% Power.

The crew has implemented OPOP04-RC-0004, Steam Generator Tube Leakage, due to the following current Radiation Monitor Readings given to the Unit Supervisor for the Steam Generators.

Steam Generators	A	B	C	D
Steam Line Radiation	1.8E-2 uCi/cc	1.5E-2 uCi/cc	1.4E-2 uCi/cc	3.9E-1 uCi/cc
Blowdown Radiation	3.1E-4 uCi/cc	2.4E-4 uCi/cc	2.3E-4 uCi/cc	4.6E-2 uCi/cc
N-16 Monitors	9.0 gpd	0.2 gpd	0.1 gpd	77.0 gpd

- Chemistry reports total current primary to secondary leak rate is 75 gpd.

Which Steam Generator(s) have tube leaks and what are the radiological hazards associated with this event?

- A. Only Steam Generator ‘D’ has a tube leak – Increased radiation dose to plant workers ONLY.
- B. Only Steam Generator ‘D’ has a tube leak – Increased radiation dose to plant workers AND radiological release to the environment.
- C. Steam Generators ‘A’ and ‘D’ have tube leaks – Increased radiation dose to plant workers ONLY.
- D. Steam Generators ‘A’ and ‘D’ have tube leaks – Increased radiation dose to plant workers AND radiological release to the environment.

## Question 85

Unit 2 is operating at 60% Power.

Subsequently:

- A Reactor Operator reports that Condenser Vacuum is 23" HG and stable and Main Generator Megawatt output is slowly lowering.
- Further investigation reveals that the "MAIN COND VACUUM LO" alarm is EXTINGUISHED and the "C9 COND AVAILABLE FOR STEAM DUMP" light is ILLUMINATED.

Based on the given plant conditions, which of the following describes actions that the Unit Supervisor should perform?

- A. (1) Trip the Reactor, Ensure the Main Turbine tripped and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection.  
(2) Write a Condition Report on the "MAIN COND VACUUM LO" alarm ONLY which is NOT responding properly.
- B. (1) Trip the Reactor, Ensure the Main Turbine tripped and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection.  
(2) Write a Condition Report on the "MAIN COND VACUUM LO" alarm and the "C9 COND AVAILABLE FOR STEAM DUMP" light. Both are NOT responding properly.
- C. (1) Enter 0POP04-CR-0001, Loss of Condenser Vacuum, and begin a Turbine Load Reduction.  
(2) Write a Condition Report on the "MAIN COND VACUUM LO" alarm and the "C9 COND AVAILABLE FOR STEAM DUMP" light. Both are NOT responding properly.
- D. (1) Enter 0POP04-CR-0001, Loss of Condenser Vacuum, and begin a Turbine Load Reduction.  
(2) Write a Condition Report on the "MAIN COND VACUUM LO" alarm ONLY which is NOT responding properly.

## Question 86

Instrument air has been lost to “LETDN ORIF HDR ISOL” CV-FV-0011.

Which of the following correctly describes the action to be taken by the control room staff and why?

The Unit Supervisor should enter ...

- A. 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control, and close “CHG FLOW CONT” FCV-0205 to minimize thermal stress on the charging nozzle at the RCS pipe.
- B. 0POP04-CV-0004, Loss of Normal Letdown, and close “CHG FLOW CONT” FCV-0205 to minimize thermal stress on the charging nozzle at the RCS pipe.
- C. 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control, and close “CHG FLOW CONT” FCV-0205 to maintain VCT level and prevent a loss of suction to the charging pump.
- D. 0POP04-CV-0004, Loss of Normal Letdown, and close “CHG FLOW CONT” FCV-0205 to maintain VCT level and prevent a loss of suction to the charging pump.

Question 87

Unit 1 was at 100% power when an event occurred that required a fast load reduction to 80% power. During the power reduction, 2 rods in Control Bank ‘D’ failed to move while the remainder of the rods in the bank inserted 18 steps.

Which of the following describes the ACTION the Unit Supervisor should now take and the EFFECTS this condition may have on Unit 1?

	<b>ACTION</b>	<b>EFFECTS</b>
A.	Trip the reactor and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection.	Fuel Integrity may be challenged by Power Peaking Factor limits being exceeded.
B.	Place Unit 1 in MODE 3 within 6 hours per 0POP03-ZG-0006, Plant Shutdown from 100%.	Fuel Integrity may be challenged by DNBR limits being exceeded.
C.	Trip the reactor and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection.	Fuel Integrity may be challenged by DNBR limits being exceeded.
D.	Place Unit 1 in MODE 3 within 6 hours per 0POP03-ZG-0006, Plant Shutdown from 100%.	Fuel Integrity may be challenged by Power Peaking Factor limits being exceeded.

## Question 88

A large leak of radioactive water is occurring in the Mechanical Auxiliary Building.

The following sumps are experiencing a rise in level due to the leak.

1. Component Cooling Water Sump
2. Mechanical Auxiliary Building Floor Drain Sump #2
3. Essential Cooling Water Sump
4. Mechanical Auxiliary Building Elevator Sump

Under these conditions securing the sump pumps for which of the above sumps would prevent an unmonitored release directly to the environment? All sump discharges are in normal alignment.

- A. 1
- B. 2
- C. 3
- D. 4



Question 89

Given the following:

- A Waste Monitor Tank release needs to be performed
- RT-8038, LWPS Monitor #1, was declared inoperable 3 days ago

In accordance with 0PSP07-WL-LDP2, Liquid Effluent Permit with RT-8038 Inoperable, who approves the discharge and what are the additional requirements for the release per the Offsite Dose Calculation Manual (ODCM)?

	Approval	ODCM requirement
A.	Shift Manager	Continuous surveys of the discharge piping during the release
B.	Shift Manager	At least two independent samples of the monitor tank are analyzed prior to the release
C.	Health Physics Manager	Continuous surveys of the discharge piping during the release
D.	Health Physics Manager	At least two independent samples of the monitor tank are analyzed prior to the release

## Question 90

Due to an emergent equipment condition, Plant Operations needs to generate a troubleshooting plan.

In accordance with 0POP01-ZO-0012, Operations Troubleshooting Process, which of the following is correct concerning the troubleshooting process?

1. Component operation should ONLY be directed by approved plant procedures or Condition Report Operation Evaluations (CROE).
  2. Troubleshooting should ONLY be performed on equipment that is already removed from service and/or inoperable.
  3. Operations Manager approval is required to enter into 0POP01-ZO-0012, Operations Troubleshooting Process.
  4. Shift Manager approval is required to enter into 0POP01-ZO-0012, Operations Troubleshooting Process.
- A. 1, 3
- B. 2, 4
- C. 1, 4
- D. 2, 3

## Question 91

Unit 1 is at 100% Power.

A Reactor Operator reports the following to the Unit Supervisor:

- VCT level is 60% and rising.
- A VCT Auto Make-up is NOT in service.
- Tavg is 1°F below Tref and slowly lowering.
- “VCT HI/LO” alarm is illuminated.
- “VCT LO/LO” alarm is illuminated.

Which of the following (1) describes the cause of these indications and (2) the action the Unit Supervisor should take?

- A. (1) VCT level transmitter, CV-LT-0113, has failed low causing an inadvertent boration.  
(2) Enter 0POP09-AN-04M8, Annunciator Response for the VCT LO/LO alarm, OPEN CV-MOV-0113A, “VCT OUTL ISOL”, and then de-energize the MOV.
- B. (1) VCT level transmitter, CV-LT-0113, has failed low causing an inadvertent boration.  
(2) Enter 0POP09-AN-04M8, Annunciator Response for the VCT HI/LO alarm, CLOSE CV-MOV-0113B, “RWST ISOL”, and then de-energize the MOV.
- C. (1) VCT level transmitter, CV-LT-0112, has failed low causing an inadvertent boration.  
(2) Enter 0POP09-AN-04M8, Annunciator Response for the VCT LO/LO alarm, OPEN CV-MOV-0112B, “VCT OUTL ISOL”, and then de-energize the MOV.
- D. (1) VCT level transmitter, CV-LT-0112, has failed low causing an inadvertent boration.  
(2) Enter 0POP09-AN-04M8, Annunciator Response for the VCT HI/LO alarm, CLOSE CV-MOV-0112C, “RWST ISOL”, and then de-energize the MOV.

## Question 92

In regards to the Pressurizer Pressure Reactor Trip Setpoint, which of the following describes the Technical Specification Bases for the Setpoint?

- A. Prevent water relief through the Pressurizer Safety Valves.
- B. Protect against Departure from Nucleate Boiling and Reactor Coolant System over pressure.
- C. Prevent Fuel Pellet melting and greater than 1% cladding strain.
- D. Protect against consequences of a power excursion from all power levels.

Question 93

Unit 1 is at full power operations.

Annunciator “125V DC SYSTEM E1A11 TRBL” is received and the crew sends a Plant Operator to the Class 1E 125V DC E1A11 Bus.

The Plant Operator reports the following:

- Bus voltage reads 129 VDC
- Negative voltage reads 25 VDC
- Positive voltage reads 105 VDC

Which of the following describes the malfunction and the procedure the Unit Supervisor should use to mitigate the consequences?

	<b>MALFUNCTION</b>	<b>PROCEDURE</b>
A.	Class 1E 125 VDC Bus has a ground.	Use 0POP02-EE-0001, ESF (Class1E) DC Distribution System, to de-energize the Bus and apply appropriate Tech Specs.
B.	Class 1E 125 VDC Bus has a ground.	Use 0POP01-ZO-0009, Ground Isolation, to attempt to isolate the ground fault.
C.	Class 1E 125 VDC Bus has high current.	Use 0POP02-EE-0001, ESF (Class1E) DC Distribution System, to place a second battery charger in service.
D.	Class 1E 125 VDC Bus has high current.	Use 0POP01-ZO-0009, Ground Isolation, to de-energize unnecessary loads.

## Question 94

Which of the following requires Core Load Supervisor approval prior to performing in accordance with OPOP08-FH-0002, Fuel Handling Machine, and OPOP08-FH-0003, Fuel Transfer System?

During an outage and while offloading the Reactor Core...

- A. the FHB Upender Operator uses the "PROX SWITCH BYPASS" key switch to operate the FHB upender because the "UPENDER CLEAR" light will not illuminate.
- B. the FHB Upender Operator positions the "TRAVERSE RX/POOL" selector switch to "RX" position to move the carriage from the FHB to Containment.
- C. the Fuel Handling Machine Operator lowers a fuel assembly into a Region 2 Fuel Cell.
- D. the Fuel Handling Machine Operator unlatches a fuel assembly after being placed in a SFP Region 1 Fuel Cell.

Question 95

Given the following:

- Unit 2 is operating at 100% power
- Loop 1 (Channel I) T-ave bistables are tripped for ongoing maintenance on the temperature channel.

Subsequently, a faulty bistable causes:

- the PRZR PRESS LO RX TRIP ALERT annunciator to illuminate
- the following SINGLE bistable status monitoring light to illuminate:
  - Channel III Pressurizer Pressure Lo Reactor Trip.

The Reactor Operator reports that the reactor is still in operation.

Which of the following describes the procedure the Unit Supervisor should initially enter and the subsequent actions that will be performed?

	Procedure	Subsequent Action
A.	0POP05-EO-EO00, Reactor Trip or Safety Injection	Trip the bistables associated with Channel III Pressurizer Pressure within 72 hours and repair the channel prior to entering Mode 2.
B.	0POP05-EO-EO00, Reactor Trip or Safety Injection	Repair Channel III Pressurizer Pressure prior to entering Mode 2.
C.	0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control	Trip the bistables associated with Channel III Pressurizer Pressure within 72 hours.
D.	0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control	Make preparations to begin a unit shutdown within 1 hour.

Question 96

Given the following:

- Unit 2 is being cooled down at the start of a refueling outage per OPOP03-ZG-0007, Plant Cooldown
- Control Room Operators have just completed isolating the Safety Injection Accumulators per OPOP03-ZG-0007.
- 10 minutes later, the Reactor Operator reports Pressurizer level at 17% and lowering rapidly.

Which of the following identifies the PROCEDURE the Unit Supervisor should enter and an action DIRECTED BY THE PROCEDURE?

	PROCEDURE ENTERED	ACTION DIRECTED
A.	OPOP05-EO-EO00, Reactor Trip or Safety Injection	Check Steam Generator tubes intact
B.	OPOP05-EO-EO00, Reactor Trip or Safety Injection	Check RHR Trains isolated
C.	OPOP04-RC-0006, Shutdown LOCA	Check Steam Generator tubes intact
D.	OPOP04-RC-0006, Shutdown LOCA	Check RHR Trains isolated



## Question 97

A Site Area Emergency has been declared in Unit 1. The TSC, EOF and JIC have not been activated yet.

An Inside Containment Isolation Valve needs to be manually closed to stop a radiological release that is affecting the owner controlled area. It is estimated that it will take a worker 15 minutes to close the valve once in the area. The dose rate in the area of the valve is estimated at 25 REM/Hour.

In accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines, who at the MINIMUM should provide approval to perform this task?

- A. Emergency Director ONLY
- B. Emergency Director and the Worker
- C. Acting Radiological Manager ONLY
- D. Acting Radiological Manager and the Worker

Question 98

Given the following:

- A LOCA has occurred in Unit 2
- Operators are performing 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- Only one HHSI pump is available and running
- CETs are 710 °F and rising
- Core voiding is just beginning to occur

Which of the following describes the initial response of the Source Range detectors to the core voiding and the actions the Unit Supervisor should take to control the voiding?

	NI Response	Actions
A.	Indication will RISE	Enter 0POP05-EO-FRC1, Response to Inadequate Core Cooling and depressurize the RCS using a Pressurizer PORV to 255 psig to allow accumulators to inject.
B.	Indication will RISE	Enter 0POP05-EO-FRC2, Response to Degraded Core Cooling and start all available charging pumps to raise RCS inventory.
C.	Indication will LOWER	Enter 0POP05-EO-FRC1, Response to Inadequate Core Cooling and depressurize the RCS using a Pressurizer PORV to 255 psig to allow accumulators to inject.
D.	Indication will LOWER	Enter 0POP05-EO-FRC2, Response to Degraded Core Cooling and start all available charging pumps to raise RCS inventory.

## Question 99

Given the following:

- The crew is performing 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink, due to an earlier red path on the Heat Sink Critical Safety Function.

Subsequently:

- The STA reports the following current conditions:
  - Subcriticality CSF           ORANGE
  - Core Cooling CSF           ORANGE
  - Heat Sink CSF               YELLOW
  - Integrity CSF                RED
  - Containment CSF            RED
  - Inventory CSF               YELLOW

Which one of the following correctly describes the actions required?

Complete 0POP05-EO-FRH1 and transition to...

- A. 0POP05-EO-FRZ1, Response to High Containment Pressure.
- B. 0POP05-EO-FRC2, Response to Degraded Core Cooling.
- C. 0POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition.
- D. 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS

## Question 100

Unit 1 is operating at 100% power when Chemistry notifies the Control Room of the following results:

- RCS gross activity of 219 microcuries per gram and a newly calculated  $\bar{E}$  (E-bar) of 0.2734.

Based on this information, as a minimum, the Unit Supervisor should....

- A. Enter 0PGP03-ZO-0012, Plant Systems Chemistry Control, and shutdown as quickly as safe plant operation allows to comply with Tech Spec 3.4.8, RCS Specific Activity.
- B. Enter 0PGP03-ZO-0012, Plant Systems Chemistry Control, and immediately take action to reduce power to 50% or less to comply with Tech Spec 3.4.8, RCS Specific Activity.
- C. Enter POP04-RC-0001, High Reactor Coolant System Activity, and raise letdown flow in order to pass more coolant through the Demineralizers.
- D. Enter POP04-RC-0001, High Reactor Coolant System Activity, and lower letdown flow in order to allow the coolant to remain in the Demineralizers longer.

---

# LOT-19 NRC RO EXAM KEY

---

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

---

# LOT-19 NRC SRO EXAM KEY

---

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