

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

FINAL RO AND SRO
WRITTEN EXAM WITH ANSWERS

**U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination****Applicant Information**

Name: ANSWER KEY	Region: II
Date:	Facility/Unit: Shearon Harris
License Level: RO	Reactor Type: Westinghouse
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

Question: 1

Given the following conditions:

- A Safety Injection has just occurred.
- Following the SI, leakage from the CCW system to the ESW system is suspected.

Which of the following sets of conditions would provide confirmation of this diagnosis?

- a. Decreasing CCW surge tank level **AND** ESW discharge radiation alarm
- b. Automatic makeup to the CCW surge tank **AND** ESW discharge sample
- c. Decreasing CCW surge tank level **AND** ESW discharge sample
- d. Automatic makeup to the CCW surge tank **AND** ESW discharge radiation alarm

Answer:

- c. Decreasing CCW surge tank level **AND** ESW discharge sample

Question: 2

Which of the following conditions would require that Attachment 2, "Cycle Log," of OMM-013, Cycle and Transient Monitoring Program, be completed?

- a. With the plant in Mode 2, a failed Source Range channel results in a Source Range High Flux Trip
- b. With the plant at 100% power, a failed actuation relay results in Auxiliary Feedwater flow to the SGs
- c. With RCS temperature at 240°F, a trip of Emergency Bus 1A-SA normal supply breaker 105 results in EDG 1A-SA starting automatically
- d. With the plant at 100% power, a failed pressurizer level instrument results in normal letdown isolating

Answer:

- b. With the plant at 100% power, a failed actuation relay results in Auxiliary Feedwater flow to the SGs

Question: 3

Which of the following indications are **BOTH** used by EPP-013, LOCA Outside Containment, to identify that the leak is isolated?

- a. RCS pressure increasing **AND** RAB radiation decreasing
- b. RCS pressure increasing **AND** Local observation
- c. PRZ level increasing **AND** Local observation
- d. PRZ level increasing **AND** RAB radiation decreasing

Answer:

- b. RCS pressure increasing **AND** Local observation

ANSWER KEY

Question: 4

Given the following conditions:

- Control Room Ventilation is in a normal lineup with 'A' Train fans in operation.
- Power is lost to the 'B' Train North Emergency Intake Radiation Monitor.

What is the response of the Control Room Ventilation System to this failure?

- a. Remains in the normal alignment, but a subsequent Train 'A' radiation monitor reaching the high alarm will cause an isolation
- b. Isolation occurs and **CANNOT** be reset
- c. Isolation occurs, but can be reset
- d. Remains in the normal alignment, but a subsequent Train 'B' radiation monitor reaching the high alarm will cause an isolation

Answer:

- c. Isolation occurs, but can be reset

Question: 5

Given the following conditions:

- The plant is operating at 100% power with 'A' Train equipment in service.
- The 1B-SB emergency bus supply breaker (125) opens.

Which of the following is expected to occur?

- a. Containment Fan Cooler Fans for AH2 and AH3 will automatically start in low speed
- b. Both sequencers will run and load equipment selected by the UV program
- c. 1MS-72, MS 'C' to Aux FW Turbine, will open
- d. The 'B' ESW Header will be supplied by the NSW System

Answer:

- c. 1MS-72, MS 'C' to Aux FW Turbine, will open

Question: 6

Given the following conditions:

- Emergency Boration is required.
- 1CS-278, Emergency Boric Acid Addition, **CANNOT** be opened.

Which of the following alignments will provide adequate boric acid flow?

	1CS-283 Boric Acid to Boric Acid Blender FCV-113A	1CS-156 Makeup to CSIP Suction FCV-113B	1CS-155 Makeup to VCT FCV-114A	1CS-291 CSIP Suction from RWST LCV-115B	1CS-292 CSIP Suction from RWST LCV-115D	1CS-165 VCT Outlet LCV-115C	1CS-166 VCT Outlet LCV-115E
a.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
b.	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED
c.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	OPEN	OPEN
d.	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED

Answer:

d.	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED
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ANSWER

Question: 7

Given the following conditions:

- The plant is in Mode 5 on RHR cooling.
- A 170 gpm leak develops from the RCS.
- Letdown has been isolated.

Which of the following methods of makeup is to be used to restore level?

- a. Normal Charging from VCT
- b. Normal Charging from RWST
- c. Opening SI Accumulator Isolation valves
- d. CSIP flow through the BIT valves

Answer:

- d. CSIP flow through the BIT valves

ANSWER KEY

Question: 8

The generator is being taken off line during a normal shutdown in accordance with GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)".

Which of the following describes the proper sequence for operation of the generator output breakers, 52-7 and 52-9?

- a. Trip the turbine and verify the generator lockout opens both generator output breakers
- b. Manually open one generator output breaker, trip the turbine, and manually open the second output breaker
- c. Manually open both the generator output breakers, then trip the turbine
- d. Manually open one generator output breaker, trip the turbine, and allow the generator lockout to open the second output breaker

Answer:

- b. Manually open one generator output breaker, trip the turbine, and manually open the second output breaker

Question: 9

Which of the following is the **MOST SIGNIFICANT ACTION** the operator can take during a SGTR concurrent with a loss of off-site power to minimize the PTS challenge?

- a. Maintain the RCS temperature at or below the required cooldown target temperature
- b. Secure AFW flow to the affected SG once minimum required level is achieved
- c. Ensure the affected SG does **NOT** become water solid
- d. Terminate SI after meeting termination criteria

Answer:

- d. Terminate SI after meeting termination criteria

ANSWER KEY

Question: 10

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Containment pressure is 4.5 psig.
- SI has **NOT** been reset.
- Phase A has **NOT** been reset.
- Phase B has **NOT** been reset.

Which of the following describes the conditions required to allow opening of the SG sample valves?

- a. Containment pressure must be reduced below 3.0 psig before SI can be reset to allow opening the sample valves
- b. SI can be reset to allow opening the sample valves
- c. Containment pressure must be reduced below 3.0 psig before Phase A can be reset to allow opening the sample valves
- d. Phase A can be reset to allow opening the sample valves

Answer:

- b. SI can be reset to allow opening the sample valves

Question: 11

Given the following conditions:

- Condenser vacuum is 5.4 inches Hg and degrading.
- Turbine first stage pressure is 38% turbine load.
- Turbine load is being reduced.

Which of the following actions must be taken in accordance with AOP-012, "Partial Loss of Condenser Vacuum"?

- Continue reducing turbine load as necessary to maintain condenser vacuum
- Trip the reactor and verify the turbine trips
- Throttle open the Cooling Tower Bypass Valves to lower Circulating Water temperature
- Trip the turbine and verify the plant stabilizes at the point of adding heat on the steam dumps

Answer:

- Trip the reactor and verify the turbine trips

Question: 12

Given the following conditions:

- The plant is operating at 100% power.
- Bank 'C' control rod D12 DRPI is indicating 206 steps
- Bank 'C' Step Counters are indicating 228 steps

When comparing incore thermocouple positions to determine if the rod is actually out of position, which of the following thermocouples should be compared?

- a. Compare incore thermocouple C12 to the average of incore thermocouples C08, D03, D05, and H13
- b. Compare incore thermocouple C12 to the average of incore thermocouples F09, F11, F13, H11, and H13
- c. Compare incore thermocouple E12 to the average of incore thermocouples E08, E10, E14, and G15
- d. Compare incore thermocouple E12 to the average of incore thermocouples D05, E04, L12, and M11

Answer:

- d. Compare incore thermocouple E12 to the average of incore thermocouples D05, E04, L12, and M11

Question: 13

Which of the following sets of conditions would **NOT** permit waiving the Independent Verification requirement for a clearance removal?

	EXPECTED DOSE	AREA TEMPERATURE
a.	12 mRem	105°F
b.	9 mRem	115°F
c.	6 mRem	125°F
d.	3 mRem	135°F

Answer:

b.	9 mRem	115°F
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Question: 14

Given the following conditions:

- The RCS is solid.
- 'B' RCP is running.
- Both trains of RHR cooling are in service.
- The RCS is at 300 psig and 160 °F.

How is RCS pressure **INITIALLY** affected by the following valve failures?

	HCV-142 (RHR to letdown) fails SHUT	FCV-122 (charging flow control) fails OPEN
a.	Increase	Increase
b.	Increase	Decrease
c.	Decrease	Increase
d.	Decrease	Decrease

Answer:

a.	Increase	Increase
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Question: 15

With the plant at 100 percent steady-state condition, the following occurs:

- ALB-06-7-3, TOTAL MAKEUP WATER FLOW DEVIATION, alarms.
- ALB-06-8-4, BORIC ACID FLOW DEVIATION, alarms.
- VCT level is at 19.5% and decreasing at the same rate it has been for the last few days.

Which of the following procedures should be addressed?

- a. AOP-002, Emergency Boration
- b. AOP-003, Malfunction of Reactor Makeup Control
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-017, Loss of Instrument Air

Answer:

- b. AOP-003, Malfunction of Reactor Makeup Control

Question: 16

Given the following conditions:

- While performing an OP valve lineup, two valves are found under clearance.
- One of the valves is in the position required by the OP valve lineup.
- The other valve is **NOT** in the position required by the OP valve lineup.

Which of the following describes the action to take for each valve?

- a.
 - **CORRECT POSITION** - initial as being in the correct position, using the clearance number as a reference
 - **WRONG POSITION** - enter the clearance number in the initials space
- b.
 - **CORRECT POSITION** - circle the component number on the checklist **AND** leave the initial space blank
 - **WRONG POSITION** - make a note in the comment section **AND** leave the initial space blank
- c.
 - **CORRECT POSITION** - enter the clearance number in the initials space
 - **WRONG POSITION** - circle the component number on the checklist **AND** leave the initial space blank
- d.
 - **CORRECT POSITION** - initial as being in the correct position, using the clearance number as a reference
 - **WRONG POSITION** - make a note in the comment section **AND** leave the initial space blank

Answer:

- a.
 - **CORRECT POSITION** - initial as being in the correct position, using the clearance number as a reference
 - **WRONG POSITION** - enter the clearance number in the initials space

Question: 17

A leak in the Instrument Air system has occurred.

Which of the following describes an automatic response **AND** the pressure at which the response will occur?

- a. The Standby Air Compressor starts at 105 psig
- b. The in-service Air Dryer is bypassed at 90 psig
- c. 1SA-506 opens to supply Instrument Air from Service Air at 90 psig
- d. The FW preheater bypass valves shut at 66 psig

Answer:

- d. The FW preheater bypass valves shut at 66 psig

ANSWER KEY

Question: 18

Given the following conditions:

- Essential Services Chilled Water System (ESCWS) 'A' Train is in service.
- A reactor trip and safety injection occurs.

Which of the following describes the expected ESCWS alignment?

- a.
 - Both ESCW chillers running
 - ESCWS trains split with 'A' Train supplying the non-safety ESCWS loop
- b.
 - Both ESCW chillers running
 - ESCWS trains split with the non-safety ESCWS loop isolated
- c.
 - **ONLY** 'A' Train ESCWS chiller running
 - ESCWS trains cross-connected with the non-safety ESCWS loop isolated
- d.
 - **ONLY** 'A' Train ESCWS chiller running
 - ESCWS trains cross-connected with the 'A' Train supplying the non-safety ESCWS loop

Answer:

- b.
 - Both ESCW chillers running
 - ESCWS trains split with the non-safety ESCWS loop isolated

Question: 19

Given the following conditions:

- An SGTR has occurred.
- A transition has been made from PATH-2 to EPP-020, SGTR with Loss of Reactor Coolant: Sub-Cooled Recovery.
- After several steps have been completed in EPP-020, it becomes apparent that the wrong procedure is being implemented.

Which of the following actions should be taken?

- a. Return to the point in PATH-2 where the transition was made to EPP-20
- b. Return to the top left entry in PATH-2
- c. Return to the point in PATH-1 where the transition was made to PATH-2
- d. Return to the top left entry in PATH-1

Answer:

- d. Return to the top left entry in PATH-1

Question: 20

During the review of a clearance request to support preventative maintenance work activities, it is determined that there is an existing Standard Clearance.

Which of the following would be the appropriate course of action?

- a. The work can be performed under the Standard Clearance, and the technician signing on is responsible for ensuring adequate clearance boundary
- b. The work can be performed under the Standard Clearance, and Clearance Preparer is responsible for ensuring adequate clearance boundary
- c. The work can be performed using the Standard Clearance to create a new clearance if the Clearance Preparer and Verifier confirm the accuracy of the Standard Clearance
- d. The work **CANNOT** be performed using the Standard Clearance since Standard Clearance use is limited to support corrective maintenance work activities only

Answer:

- c. The work can be performed using the Standard Clearance to create a new clearance if the Clearance Preparer and Verifier confirm the accuracy of the Standard Clearance

Question: 21

Given the following conditions:

- A reactor trip and safety injection has occurred.
- ESW pump operation is being verified in PATH-1.
- Containment pressure is 7 psig.
- RCS pressure is 950 psig.
- SI Flow indicator FI-943, Normal HDR Flow, indicates 0 gpm.
- Both CSIPs are running and all SI valves are properly aligned.

Which of the following actions is to be taken?

- a. Trip the RCPs immediately due to RCP Trip Criteria being met
- b. Leave the RCPs running until a transition is made to Entry Point C
- c. Leave the RCPs running until containment pressure reaches 10 psig
- d. Trip the RCPs immediately due to a loss of CCW cooling to the pumps

Answer:

- a. Trip the RCPs immediately due to RCP Trip Criteria being met

Question: 22

Given the following conditions:

- The plant is in Mode 5.
- ALB-008-1-4, RWMU STORAGE TANK MINIMUM/HIGH LEVEL, alarms.
- RWMU tank level is decreasing with **NO** VCT makeup in progress.

Which one of the following procedures would be the most appropriate to implement?

- a. AOP-003, Malfunction of Reactor Makeup Control
- b. AOP-008, Accidental Release of Liquid Waste
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-020, Loss of Reactor Coolant Inventory / RHR While Shutdown

Answer:

- b. AOP-008, Accidental Release of Liquid Waste

Question: 23

Given the following conditions:

- Fuel cladding failure has occurred.
- The CVCS Cation Bed demineralizer has been placed in service.

Which of the following provide positive indications of the fuel cladding failure?

- a.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Volume Control Tank Room radiation monitor alarming
- b.
 - Reactor Coolant Filter high ΔP
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- c.
 - Chemistry samples
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- d.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Gross Failed Fuel Detector alarming

Answer:

- c.
 - Chemistry samples
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming

Question: 24

Given the following conditions:

- The plant is at 30% power.
- A dropped control rod has just been re-aligned.
- While attempting to reset the Rod Control Urgent Failure alarm, the operator inadvertently operates the Rod Control Start Up switch.

Which of the following describes the effect of operating the incorrect switch?

- a. All Control Bank control rods drop into the core, causing an automatic reactor trip
- b. All rods, including Control Bank and Shutdown Bank rods, drop into the core, causing an automatic reactor trip
- c. All rods remain in their current position and there is **NO** effect on the Rod Control System circuitry
- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Answer:

- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Question: 25

Given the following conditions:

- ALB-26-1-4, ANNUN SYS 1 POWER SUPPLY FAILURE, alarms.
- Investigation determines a 12 VDC (1C#1) power supply has failed.

Which of the following ALBs should be considered inoperable?

- a. Containment Spray & Accumulator System
- b. Diesel Generator System
- c. Reactor First Out System
- d. Auxiliary Feedwater System

Answer:

- c. Reactor First Out System

ANSWER KEY

Question: 26

Given the following conditions:

- Several Fuel Handling Building (FHB) area radiation monitors on both trains have reached the high alarm setpoint.
- AOP-005 has directed the operator to verify that the FHB ventilation has shifted to the emergency exhaust lineup.
- Both FHB Emergency Exhaust Fans, E-12 and E-13, are RUNNING.
- FHB Emergency Exhaust Fan Inlets, 1FV-2 SA and 1FV-4 SB, are OPEN

Which of the following additional alignments is expected?

	FHB OPERATING FLOOR SUPPLY FANS AH-56, AH-57, AH-58, and AH-59	FHB NORMAL EXHAUST ISOLATION DAMPERS FL-D4, FL-D5, FL-D21 and FL-D22
a.	Secured	Open
b.	Running	Open
c.	Secured	Shut
d.	Running	Shut

Answer:

c.	Secured	Shut
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Question: 27

Why do actions concerning CNMT spray operation contained in EPP-12, Loss of Emergency Coolant Recirculation, take precedence over the actions contained in FRP-J.1, Response to High Containment Pressure?

- a. Actions required by EPPs have priority over those in FRPs
- b. CNMT spray is **NOT** used if the plant is in a recirculation mode
- c. CNMT pressure may be too low to require CNMT spray
- d. Conservation of RWST inventory has priority over containment pressure control

Answer:

- d. Conservation of RWST inventory has priority over containment pressure control

Question: 28

Following a load reduction, Axial Flux Difference (AFD) is being verified.

Using the attached curve numbered F-10-2, which of the following combinations of power and AFD are outside the acceptable operating limits?

	POWER	AFD
a.	82%	-17
b.	77%	-21
c.	63%	-27
d.	56%	-30

Answer:

b.	77%	-21
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ANSWER KEY

Question: 29

Given the following conditions:

- The unit is operating at 50% power.
- LT-460, Channel III Pressurizer Level, has failed and all associated bistables are in the tripped condition.
- Power is subsequently lost to UPS Bus IDP-1A-SI.

Which train(s) of Reactor Protection will actuate, if any?

- a. Neither train
- b. Train SA **ONLY**
- c. Train SB **ONLY**
- d. Both trains

Answer:

- d. Both trains

Question: 30

Given the following conditions:

- Reactor power is 80% and stable.
- Tavg is stable.
- Pressurizer level is stable with the control system in AUTO.
- A small leak develops across the differential pressure bellows for the controlling channel of pressurizer level, resulting in pressure equalizing across the bellows.

How will this leak affect the operation of FCV-122, Charging Flow Control Valve?

- a. It will throttle open slightly during the course of the pressure equalization and then return to its original position
- b. It will throttle closed slightly during the course of the pressure equalization and then return to its original position
- c. It will throttle open slightly during the course of the pressure equalization and remain in that position
- d. It will throttle closed slightly during the course of the pressure equalization and remain in that position

Answer:

- d. It will throttle closed slightly during the course of the pressure equalization and remain in that position

Question: 31

Which of the following describes the result if 1B Condensate Pump trips on motor overcurrent at 80% power?

	CONDENSATE BOOSTER PUMPS	MAIN FEED PUMPS
a.	1A and 1B Remain Running	1A and 1B Remain Running
b.	1B Trips	1B Trips
c.	1B Trips	1A and 1B Remain Running
d.	1A and 1B Remain Running	1B Trips

Answer:

b.	1B Trips	1B Trips
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Question: 32

Given the following conditions:

- A Loss of Coolant Accident (LOCA) has occurred.
- Containment pressure is 2 psig.
- Containment hydrogen concentration is 3.5%.
- Containment temperature is 140 °F.
- Containment temperature prior to the accident was 90 °F.

Which one of the following is the required power setting for the 1A Hydrogen Recombiner?

- a. 44.7 kW
- b. 45.8 kW
- c. 46.7 kW
- d. 47.9 kW

Answer:

- d. 47.9 kW

Question: 33

During operation at 100% power, an inadvertent SI occurs on 'B' Train **ONLY**.

Which of the following actions is required?

- a. Manually actuate SI on 'A' Train and continue in PATH-1
- b. Continue in PATH-1 noting which 'A' Train ESF equipment is **NOT** running
- c. Start **ONLY** the 'A' Train of ESF equipment for which the redundant 'B' Train equipment failed
- d. Transition directly to EPP-008, SI Termination

Answer:

- a. Manually actuate SI on 'A' Train and continue in PATH-1

Question: 34

Given the following conditions:

- The plant is at 22% power during a shutdown.
- Intermediate Range Channel N-35 has been declared inoperable as a result of failing to meet Operational Test Criteria of MST-I0167.
- The test was performed, per GP-006, during a Tech Spec 3.0.3 required shutdown (i.e., the shutdown must continue).
- OWP-RP-21 has been performed, which places the LEVEL TRIP BYPASS switch in the BYPASS position and verifies the associated light on the Bypass Permissive Light Panel.
- The I&C Supervisor states that both control and instrument power must be removed from the drawer to replace a bistable module.

Assuming the instrument and control power are removed for the remainder of the shutdown, the shutdown continues and ...

- a. the reactor trips when the fuses are removed.
- b. the reactor trips when power is reduced below P-10.
- c. the reactor trips when power is reduced below P-6.
- d. **NO** reactor trip occurs.

Answer:

- b. the reactor trips when power is reduced below P-10.

Question: 35

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Instrument Bus SIII de-energizes, causing a loss of power to PT-2250A, AFW Pump A Suct Press.

Which of the following describes the effect of the loss of this instrument on MDAFW Pump 1A-SA?

	MDAFW PUMP 1A-SA ALREADY RUNNING	MDAFW PUMP 1A-SA NOT RUNNING
a.	Automatically Trips	Can Be Started
b.	Automatically Trips	CANNOT Be Started
c.	Remains Running	Can Be Started
d.	Remains Running	CANNOT Be Started

Answer:

c.	Remains Running	Can Be Started
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Question: 36

Given the following conditions:

- EPP-008, SI Termination, is being performed following an inadvertent SI.
- One CSIP has been secured.
- The normal CSIP miniflow isolation valves will **NOT** open.

Which of the following actions should be taken?

- a. Maintain BIT flow until the miniflow isolation valves are manually opened
- b. Direct an NLO to open the valves locally and continue to the next step once the directions have been provided
- c. Initiate and maintain at least 30 GPM RCP seal injection flow until the miniflow isolation valves are open
- d. Initiate and maintain at least 60 GPM CSIP flow until the miniflow isolation valves are open

Answer:

- d. Initiate and maintain at least 60 GPM CSIP flow until the miniflow isolation valves are open

Question: 37

Given the following conditions:

- The plant is operating at 100% power.
- The Steam Dump System is in the T-AVG Mode.
- A transient results in a rapid loss of load to 45%.

Which of the following describes the **INITIAL** response of the listed valves to this event?

	CONDENSER DUMPS	ATMOSPHERIC DUMPS	INTERCEPT VALVES
a.	Open	Open	Remain Open
b.	Open	Open	Close
c.	Open	Remain Closed	Remain Open
d.	Remain Closed	Open	Close

Answer:

a.	Open	Open	Remain Open
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Question: 38

Given the following conditions:

- The plant is operating at 100% power.
- Charging flow is 150 gpm.
- Letdown flow is 45 gpm.
- Seal injection flow is 10 gpm to each RCP.
- RCP #1 Seal Return is 3 gpm from each RCP.
- Pressurizer level is stable.

Which of the following describes the RCS leak rate **AND** the required action based on the leak rate?

	LEAK RATE	REQUIRED ACTION
a.	126 gpm	Perform a plant shutdown per GP-006
b.	126 gpm	Manually trip the reactor and initiate safety injection
c.	135 gpm	Perform a plant shutdown per GP-006
d.	135 gpm	Manually trip the reactor and initiate safety injection

Answer:

b.	126 gpm	Manually trip the reactor and initiate safety injection
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Question: 39

Given the following conditions:

- A fire has occurred in cable spread Room A - RAB 286 which requires a plant shutdown.
- 'A' SG pressure is 950 psig.
- 'A' SG wide range level is 70%.
- 'A' SG narrow range level is unavailable.
- AFW flow is being supplied to 'A' SG.

Which of the following actions should be taken?

- Decrease AFW flow to lower 'A' SG wide range level to $< 67\%$
- Decrease AFW flow to lower 'A' SG wide range level to $< 50\%$
- Increase AFW flow to raise 'A' SG wide range level to $> 50\%$
- Increase AFW flow to raise 'A' SG wide range level to $> 67\%$

Answer:

- Decrease AFW flow to lower 'A' SG wide range level to $< 67\%$

Question: 40

You are the on-shift control operator and you are assigned to perform an Operations Surveillance Test (OST).

Which of the following must be performed by someone other than you?

- a. Sign off step completion for actions that you direct the AOs to perform
- b. Complete the prerequisites section before the test starts
- c. Sign the test verifying that **ALL** prerequisites have been met and that the Unit SCO has given permission for the test to begin
- d. Sign the test as completed with **NO** exceptions and submit to Document Records

Answer:

- d. Sign the test as completed with **NO** exceptions and submit to Document Records

Question: 41

Following a steam break inside containment, the Containment Spray System actuated.

Containment pressure has been reduced to 2.5 psig. The following signals have been reset:

- Safety Injection
- Phase A
- Phase B
- Containment Spray

Several minutes after securing Containment Spray, containment pressure increases to 11 psig due to a subsequent large break LOCA.

Which of the following describes the expected response of the Containment Spray System?

	CS PUMPS	CS DISCHARGE VALVES
a.	Automatically Start	Automatically Open
b.	Automatically Start	Must be Manually Opened
c.	Must be Manually Started	Automatically Open
d.	Must be Manually Started	Must be Manually Opened

Answer:

a.	Automatically Start	Automatically Open
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Question: 42

Given the following conditions:

- A load rejection has occurred, causing RCS pressure to increase.
- The PRZ Spray Valves and PRZ PORVs have opened.
- During the pressure transient, PRZ pressure transmitter PT-445 failed high.

Which of the following will occur?

- PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will close when RCS pressure drops below 2000 psig
- All PRZ PORVs will remain open as PT-444 senses a lowering pressure and must be manually closed
- PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will remain open and must be manually closed
- PRZ PORV 444B will close as PT-444 senses a lowering pressure; PRZ PORVs 445A and 445B will close when RCS pressure drops below 2000 psig

Answer:

- PRZ PORV 444B will close as PT-444 senses a lowering pressure; PRZ PORVs 445A and 445B will close when RCS pressure drops below 2000 psig

Question: 43

Given the following conditions:

- Instrument Bus SI is de-energized.
- A reactor trip and safety injection occurs.

Which of the following describes the plant response AND required operator actions?

- a.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'A' Train equipment
- b.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'B' Train equipment
- c.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - 'A' Train equipment must be manually aligned/started **ONLY** if the corresponding 'B' Train equipment fails
- d.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - 'B' Train equipment must be manually aligned/started **ONLY** if the corresponding 'A' Train equipment fails

Answer:

- a.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'A' Train equipment

Question: 44

Given the following conditions:

- Reactor power is 8% during a plant startup.
- 1A Main Feed Pump is operating.
- The Main Feed Regulating Valves are in MAN and are throttled open.
- The Main Feed Regulating Bypass Valves are in AUTO and are throttled open.
- 'C' SG level rises to 85%.

Which of the following will occur?

- a. 1A Main Feed Pump trips **AND** MFW is isolated to 'C' SG **ONLY**
- b. 1A Main Feed Pump trips **AND** MFW is isolated to all SGs
- c. 1A Main Feed Pump remains running **AND** MFW is isolated to 'C' SG **ONLY**
- d. 1A Main Feed Pump remains running **AND** MFW is isolated to all SGs

Answer:

- b. 1A Main Feed Pump trips **AND** MFW is isolated to all SGs

Question: 45

A high (red) alarm on the Containment Leak Detection Monitor particulate channel (3502A-SA) causes which of the following automatic isolations/trips to occur?

- a.
 - Containment Normal Purge
 - Containment Pre-Entry Purge
 - Containment Vacuum Relief
- b.
 - Containment Normal Purge **ONLY**
- c.
 - Containment Pre-Entry Purge **ONLY**
- d.
 - Containment Vacuum Relief **ONLY**

Answer:

- b.
 - Containment Normal Purge **ONLY**

ANSWER KEY

Question: 46

Which of the following events would result in increasing radiation levels in the Plant Vent Stack?

- a. Steam Generator Tube Rupture
- b. Waste Gas Decay Tank Rupture
- c. Fuel Handling Accident
- d. Radioactive Spill in the Chemistry Hot Lab

Answer:

- c. Fuel Handling Accident

ANSWER KEY

Question: 47

Given the following conditions:

- The plant is operating at 22% power.
- PRZ pressure transmitter PT-444 has failed high.
- 1RC-107, PRZ Spray Valve 444C, has stuck open.

Which of the following actions is to be taken?

- a. Stop 1A RCP and stabilize the plant at power
- b. Trip the reactor and stop 1A RCP
- c. Stop 1C RCP and stabilize the plant at power
- d. Trip the reactor and stop 1C RCP

Answer:

- a. Stop 1A RCP and stabilize the plant at power

Question: 48

Which of the following gives the parameters monitored for SI Reinitiation criteria on the EPP-009, Post LOCA Cooldown and Depressurization, foldout page?

- a. RCS subcooling and RVLIS level
- b. RCS pressure and pressurizer level
- c. RCS pressure and RVLIS level
- d. RCS subcooling and pressurizer level

Answer:

- d. RCS subcooling and pressurizer level

ANSWER KEY

Question: 49

The plant was operating at 100% power when an accident occurred.

Assuming **NO** operator action is taken, a Main Steam Line Isolation Signal (MSIS) will be generated when ...

- a. PRZ pressure drops to 1832 psig.
- b. containment pressure rises to 2.0 psig.
- c. steam line pressure drops to 547 psig.
- d. steam line pressure drops faster than 100 psig/sec.

Answer:

- c. steam line pressure drops to 547 psig.

ANSWER KEY

Question: 50

Given the following conditions:

- Power is at 45% during a power increase following a short maintenance outage.
- Rod K-6 in Control Bank 'D' is determined to be inoperable due to a power cabinet malfunction.
- The rod, determined to be at 153 steps, is **NOT** capable of being moved, but is considered to be trippable.
- The crew realigns the remaining rods in Control Bank 'D' with the inoperable rod.

What is the maximum power level that can be achieved under these conditions while maintaining **ALL** associated alarms clear?

- a. 45%
- b. 50%
- c. 75%
- d. 80%

Answer:

- c. 75%

Question: 51

Given the following conditions:

- The plant was operating at 100% power when an accident occurred.
- All feedwater is isolated to three faulted SGs IAW EPP-015, Uncontrolled Depressurization of All SGs.
- The STA reports a red path requirement for the heat sink CSF.

Which of the following describes why FRP-H.1, Response to Loss of Secondary Heat Sink, would **NOT** be used in this situation?

- a. FRPs are implemented only after completion of PATH-1, entry Point C
- b. Feed flow has been reduced by operator action
- c. RHR is capable of providing an adequate heat sink
- d. Heat transfer coupling has been lost between the RCS and the SGs

Answer:

- b. Feed flow has been reduced by operator action

Question: 52

ALB-15-1-3, Protection System A/B Trouble, has alarmed.

Local indications are as follows:

	<u>Train A</u>	<u>Train B</u>
General Warning Light	On	Off
#1 48-V DC Power Supply	On	On
#1 15-V DC Power Supply	On	On
#2 48-V DC Power Supply	Off	On
#2 15-V DC Power Supply	Off	On
Trip Bypass Breaker	Racked Out/Open	Racked Out/Open

These conditions would be caused by ...

- a loss of instrument Channel SIII power supply.
- a loss of instrument Channel SIV power supply.
- a logic test switch being out of position inside an SSPS 'A' Train cabinet.
- a logic test switch being out of position inside an SSPS 'B' Train cabinet.

Answer:

- a loss of instrument Channel SIII power supply.

Question: 53

Given the following conditions:

- Reactor power is at 30% and stable.
- Control Bank 'D' rods are at 185 steps.
- RCS Tavg is 564 °F.
- All control systems are in automatic.
- TE-144, Letdown HX Outlet Temp, fails high.

Which of the following describes the expected response of RCS temperature and rod position?

	RCS TAVG	BANK 'D' POSITION
a.	Greater than 564 °F	Greater than 185 steps
b.	Greater than 564 °F	Less than 185 steps
c.	Less than 564 °F	Greater than 185 steps
d.	Less than 564 °F	Less than 185 steps

Answer:

b.	Greater than 564 °F	Less than 185 steps
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Question: 54

A large break LOCA has occurred and PATH-1 is being performed.

The following have been reset:

- Safety Injection
- Phase A Isolation
- Phase B Isolation

The RWST level subsequently decreases to the Low-Low level setpoint.

Which of the following describes the response of the RHR Pump and the Containment Spray Pump Suction Valves?

	RHR CONTAINMENT SUMP SUCTION VALVES	RWST TO RHR SUCTION VALVES	CONTAINMENT SPRAY CONTAINMENT SUMP SUCTION VALVES	RWST TO CONTAINMENT SPRAY SUCTION VALVES
a.	Must be manually opened	Must be manually closed	Automatically open	Must be manually closed
b.	Must be manually opened	Automatically close	Automatically open	Automatically close
c.	Automatically open	Must be manually closed	Must be manually opened	Must be manually closed
d.	Automatically open	Must be manually closed	Automatically open	Automatically close

Answer:

d.	Automatically open	Must be manually closed	Automatically open	Automatically close
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Question: 55

How is the clearance preparer notified of a Temporary Modification which affects an item being placed under clearance?

- a. The standard clearances in PTR are updated with Temporary Modification information
- b. The 400 screen of EDBS for each component affected lists the applicable Temporary Modifications
- c. The Category A drawings are annotated with the ESR number of the applicable Temporary Modifications
- d. During the schedule review, the responsible engineer notifies the WSC of any Temporary Modifications which may affect clearances needed for the current schedule

Answer:

- c. The Category A drawings are annotated with the ESR number of the applicable Temporary Modifications

Question: 56

What are the normal and alternate power supplies to PIC-17?

	Normal	Alternate
a.	UPS Instrument Bus IDP-1A-S1	Appendix R Inverter
b.	UPS Instrument Bus IDP-1A-S1	UPP-1
c.	Appendix R Inverter	UPS Instrument Bus IDP-1A-S1
d.	Appendix R Inverter	UPP-1

Answer:

a.	UPS Instrument Bus IDP-1A-S1	Appendix R Inverter
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Question: 57

Given the following conditions:

- A rapid shutdown is required per GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)".
- The SCO has directed you to perform a rapid addition of boric acid in accordance with OP-107, "Chemical and Volume Control System".
- It is estimated that 1300 gallons of boric acid will be required to complete the shutdown, but the actual required volume has **NOT** yet been calculated.

The actual required volume must be calculated prior to ...

- a. reducing power below 50%.
- b. borating > 500 gallons.
- c. borating > 650 gallons.
- d. reducing turbine load.

Answer:

- b. borating > 500 gallons.

ANSWER KEY

Question: 58

Given the following conditions:

- The AutoLog is **NOT** functioning.
- The Reactor Operator is maintaining a manual log.

The following log entries have been made:

- 0956 B-SB CSIP trip
- 1005 Started A-SA CSIP per AOP-018
- 1011 Established normal letdown

At 1030, the Reactor Operator realizes he forgot to make a 0957 entry that letdown had been isolated.

Which of the following entries would be a proper entry in accordance with OMM-016, Operator Logs?

- a. *1030 Isolated normal letdown
- b. L.E. 1030 Isolated normal letdown
- c. *0957 Isolated normal letdown
- d. L.E. 0957 Isolated normal letdown

Answer:

- d. L.E. 0957 Isolated normal letdown

Question: 59

Both Condensate Pumps, both Condensate Booster Pumps (CBPs), and the 'A' Main Feed Pump (MFP) are running.

Which of the following will cause an automatic start of the 'B' MFP?

- a. 'A' MFP trips on low lube oil pressure
- b. 'A' MFP trips on low discharge pressure
- c. 'A' MFP trips on low flow
- d. 'A' MFP control switch is taken to the STOP position

Answer:

- a. 'A' MFP trips on low lube oil pressure

ANSWER KEY

Question: 60

Given the following conditions:

- The plant was at 100% power when a Main Steam Line break occurred outside containment.
- 'A' SG is indicating 400 psig.
- Containment pressure is -0.27 inches water gauge.

Which of the following Containment Ventilation fans will be operating?

- a. Containment Pre-entry Purge Exhaust
- b. Containment Pre-entry Purge Make-up
- c. Normal Containment Purge Make-up
- d. Airborne Radioactivity Removal

Answer:

- d. Airborne Radioactivity Removal

ANSWER KEY

Question: 61

Given the following conditions:

- At 1315, the Reactor Operator must leave the Control Room for a short period of time.
- All requirements for this short term relief have been conducted
- An entry has been made into OMM-002, Attachment 14, Documentation of Short Term Assumption of Duties.

An entry must also be made in the Control Operators Log if the relieved operator does **NOT** resume the watch by ...

- a. 1330.
- b. 1345.
- c. 1415.
- d. 1515.

Answer:

- c. 1415.

Question: 62

Given the following conditions:

- A loss of off-site power has occurred.
- The plant is being cooled down and depressurized per EPP-005, Natural Circulation Cooldown.
- The RCS cooldown rate is 40 °F/hour.
- RVLIS Upper Range indication is 96% and lowering slowly.
- The S-SO has determined that RCS depressurization must continue.

Which of the following actions should be taken?

- a. Continue in EPP-005, Natural Circulation Cooldown, AND maintain the cooldown rate <50 °F/hour
- b. Initiate safety injection to collapse the vessel head voids
- c. Transition to EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, AND continue the cooldown and depressurization
- d. Transition to EPP-007, Natural Circulation Cooldown with Steam Void in Vessel without RVLIS, AND continue the cooldown and depressurization

Answer:

- c. Transition to EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, AND continue the cooldown and depressurization

Question: 63

Given the following conditions:

- CP&L hired an employee on May 5th of this year.
- The employee's TEDE for this year prior to May 5th was 400 mRem.
- The employee's TEDE at SHNPP for this year is 1500 mRem.

Which of the following describes the **MAXIMUM ADDITIONAL** exposure allowed at CP&L facilities for this employee for the remainder of the year, without receiving an extension, **AND** what is the **LOWEST** level of authorization required if an extension is required during non-emergency conditions?

	MAXIMUM ADDITIONAL EXPOSURE W/OUT EXTENSION	LOWEST LEVEL OF AUTHORIZATION FOR EXTENSION
a.	100 mRem	E&RC Manager
b.	100 mRem	Site Vice President
c.	500 mRem	E&RC Manager
d.	500 mRem	Site Vice President

Answer:

d.	500 mRem	Site Vice President
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Question: 64

Given the following conditions:

- The unit is operating at 20% power with all systems in automatic.
- Bank 'D' control rods are at 130 steps.
- Control Bank 'C' rod H6 drops to the bottom of the core.
- **NO** rod control urgent failure alarms occur.

In response to the dropped rod, where will thermal power and RCS Tavg stabilize, in comparison to their values prior to the dropped rod, **WITHOUT** any operator action?

	REACTOR THERMAL POWER	RCS T-AVG
a.	Within 1%	More than 5°F lower
b.	More than 2% different	More than 5°F lower
c.	Within 1%	Within 1°F
d.	More than 2% different	Within 1°F

Answer:

c.	Within 1%	Within 1°F
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Question: 65

Which of the following identifies when the Diesel and Motor Fire Pumps will start on lowering Fire Header pressure?

	MOTOR FIRE PUMP	DIESEL FIRE PUMP
a.	93 psig	83 psig
b.	83 psig	93 psig
c.	93 psig	105 psig
d.	105 psig	83 psig

Answer:

a.	93 psig	83 psig
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Question: 66

Given the following conditions:

- The plant is at 100% power.
- One minute ago, the normal feeder breaker to 6.9kV bus 1A-SA (BKR 105) tripped open.
- The 1A-SA EDG failed to start.

Which of the following actions is required?

- a. Start 1B-SB MDAFW Pump to supply the SGs
- b. Trip the reactor and enter PATH-1
- c. Open all load breakers on 6.9kV bus 1A-SA
- d. Place the 1A-SA EDG Emergency Stop switch to EMER STOP

Answer:

- d. Place the 1A-SA EDG Emergency Stop switch to EMER STOP

Question: 67

Given the following conditions:

- The plant is at 100% power.
- 1A and 1B ESW Pumps are off.
- 'A' and 'B' ESW headers are being supplied from NSW.
- 1A NSW Pump is running.
- 1B NSW Pump is off.

Subsequently, the following events occur:

- A breaker failure results in a loss of power to 1A-SA.
- The 'A' EDG starts, re-energizes the bus, and sequences the loads properly.

Which of the following describes how the ESW alignment is affected?

	'A' TRAIN ESW HEADER SUPPLY	'B' TRAIN ESW HEADER SUPPLY
a.	1A ESW Pump	1B ESW Pump
b.	1A ESW Pump	1A NSW Pump
c.	1A NSW Pump	1B ESW Pump
d.	1A NSW Pump	1A NSW Pump

Answer:

b.	1A ESW Pump	1A NSW Pump
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Question: 68

During FRP-C.1, Response to Inadequate Core Cooling, the steam generators are depressurized to 90 psig.

Which of the following is the basis for stopping at 90 psig?

- a. To prevent N2 injection into the RCS from the Cold Leg Accumulators
- b. To maintain gases in solution while low head SI recovers core cooling
- c. To ensure the SG U-Tubes remain covered
- d. To maintain adequate pressure for running any available RCPs

Answer:

- a. To prevent N2 injection into the RCS from the Cold Leg Accumulators

Question: 69

The plant is operating at 100% power with the following conditions:

<u>Time</u>	<u>Ambient Temp</u>	<u>CT Basin Temp</u>
1200	25 °F	55 °F
1600	30 °F	60 °F
2000	40 °F	64 °F

Which of the following describes the correct CT Deicing Gate Valve alignment for these conditions?

	1600	2000
a.	Full Open	Full Open
b.	Half Open	Full Open
c.	Full Open	Half Open
d.	Half Open	Half Open

Answer:

b.	Half Open	Full Open
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Question: 70

Reactor power is being increased and is at 37%.

All indications for 1A and 1C RCPs are normal.

Given the following conditions for 1B RCP:

- ALB-008-4-3, RCP 'B' SEAL #1 LEAKOFF HIGH/LOW FLOW, alarms.
- #1 seal leakoff flow has increased to 6.8 gpm.
- Shaft vibration levels are 6 mils and increasing at 0.4 mil/hr.
- Frame vibration levels are 2.1 mils and increasing at 0.3 mil/hr.
- Motor upper radial bearing temperature is 172 °F and stable.
- Motor lower radial bearing temperature is 176 °F and stable.
- Motor upper thrust bearing temperature is 168 °F and stable.
- Motor lower thrust bearing temperature is 178 °F and stable.
- Pump radial bearing temperature is 193 °F and increasing slowly.
- Seal inlet water temperature is 198 °F and increasing slowly.
- Pump bearing water temperature is 158 °F and increasing slowly.
- Motor stator winding temperature is 310 °F and increasing slowly.

Which of the following actions should be taken, in accordance with AOP-018?

- a. Trip the reactor and trip 1B RCP immediately.
- b. Trip 1B RCP immediately and perform a plant shutdown.
- c. Be in Hot Standby within 6 hours, then stop 1B RCP.
- d. Trip 1B RCP within 10 minutes and perform a plant shutdown.

Answer:

- b. Trip 1B RCP immediately and perform a plant shutdown.

Question: 71

Given the following conditions:

- The plant is in Mode 3.
- ALB 5-6-1, CCW SURGE TANK HIGH-LOW LEVEL, alarms.
- ALB 10-4-5, RAD MONITOR SYSTEM TROUBLE, alarms.
- ALB 5-1-2A, RCP THERM BAR HDR HIGH FLOW, alarms.
- ALB 5-2-2B, RCP THERM BAR HDR HIGH TEMP, alarms.
- CCW RAD monitor alarm on RM-11 console, alarms.
- CCW surge tank level is increasing.

Which of the following actions should automatically occur?

- a. 1CC-251, CCW From RCP Thermal Barrier Coolers, CLOSES
- b. CCW Holdup Tank Transfer Pump, STARTS
- c. CCW Drain Tank Transfer Pump, STARTS
- d. 1CC-252, RCP Thermal Barriers Flow Control, CLOSES

Answer:

- d. 1CC-252, RCP Thermal Barriers Flow Control, CLOSES

Question: 72

Given the following conditions:

- The plant is in Mode 3.
- 1A-SA CCW Pump is running.
- 1B-SB CCW Pump is in standby.
- A leak occurs in the non-essential header, causing a low pressure condition in the CCW system.

Which of the following describes the response of the CCW system?

	CCW PUMP(S) RUNNING	NON-ESSENTIAL HEADER
a.	1A-SA Pump ONLY	Isolated
b.	1A-SA Pump ONLY	NOT Isolated
c.	1A-SA AND 1B-SB Pumps	Isolated
d.	1A-SA AND 1B-SB Pumps	NOT Isolated

Answer:

d.	1A-SA AND 1B-SB Pumps	NOT Isolated
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Question: 73

Given the following conditions:

- The unit is in a Refueling Outage.
- A spent fuel assembly is attached to the manipulator crane.
- A failure of the Reactor Vessel permanent cavity seal ring causes cavity level to drop approximately 3" every minute.
- Non-essential personnel have been evacuated from Containment.
- The Refueling Crew is in the process of placing the assembly in the Reactor Vessel when a Loss of Off-Site Power occurs.

Refueling Crew members are immediately evacuated from Containment because there are **NO** means for ...

- a. making up to the cavity.
- b. monitoring radiological levels inside Containment.
- c. placing the fuel assembly in the vessel.
- d. providing ventilation to Containment.

Answer:

- c. placing the fuel assembly in the vessel.

Question: 74

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, is being performed.
- RVLIS indicates that voids exist in the upper head of the vessel.
- An hour later, Off-Site power is restored.
- Conditions are being established to start an RCP.

Prior to starting the RCP, pressurizer level must be ...

- a. increased to accommodate the expected outsurge when the voids in the head are collapsed.
- b. decreased to accommodate the expected insurge when the RCS heats up.
- c. increased to accommodate the expected outsurge when the RCS cools down.
- d. decreased to accommodate the expected insurge when PRZ spray flow lowers pressure.

Answer:

- a. increased to accommodate the expected outsurge when the voids in the head are collapsed.

Question: 75

Which of the following describes the automatic actions performed by the AMSAC system **AND** the basis for each action?

- a.
 - Reactor is tripped to remove the heat source
 - Turbine is tripped to preserve SG inventory
- b.
 - Reactor is tripped to remove the heat source
 - AFW is initiated in anticipation of a loss of SG inventory
- c.
 - Turbine is tripped to preserve SG inventory
 - AFW is initiated in anticipation of a loss of SG inventory
- d.
 - Turbine is tripped to establish a Tave-Tref deviation to force auto rod insertion
 - AFW is initiated in anticipation of a loss of SG inventory

Answer:

- c.
 - Turbine is tripped to preserve SG inventory
 - AFW is initiated in anticipation of a loss of SG inventory

Question: 76

Given the following conditions:

- The plant is at 80% power.
- A dropped rod in Group 2 of Control Bank 'D' has occurred.
- A recovery of the dropped rod has begun.
- The ROD CONTROL URGENT ALARM (ALB-013-7-1) has just alarmed.

The power cabinet causing the urgent alarm is ...

- a. 1AC.
- b. 2AC
- c. 1BD.
- d. 2BD.

Answer:

- c. 1BD.

ANSWER KEY

Question: 77

Given the following conditions:

- A plant cooldown is being performed per GP-007, "Normal Plant Cooldown (Mode 3 to Mode 5)".
- RCPs 'A' and 'C' are running.
- RCS temperature is 170 °F.
- RCS pressure is 180 psig.
- VCT pressure is 30 psig.

Which of the following describes when the operating RCPs are to be stopped?

	A' RCP	C' RCP
a.	When the RCS is < 160 °F	Immediately
b.	Immediately	Immediately
c.	When the RCS is < 160 psig	Immediately
d.	When the RCS is < 160 °F	When the RCS is < 160 °F

Answer:

b.	Immediately	Immediately
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Question: 78

Which of the following conditions would be considered a loss of Containment Integrity?

- a. Failure of the inner door on the emergency air lock to seal with the plant in Mode 6 during core alterations
- b. Failure of 1SP-948, RCS Sample, to open when given an OPEN signal with the plant in Mode 3
- c. Equipment hatch **NOT** closed and sealed with the plant in Mode 5
- d. Locking device on 1SA-80, Service Air Supply, is discovered missing with the plant in Mode 4

Answer:

- d. Locking device on 1SA-80, Service Air Supply, is discovered missing with the plant in Mode 4

Question: 79

Given the following conditions:

- A LOCA has occurred inside Containment.
- Containment pressure is 5.5 psig.
- RCS Wide Range Pressure indications are:

(BLACK BEZELED INSTRUMENTS)

PI-440 = 1060 psig

PI-441 = 1040 psig

(YELLOW BEZELED INSTRUMENTS)

PI-402 = 980 psig

PI-403 = 980 psig

PI-402A = 700 psig

RCS pressure should be reported as ...

- a. 700 psig.
- b. 980 psig.
- c. 1040 psig.
- d. 1060 psig.

Answer:

- b. 980 psig.

Question: 80

Given the following conditions:

- A reactor trip and safety injection has occurred.
- A transition has been made to FRP-H.1, Response to Loss of Secondary Heat Sink.
- The Condensate Storage Tank (CST) level is dropping rapidly due to a tank rupture.

Which of the following will result in the Emergency Service Water System (ESW) supplying suction to the Auxiliary Feedwater (AFW) Pump?

- Manual operator action when the CST drops below 10% level
- Automatic alignment when the CST drops below 10% level
- Manual operator action when AFW suction pressure drops below 14 psig
- Automatic alignment when AFW suction pressure drops below 14 psig

Answer:

- Manual operator action when the CST drops below 10% level

Question: 81

Given the following conditions:

- A reactor trip with SI has occurred.
- The immediate action steps, ECCS flow verifications, and AFW flow verifications are performed.
- SG levels are < 10% and the required AFW flow **CANNOT** be established.
- FRP-H.1, Response to Loss of Secondary Heat Sink, is entered.
- RCS pressure is checked and determined to be less than intact SG pressure.

Which of the following describes the plant conditions?

- a. A large break LOCA is in progress **AND** a secondary heat sink is required
- b. A large break LOCA is in progress **AND** a secondary heat sink is **NOT** required
- c. A small break LOCA is in progress **AND** a secondary heat sink is required
- d. A small break LOCA is in progress **AND** a secondary heat sink is **NOT** required

Answer:

- b. A large break LOCA is in progress **AND** a secondary heat sink is **NOT** required

Question: 82

If the suction pipe from the 'B' Spent Fuel Pool to the Spent Fuel Pool Cooling Pump completely severed, level in the Spent Fuel Pool would decrease ...

- a. to 18 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- b. to 18 feet above the fuel assemblies and stabilize without any automatic action.
- c. to 21 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- d. to 21 feet above the fuel assemblies and stabilize without any automatic action.

Answer:

- b. to 18 feet above the fuel assemblies and stabilize without any automatic action.

Question: 83

Given the following conditions:

- The plant is solid in Mode 5 with one (1) RCP in operation.
- RHR Pump A-SA is providing letdown flow with PK-145.1, LTDN PRESSURE 1CS-38, in **MAN**.
- CSIP A-SA is providing RCS makeup and seal injection.

If instrument air is lost to 1CS-38 (PCV-145), the operator should ...

- a. trip CSIP A-SA.
- b. trip RHR Pump A-SA.
- c. maintain letdown flow using HC-142.1, RHR Letdown 1CS-28.
- d. open one PRZ PORV.

Answer:

- a. trip CSIP A-SA.

ANSWER KEY

Question: 84

RCS temperature is 220 °F.

Which of the following sets of conditions is the **MINIMUM** required to meet the Technical Specification requirements for DC Electrical Sources?

	125 VDC BATTERIES		BATTERY CHARGERS			
	1A-SA	1B-SB	1A-SA	1B-SA	1A-SB	1B-SB
a.	Operable	Operable	Operable	Operable	Operable	Operable
b.	Operable	Operable	Operable	NOT Operable	NOT Operable	Operable
c.	Operable	NOT Operable	Operable	Operable	NOT Operable	NOT Operable
d.	NOT Operable	Operable	NOT Operable	Operable	Operable	Operable

Answer:

b.	Operable	Operable	Operable	NOT Operable	NOT Operable	Operable
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ANSWER

Question: 85

Given the following conditions:

- A liquid waste discharge from a Treated Laundry and Hot Shower (TL&HS) Tank is in progress.
- REM-1WL-3540, Treated Laundry and Hot Shower Tank Pump Discharge Monitor, goes into high alarm.

Which of the following terminates the discharge?

- a. The running TL&HS Tank Pump will automatically trip.
- b. An operator must take manual action to shut the TL&HS Tank Pump Discharge Isolation Valve.
- c. The running TL&HS Tank Pump Recirc Valve will automatically open.
- d. The TL&HS Tank Pump Discharge Isolation Valve will automatically close.

Answer:

- d. The TL&HS Tank Pump Discharge Isolation Valve will automatically close.

Question: 86

The unit is in Mode 3 with the reactor trip breakers closed.

If 125 VDC Bus 1A-SA deenergizes due to a fault on the bus ...

- a. Train SA reactor trip breaker will open due to an undervoltage (UV) trip.
- b. Train SA reactor trip breaker will open due to a shunt trip.
- c. an undervoltage (UV) trip signal will **NOT** be capable of opening Train SA reactor trip breaker.
- d. a shunt trip signal will **NOT** be capable of opening Train SA reactor trip breaker.

Answer:

- d. a shunt trip signal will **NOT** be capable of opening Train SA reactor trip breaker

Question: 87

Given the following conditions:

- The plant experiences a reactor trip and SI from 100% power.
- **ONLY** one train of SI has actuated.
- Four Containment Fan Cooler fans are running in fast on one train.
- Two Containment Fan Cooler fans are running in slow on the other train.

Which of the following is the Containment Fan Cooler fan alignment following operator action in response to this situation?

- a. Four fans running in slow
- b. Four fans running in fast
- c. Eight fans running in fast
- d. Eight fans running in slow

Answer:

- a. Four fans running in slow

Question: 88

Given the following conditions:

- A recovery from an SGTR on the 1B SG is being performed using the backfill method.
- ERFIS in **NOT** available.
- **NO** RCPs are running.
- RCS pressure channels read:
 - PI-402 = 600 psig
 - PI-403 = 620 psig
 - PI-402A = 650 psig
- Thot channels read:
 - TI-413 = 420 °F
 - TI-423 = 480 °F
 - TI-433 = 415 °F
- The five hottest ICCM TCs read:
 - 490 °F
 - 486 °F
 - 459 °F
 - 430 °F
 - 425 °F

Which of the following identifies the amount of subcooling present?

- a. 8 °F
- b. 18 °F
- c. 30 °F
- d. 40 °F

Answer:

- a. 8 °F

Question: 89

Given the following conditions:

- ALB-13-6-2, RPI NON-URGENT ALARM, alarms.
- The General Warning LED for Control Rod H2 is flashing.
- The Data B Failure 1, 2, 3 LEDs are flashing.
- The position LED for Control Rod H2 at Step 48 is LIT.

Which of the following describes the **MINIMUM** and **MAXIMUM** known positions of Control Rod H2?

	MINIMUM POSITION	MAXIMUM POSITION
a.	38 Steps	52 Steps
b.	44 Steps	52 Steps
c.	38 Steps	58 Steps
d.	44 Steps	58 Steps

Answer:

a.	38 Steps	52 Steps
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Question: 90

Which of the following describes the effect a Containment Phase A isolation will have on RCP seal leakoff?

- a. No. 1 seal leakoff will discharge to the PRT via a relief valve
- b. No. 1 seal leakoff will discharge to the RCDT via a relief valve
- c. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the PRT
- d. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the RCDT

Answer:

- a. No. 1 seal leakoff will discharge to the PRT via a relief valve

Question: 91

During the performance of PATH-1, the crew must determine if RCS temperature is "stable at or trending to 557 °F."

Which of the following describes the temperature to be used when RCPs are running AND when RCPs are off?

	RCPs ON	RCPs OFF
a.	T-avg	Cold Leg Temps
b.	T-avg	Hot Leg Temps
c.	Incore TCs	Cold Leg Temps
d.	Incore TCs	Hot Leg Temps

Answer:

a.	T-avg	Cold Leg Temps
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Question: 92

Given the following conditions:

- A reactor trip occurred due to a loss of offsite power.
- The plant is being cooled down on RHR per EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS.
- RVLIS upper range indicates greater than 100%.
- Three CRDM fans have been running during the entire cooldown.
- RCS cold leg temperatures are 190 °F.
- Steam generator pressures are 50 psig.

Steam should be dumped from all SGs to ensure ...

- a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.
- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.
- c. RCS and SG temperatures are equalized prior to any subsequent RCP restart.
- d. RCS temperatures do **NOT** increase during the required 29-hour vessel soak period.

Answer:

- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.

Question: 93

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- ALB-17-5-5, CONDENSATE STORAGE TANK LOW MINIMUM LEVEL, alarms (65%).

Which of the following describes the significance of this alarm?

- CST level is nearing the level where it will be inadequate to maintain the required suction pressure to the TDAFW pump
- Manual swap to the backup source Emergency Service Water System should be initiated
- Normal Condenser Makeup System must be manually isolated to prevent drain down of the CST
- CST level is nearing the level where it will be inadequate to maintain hot standby for 12 hours

Answer:

- CST level is nearing the level where it will be inadequate to maintain hot standby for 12 hours

Question: 94

Given the following conditions:

- RCS temperature is 300 °F.
- The Low Temperature Overpressure Protection system (LTOP) is armed.
- PT-441, RCS Wide Range Pressure, has failed low.

Which of the following describes the effect on LTOP?

- a. **ONLY** PRZ PORV PCV-445A is available for LTOP
- b. Both PRZ PORVs are available for LTOP
- c. Neither PRZ PORV is available for LTOP
- d. **ONLY** PRZ PORV PCV-444B is available for LTOP

Answer:

- a. **ONLY** PRZ PORV PCV-445A is available for LTOP

Question: 95

Given the following conditions:

- Reactor power is at 70%.
- Rod Control is in AUTO.
- Bank 'D' control rods are at 195 steps.
- Loop 1 Tavg is 576 °F.
- Loop 2 Tavg is 574 °F.
- Loop 3 Tavg is 572 °F.

Which of the following failures will cause control rods to step out?

- a. Loop 1 T_{hot} fails high
- b. Loop 3 T_{hot} fails low
- c. Loop 2 T_{cold} fails high
- d. Loop 2 T_{cold} fails low

Answer:

- d. Loop 2 T_{cold} fails low

ANSWER KEY

Question: 96

Given the following conditions:

- A reactor trip has occurred due to a SG low-low level trip.
- RCS temperature has stabilized at no-load Tavg.

Which of the following describes the expected condition of the Feedwater System when directed to check the status?

	Main Feed Pumps	Main Feed Reg Valves	Feed Isolation Valves
a.	Tripped	Closed	Closed
b.	Tripped	Closed	Open
c.	Running	Open	Closed
d.	Running	Closed	Closed

Answer:

d.	Running	Closed	Closed
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Question: 97

Which of the following air compressors would be available during a Loss of Off-Site Power?

- a. A and B **ONLY**
- b. A and C **ONLY**
- c. B and C **ONLY**
- d. A, B and C

Answer:

- a. A and B **ONLY**

ANSWER KEY

Question: 98

Given the following conditions:

- The plant is operating at 40% power.
- AOP-005, Radiation Monitoring System, has been entered.
- A high (red) alarm on REM-1WC-3544, WPB CCW HX Inlet Monitor, has just been received.

As a result of the high radiation alarm, which of the following will automatically occur?

- a. 1CC-252, RCP Thermal Barrier Flow Control Valve, CLOSES
- b. 3WC-4, WPB CCW Surge Tank Overflow Valve, CLOSES
- c. 1CC-304, CCW to Gross Failed Fuel Detector, OPENS
- d. 3WC-7, WPB CCW Surge Tank Drain Valve, OPENS

Answer:

- b. 3WC-4, WPB CCW Surge Tank Overflow Valve, CLOSES

Question: 99

Given the following conditions:

- The plant has tripped from 100% power due to a trip of 'B' RCP.
- 'A' and 'C' RCPs are running.

Which of the following is the expected RVLIS Dynamic Head indication?

- a. 36%
- b. 41%
- c. 63%
- d. 100%

Answer:

- c. 63%

ANSWER KEY

Question: 100

Given the following conditions:

- A reactor shutdown is in progress.
- Intermediate Range Channel N-35 compensating voltage is set too low.
- Intermediate Range Channel N-36 compensating voltage is set correctly.

How will this affect the Source Range Nuclear Instruments?

- a.
 - Source Range Channel N-31 will automatically re-energize prematurely
 - Source Range Channel N-32 will automatically re-energize at the correct power level
- b.
 - Both Source Range Channels N-31 and N-32 will automatically re-energize prematurely
- c.
 - Source Range Channel N-31 must be manually re-energized
 - Source Range Channel N-32 will automatically re-energize at the correct power level
- d.
 - Both Source Range Channels N-31 and N-32 must be manually re-energized

Answer:

- d.
 - Both Source Range Channels N-31 and N-32 must be manually re-energized

**U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination****Applicant Information**Name: **ANSWER KEY**Region: **II**

Date:

Facility/Unit: **Shearon Harris**License Level: **SRO**Reactor Type: **Westinghouse**

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

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

Applicant's Signature**Results**

Examination Value _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

Question: 1

Given the following conditions:

- A Safety Injection has just occurred.
- Following the SI, leakage from the CCW system to the ESW system is suspected.

Which of the following sets of conditions would provide confirmation of this diagnosis?

- a. Decreasing CCW surge tank level **AND** ESW discharge radiation alarm
- b. Automatic makeup to the CCW surge tank **AND** ESW discharge sample
- c. Decreasing CCW surge tank level **AND** ESW discharge sample
- d. Automatic makeup to the CCW surge tank **AND** ESW discharge radiation alarm

Answer:

- c. Decreasing CCW surge tank level **AND** ESW discharge sample

Question: 2

Which of the following conditions would require that Attachment 2, "Cycle Log," of OMM-013, Cycle and Transient Monitoring Program, be completed?

- a. With the plant in Mode 2, a failed Source Range channel results in a Source Range High Flux Trip
- b. With the plant at 100% power, a failed actuation relay results in Auxiliary Feedwater flow to the SGs
- c. With RCS temperature at 240°F, a trip of Emergency Bus 1A-SA normal supply breaker 105 results in EDG 1A-SA starting automatically
- d. With the plant at 100% power, a failed pressurizer level instrument results in normal letdown isolating

Answer:

- b. With the plant at 100% power, a failed actuation relay results in Auxiliary Feedwater flow to the SGs

Question: 3

Which of the following indications are **BOTH** used by EPP-013, LOCA Outside Containment, to identify that the leak is isolated?

- a. RCS pressure increasing **AND** RAB radiation decreasing
- b. RCS pressure increasing **AND** Local observation
- c. PRZ level increasing **AND** Local observation
- d. PRZ level increasing **AND** RAB radiation decreasing

Answer:

- b. RCS pressure increasing **AND** Local observation

ANSWER KEY

Question: 4

Given the following conditions:

- Control Room Ventilation is in a normal lineup with 'A' Train fans in operation.
- Power is lost to the 'B' Train North Emergency Intake Radiation Monitor.

What is the response of the Control Room Ventilation System to this failure?

- Remains in the normal alignment, but a subsequent Train 'A' radiation monitor reaching the high alarm will cause an isolation
- Isolation occurs and **CANNOT** be reset
- Isolation occurs, but can be reset
- Remains in the normal alignment, but a subsequent Train 'B' radiation monitor reaching the high alarm will cause an isolation

Answer:

- Isolation occurs, but can be reset

Question: 5

Given the following conditions:

- The plant is operating at 100% power with 'A' Train equipment in service.
- The 1B-SB emergency bus supply breaker (125) opens.

Which of the following is expected to occur?

- a. Containment Fan Cooler Fans for AH2 and AH3 will automatically start in low speed
- b. Both sequencers will run and load equipment selected by the UV program
- c. 1MS-72, MS 'C' to Aux FW Turbine, will open
- d. The 'B' ESW Header will be supplied by the NSW System

Answer:

- c. 1MS-72, MS 'C' to Aux FW Turbine, will open

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SENIOR REACTOR OPERATOR

Question: 6

Given the following conditions:

- Emergency Boration is required.
- 1CS-278, Emergency Boric Acid Addition, **CANNOT** be opened.

Which of the following alignments will provide adequate boric acid flow?

	1CS-283 Boric Acid to Boric Acid Blender FCV-113A	1CS-156 Makeup to CSIP Suction FCV-113B	1CS-155 Makeup to VCT FCV-114A	1CS-291 CSIP Suction from RWST LCV-115B	1CS-292 CSIP Suction from RWST LCV-115D	1CS-165 VCT Outlet LCV-115C	1CS-166 VCT Outlet LCV-115E
a.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
b.	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED
c.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	OPEN	OPEN
d.	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED

Answer:

d.	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED
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ANSWER

Question: 7

Given the following conditions:

- The plant is in Mode 5 on RHR cooling.
- A 170 gpm leak develops from the RCS.
- Letdown has been isolated.

Which of the following methods of makeup is to be used to restore level?

- a. Normal Charging from VCT
- b. Normal Charging from RWST
- c. Opening SI Accumulator Isolation valves
- d. CSIP flow through the BIT valves

Answer:

- d. CSIP flow through the BIT valves

ANSWER KEY

Question: 8

The generator is being taken off line during a normal shutdown in accordance with GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)".

Which of the following describes the proper sequence for operation of the generator output breakers, 52-7 and 52-9?

- a. Trip the turbine and verify the generator lockout opens both generator output breakers
- b. Manually open one generator output breaker, trip the turbine, and manually open the second output breaker
- c. Manually open both the generator output breakers, then trip the turbine
- d. Manually open one generator output breaker, trip the turbine, and allow the generator lockout to open the second output breaker

Answer:

- b. Manually open one generator output breaker, trip the turbine, and manually open the second output breaker.

Question: 9

Which of the following is the **MOST SIGNIFICANT ACTION** the operator can take during a SGTR concurrent with a loss of off-site power to minimize the PTS challenge?

- a. Maintain the RCS temperature at or below the required cooldown target temperature
- b. Secure AFW flow to the affected SG once minimum required level is achieved
- c. Ensure the affected SG does **NOT** become water solid
- d. Terminate SI after meeting termination criteria

Answer:

- d. Terminate SI after meeting termination criteria

ANSWER KEY

Question: 10

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Containment pressure is 4.5 psig.
- SI has **NOT** been reset.
- Phase A has **NOT** been reset.
- Phase B has **NOT** been reset.

Which of the following describes the conditions required to allow opening of the SG sample valves?

- a. Containment pressure must be reduced below 3.0 psig before SI can be reset to allow opening the sample valves
- b. SI can be reset to allow opening the sample valves
- c. Containment pressure must be reduced below 3.0 psig before Phase A can be reset to allow opening the sample valves
- d. Phase A can be reset to allow opening the sample valves

Answer:

- b. SI can be reset to allow opening the sample valves

Question: 11

Given the following conditions:

- Condenser vacuum is 5.4 inches Hg and degrading.
- Turbine first stage pressure is 38% turbine load.
- Turbine load is being reduced.

Which of the following actions must be taken in accordance with AOP-012, "Partial Loss of Condenser Vacuum"?

- a. Continue reducing turbine load as necessary to maintain condenser vacuum
- b. Trip the reactor and verify the turbine trips
- c. Throttle open the Cooling Tower Bypass Valves to lower Circulating Water temperature
- d. Trip the turbine and verify the plant stabilizes at the point of adding heat on the steam dumps

Answer:

- b. Trip the reactor and verify the turbine trips

Question: 12

Given the following conditions:

- The plant is operating at 100% power.
- Bank 'C' control rod D12 DRPI is indicating 206 steps
- Bank 'C' Step Counters are indicating 228 steps

When comparing incore thermocouple positions to determine if the rod is actually out of position, which of the following thermocouples should be compared?

- a. Compare incore thermocouple C12 to the average of incore thermocouples C08, D03, D05, and H13
- b. Compare incore thermocouple C12 to the average of incore thermocouples F09, F11, F13, H11, and H13
- c. Compare incore thermocouple E12 to the average of incore thermocouples E08, E10, E14, and G15
- d. Compare incore thermocouple E12 to the average of incore thermocouples D05, E04, L12, and M11

Answer:

- d. Compare incore thermocouple E12 to the average of incore thermocouples D05, E04, L12, and M11

Question: 13

Which of the following sets of conditions would **NOT** permit waiving the Independent Verification requirement for a clearance removal?

	EXPECTED DOSE	AREA TEMPERATURE
a.	12 mRem	105°F
b.	9 mRem	115°F
c.	6 mRem	125°F
d.	3 mRem	135°F

Answer:

b.	9 mRem	115°F
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Question: 14

Given the following conditions:

- The RCS is solid.
- 'B' RCP is running.
- Both trains of RHR cooling are in service.
- The RCS is at 300 psig and 160 °F.

How is RCS pressure **INITIALLY** affected by the following valve failures?

	HCV-142 (RHR to letdown) fails SHUT	FCV-122 (charging flow control) fails OPEN
a.	Increase	Increase
b.	Increase	Decrease
c.	Decrease	Increase
d.	Decrease	Decrease

Answer:

a.	Increase	Increase
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Question: 15

With the plant at 100 percent steady-state condition, the following occurs:

- ALB-06-7-3, TOTAL MAKEUP WATER FLOW DEVIATION, alarms.
- ALB-06-8-4, BORIC ACID FLOW DEVIATION, alarms.
- VCT level is at 19.5% and decreasing at the same rate it has been for the last few days.

Which of the following procedures should be addressed?

- a. AOP-002, Emergency Boration
- b. AOP-003, Malfunction of Reactor Makeup Control
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-017, Loss of Instrument Air

Answer:

- b. AOP-003, Malfunction of Reactor Makeup Control

Question: 16

Given the following conditions:

- A reactor shutdown is being performed.
- Source Range Channel N-31 is known to be failed high due to a detector problem.

Which of the following SR channel N-31 configurations will permit a continued normal shutdown when the Intermediate Range NIs drop below the P-6 reset point?

	INSTRUMENT POWER FUSES	CONTROL POWER FUSES	LEVEL TRIP SWITCH POSITION
a.	Removed	Installed	Bypass
b.	Installed	Removed	Bypass
c.	Removed	Installed	Normal
d.	Installed	Removed	Normal

Answer:

a.	Removed	Installed	Bypass
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Question: 17

Given the following conditions:

- FRP-S.1, Response to Nuclear Power Generation/ATWS, is being implemented.
- An SI actuation has occurred.
- The Foldout page is applicable.

Which of the following actions should be taken?

- Continue with FRP-S.1 while verifying proper operation of safeguard equipment
- Continue with FRP-S.1 until the reactor is tripped or made subcritical, then immediately exit to PATH-1
- Transition to PATH-1 and verify all automatic actions required for an SI have occurred, then return to FRP-S.1 only when directed by PATH-1
- Reset SI and FW isolation as soon as possible to restore feed flow to the steam generators, then continue with FRP-S.1

Answer:

- Continue with FRP-S.1 while verifying proper operation of safeguard equipment

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SENIOR REACTOR OPERATOR

Question: 18

Given the following conditions:

- The plant is operating at 100% power.
- While investigating an alarm condition at 0600, the S-SO determines that EDG 1B-SB is inoperable.
- Engineering reports at 1030 that a test deficiency on RHR Pump 1A-SA causes the pump to be declared inoperable.

When is the **LATEST** time that RHR Pump 1A-SA must be returned to service before TS 3.0.3 must be entered?

- a. 1030
- b. 1130
- c. 1430
- d. 1630

Answer:

- c. 1430

ANSWER KEY

Question: 19

Given the following conditions:

- 1CS-235, Charging Line Isolation, was closed to establish a clearance boundary for maintenance on 1CS-238.
- 1CS-235 had to be manually torqued shut.
- 1CS-235 is a Limitorque SMB-00/SB-00 motor-operated valve.

Prior to declaring 1CS-235 operable after the clearance is removed, the valve must be ...

- a. verified to have the torque switch calibrated correctly.
- b. stroked with the control switch.
- c. monitored for seat leakage.
- d. manually stroked full open.

Answer:

- b. stroked with the control switch.

ANSWER KEY

Question: 20

Given the following conditions:

- AOP-036, Safe Shutdown Following a Major Fire, is being implemented.
- A safety injection occurs concurrently with a loss of off-site power.
- 1A-SA EDG starts and loads.
- 1B-SB EDG fails to start.

Which of the following actions should be taken?

- a. Continue with AOP-036 while referencing EOP-PATH 1
- b. Follow EOP-PATH 1 and continue with AOP-036 when directed to perform a plant cooldown
- c. Continue with AOP-036 while referencing EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses
- d. Follow EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses, and continue with AOP-036 when directed to perform a plant cooldown

Answer:

- b. Follow EOP-PATH 1 and continue with AOP-036 when directed to perform a plant cooldown

Question: 21

Given the following conditions:

- A reactor trip and safety injection has occurred.
- ESW pump operation is being verified in PATH-1.
- Containment pressure is 7 psig.
- RCS pressure is 950 psig.
- SI Flow indicator FI-943, Normal HDR Flow, indicates 0 gpm.
- Both CSIPs are running and all SI valves are properly aligned.

Which of the following actions is to be taken?

- a. Trip the RCPs immediately due to RCP Trip Criteria being met
- b. Leave the RCPs running until a transition is made to Entry Point C
- c. Leave the RCPs running until containment pressure reaches 10 psig
- d. Trip the RCPs immediately due to a loss of CCW cooling to the pumps

Answer:

- a. Trip the RCPs immediately due to RCP Trip Criteria being met

Question: 22

Given the following conditions:

- The plant is in Mode 5.
- ALB-008-1-4, RWMU STORAGE TANK MINIMUM/HIGH LEVEL, alarms.
- RWMU tank level is decreasing with **NO** VCT makeup in progress.

Which one of the following procedures would be the most appropriate to implement?

- a. AOP-003, Malfunction of Reactor Makeup Control
- b. AOP-008, Accidental Release of Liquid Waste
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-020, Loss of Reactor Coolant Inventory / RHR While Shutdown

Answer:

- b. AOP-008, Accidental Release of Liquid Waste

Question: 23

Given the following conditions:

- Fuel cladding failure has occurred.
- The CVCS Cation Bed demineralizer has been placed in service.

Which of the following provide positive indications of the fuel cladding failure?

- a.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Volume Control Tank Room radiation monitor alarming
- b.
 - Reactor Coolant Filter high ΔP
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- c.
 - Chemistry samples
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- d.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Gross Failed Fuel Detector alarming

Answer:

- c.
 - Chemistry samples
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming

Question: 24

Given the following conditions:

- The plant is at 30% power.
- A dropped control rod has just been re-aligned.
- While attempting to reset the Rod Control Urgent Failure alarm, the operator inadvertently operates the Rod Control Start Up switch.

Which of the following describes the effect of operating the incorrect switch?

- a. All Control Bank control rods drop into the core, causing an automatic reactor trip
- b. All rods, including Control Bank and Shutdown Bank rods, drop into the core, causing an automatic reactor trip
- c. All rods remain in their current position and there is **NO** effect on the Rod Control System circuitry
- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Answer:

- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Question: 25

Given the following conditions:

- ALB-26-1-4, ANNUN SYS 1 POWER SUPPLY FAILURE, alarms.
- Investigation determines a 12 VDC (1C#1) power supply has failed.

Which of the following ALBs should be considered inoperable?

- a. Containment Spray & Accumulator System
- b. Diesel Generator System
- c. Reactor First Out System
- d. Auxiliary Feedwater System

Answer:

- c. Reactor First Out System

ANSWER KEY

Question: 26

Given the following conditions:

- Several Fuel Handling Building (FHB) area radiation monitors on both trains have reached the high alarm setpoint.
- AOP-005 has directed the operator to verify that the FHB ventilation has shifted to the emergency exhaust lineup.
- Both FHB Emergency Exhaust Fans, E-12 and E-13, are RUNNING.
- FHB Emergency Exhaust Fan Inlets, 1FV-2 SA and 1FV-4 SB, are OPEN

Which of the following additional alignments is expected?

	FHB OPERATING FLOOR SUPPLY FANS AH-56, AH-57, AH-58, and AH-59	FHB NORMAL EXHAUST ISOLATION DAMPERS FL-D4, FL-D5, FL-D21 and FL-D22
a.	Secured	Open
b.	Running	Open
c.	Secured	Shut
d.	Running	Shut

Answer:

c.	Secured	Shut
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Question: 27

Why do actions concerning CNMT spray operation contained in EPP-12, Loss of Emergency Coolant Recirculation, take precedence over the actions contained in FRP-J.1, Response to High Containment Pressure?

- a. Actions required by EPPs have priority over those in FRPs
- b. CNMT spray is **NOT** used if the plant is in a recirculation mode
- c. CNMT pressure may be too low to require CNMT spray
- d. Conservation of RWST inventory has priority over containment pressure control

Answer:

- d. Conservation of RWST inventory has priority over containment pressure control

Question: 28

Following a load reduction, Axial Flux Difference (AFD) is being verified.

Using the attached curve numbered F-10-2, which of the following combinations of power and AFD are outside the acceptable operating limits?

	POWER	AFD
a.	82%	-17
b.	77%	-21
c.	63%	-27
d.	56%	-30

Answer:

b.	77%	-21
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ANSWER KEY

Question: 29

Given the following conditions:

- The unit is operating at 50% power.
- LT-460, Channel III Pressurizer Level, has failed and all associated bistables are in the tripped condition.
- Power is subsequently lost to UPS Bus IDP-1A-SI.

Which train(s) of Reactor Protection will actuate, if any?

- a. Neither train
- b. Train SA **ONLY**
- c. Train SB **ONLY**
- d. Both trains

Answer:

- d. Both trains

ANSWER KEY

Question: 30

Given the following conditions:

- Reactor power is 80% and stable.
- Tavg is stable.
- Pressurizer level is stable with the control system in AUTO.
- A small leak develops across the differential pressure bellows for the controlling channel of pressurizer level, resulting in pressure equalizing across the bellows.

How will this leak affect the operation of FCV-122, Charging Flow Control Valve?

- a. It will throttle open slightly during the course of the pressure equalization and then return to its original position
- b. It will throttle closed slightly during the course of the pressure equalization and then return to its original position
- c. It will throttle open slightly during the course of the pressure equalization and remain in that position
- d. It will throttle closed slightly during the course of the pressure equalization and remain in that position

Answer:

- d. It will throttle closed slightly during the course of the pressure equalization and remain in that position

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Question: 31

Which of the following describes the result if 1B Condensate Pump trips on motor overcurrent at 80% power?

	CONDENSATE BOOSTER PUMPS	MAIN FEED PUMPS
a.	1A and 1B Remain Running	1A and 1B Remain Running
b.	1B Trips	1B Trips
c.	1B Trips	1A and 1B Remain Running
d.	1A and 1B Remain Running	1B Trips

Answer:

b.	1B Trips	1B Trips
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Question: 32

Given the following conditions:

- A Loss of Coolant Accident (LOCA) has occurred.
- Containment pressure is 2 psig.
- Containment hydrogen concentration is 3.5%.
- Containment temperature is 140 °F.
- Containment temperature prior to the accident was 90 °F.

Which one of the following is the required power setting for the 1A Hydrogen Recombiner?

- a. 44.7 kW
- b. 45.8 kW
- c. 46.7 kW
- d. 47.9 kW

Answer:

- d. 47.9 kW

Question: 33

During operation at 100% power, an inadvertent SI occurs on 'B' Train **ONLY**.

Which of the following actions is required?

- a. Manually actuate SI on 'A' Train and continue in PATH-1
- b. Continue in PATH-1 noting which 'A' Train ESF equipment is **NOT** running
- c. Start **ONLY** the 'A' Train of ESF equipment for which the redundant 'B' Train equipment failed
- d. Transition directly to EPP-008, SI Termination

Answer:

- a. Manually actuate SI on 'A' Train and continue in PATH-1

Question: 34

Given the following conditions:

- The plant is at 22% power during a shutdown.
- Intermediate Range Channel N-35 has been declared inoperable as a result of failing to meet Operational Test Criteria of MST-10167.
- The test was performed, per GP-006, during a Tech Spec 3.0.3 required shutdown (i.e., the shutdown must continue).
- OWP-RP-21 has been performed, which places the LEVEL TRIP BYPASS switch in the BYPASS position and verifies the associated light on the Bypass Permissive Light Panel.
- The I&C Supervisor states that both control and instrument power must be removed from the drawer to replace a bistable module.

Assuming the instrument and control power are removed for the remainder of the shutdown, the shutdown continues and ...

- a. the reactor trips when the fuses are removed.
- b. the reactor trips when power is reduced below P-10.
- c. the reactor trips when power is reduced below P-6.
- d. **NO** reactor trip occurs.

Answer:

- b. the reactor trips when power is reduced below P-10.

Question: 35

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Instrument Bus SIII de-energizes, causing a loss of power to PT-2250A, AFW Pump A Suct Press.

Which of the following describes the effect of the loss of this instrument on MDAFW Pump 1A-SA?

	MDAFW PUMP 1A-SA ALREADY RUNNING	MDAFW PUMP 1A-SA NOT RUNNING
a.	Automatically Trips	Can Be Started
b.	Automatically Trips	CANNOT Be Started
c.	Remains Running	Can Be Started
d.	Remains Running	CANNOT Be Started

Answer:

c.	Remains Running	Can Be Started
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Question: 36

Given the following conditions:

- A Loss of All AC Power has occurred.
- EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses, directs that SI be actuated and immediately reset.

Actuating SI and immediately resetting it is performed to ensure the ...

- EDG will be capable of tripping on any trip signal when started.
- SI valves will **NOT** automatically realign when power is restored.
- CCW pumps do **NOT** automatically start when power is restored.
- DC battery capacity is conserved until power is restored.

Answer:

- SI valves will **NOT** automatically realign when power is restored.

Question: 37

The plant is in Mode 4. The following RCS leak rates are noted:

- Primary to secondary – SG 'A' 0.08 gpm
- Primary to secondary – SG 'B' 0.11 gpm
- Primary to secondary – SG 'C' 0.07 gpm
- Leakage by PRZ Safeties to PRT 5.40 gpm
- Leakage from RCS to RCDT 4.00 gpm
- Total leakage from RCS 10.30 gpm

Which of the following RCS Technical Specification leakage limits is being exceeded for this Mode?

- a. Pressure Boundary Leakage
- b. Unidentified Leakage
- c. Primary to Secondary Leakage
- d. Identified Leakage

Answer:

- c. Primary to Secondary Leakage

Question: 38

Given the following conditions:

- A large break LOCA has occurred.
- During the performance of the EOPs, a transition has been made to EPP-012, Loss of Emergency Coolant Recirculation.

Conditions upon entry to EPP-012 are:

- RWST level at 68%.
- Three (3) Containment Fan Coolers operating in slow speed.
- Containment pressure at 14 psig.
- Containment wide range sump level < 100 inches.

Which of the following describes the Containment Spray (CS) System configuration required?

- a. One CS Pump running, taking a suction off the Containment Sump
- b. Both CS Pumps running, taking a suction off the Containment Sump
- c. One CS Pump running, taking a suction off the RWST
- d. Both CS Pumps running, taking a suction off the RWST

Answer:

- c. One CS Pump running, taking a suction off the RWST

Question: 39

Given the following conditions:

- A loss of secondary heat sink has occurred and FRP-H.1, Response to Loss of Secondary Heat Sink, is being performed.
- Containment pressure is 0.5 psig.
- All RCPs are stopped.
- SG levels (WR) are all between 30% and 35% and decreasing slowly.
- Core exit thermocouple temperatures are stable.
- PRZ pressure is 2270 psig and increasing slowly.
- AFW is **NOT** available.
- The crew has just attempted to start the MFW Pumps, but neither Main Feedwater Pump can be started.

Which of the following actions should be taken to provide core cooling?

- a. Depressurize the RCS to inject the CLAs
- b. Depressurize at least one SG below CBP discharge pressure
- c. Restart one RCP and establish an RCS vent path
- d. Initiate SI flow and establish an RCS vent path

Answer:

- b. Depressurize the SG below CBP discharge pressure

Question: 40

Given the following conditions:

- While at 100% power, a steam line break occurs.
- Safety injection actuates.
- The steam break is isolated per EPP-014, Faulted SG Isolation.

Which of the following describes the expected EOP flowpath used to stabilize and restore plant systems upon exiting EPP-014?

- PATH-1, Entry Point C, then to EPP-008, SI Termination
- PATH-1, Entry Point C, then to EPP-009, Post-LOCA Cooldown and Depressurization
- Directly to EPP-008, SI Termination
- Directly to EPP-009, Post-LOCA Cooldown and Depressurization

Answer:

- PATH-1, Entry Point C, then to EPP-008, SI Termination

Question: 41

Following a steam break inside containment, the Containment Spray System actuated.

Containment pressure has been reduced to 2.5 psig. The following signals have been reset:

- Safety Injection
- Phase A
- Phase B
- Containment Spray

Several minutes after securing Containment Spray, containment pressure increases to 11 psig due to a subsequent large break LOCA.

Which of the following describes the expected response of the Containment Spray System?

	CS PUMPS	CS DISCHARGE VALVES
a.	Automatically Start	Automatically Open
b.	Automatically Start	Must be Manually Opened
c.	Must be Manually Started	Automatically Open
d.	Must be Manually Started	Must be Manually Opened

Answer:

a.	Automatically Start	Automatically Open
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Question: 42

Given the following conditions:

- A load rejection has occurred, causing RCS pressure to increase.
- The PRZ Spray Valves and PRZ PORVs have opened.
- During the pressure transient, PRZ pressure transmitter PT-445 failed high.

Which of the following will occur?

- a. PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will close when RCS pressure drops below 2000 psig
- b. All PRZ PORVs will remain open as PT-444 senses a lowering pressure and must be manually closed
- c. PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will remain open and must be manually closed
- d. PRZ PORV 444B will close as PT-444 senses a lowering pressure; PRZ PORVs 445A and 445B will close when RCS pressure drops below 2000 psig

Answer:

- d. PRZ PORV 444B will close as PT-444 senses a lowering pressure; PRZ PORVs 445A and 445B will close when RCS pressure drops below 2000 psig

Question: 43

Given the following conditions:

- Instrument Bus SI is de-energized.
- A reactor trip and safety injection occurs.

Which of the following describes the plant response AND required operator actions?

- a.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'A' Train equipment
- b.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'B' Train equipment
- c.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - 'A' Train equipment must be manually aligned/started **ONLY** if the corresponding 'B' Train equipment fails
- d.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - 'B' Train equipment must be manually aligned/started **ONLY** if the corresponding 'A' Train equipment fails

Answer:

- a.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'A' Train equipment

Question: 44

Given the following conditions:

- Reactor power is 8% during a plant startup.
- 1A Main Feed Pump is operating.
- The Main Feed Regulating Valves are in MAN and are throttled open.
- The Main Feed Regulating Bypass Valves are in AUTO and are throttled open.
- 'C' SG level rises to 85%.

Which of the following will occur?

- a. 1A Main Feed Pump trips **AND** MFW is isolated to 'C' SG **ONLY**
- b. 1A Main Feed Pump trips **AND** MFW is isolated to all SGs
- c. 1A Main Feed Pump remains running **AND** MFW is isolated to 'C' SG **ONLY**
- d. 1A Main Feed Pump remains running **AND** MFW is isolated to all SGs

Answer:

- b. 1A Main Feed Pump trips **AND** MFW is isolated to all SGs

Question: 45

A high (red) alarm on the Containment Leak Detection Monitor particulate channel (3502A-SA) causes which of the following automatic isolations/trips to occur?

- a.
 - Containment Normal Purge
 - Containment Pre-Entry Purge
 - Containment Vacuum Relief
- b.
 - Containment Normal Purge **ONLY**
- c.
 - Containment Pre-Entry Purge **ONLY**
- d.
 - Containment Vacuum Relief **ONLY**

Answer:

- b.
 - Containment Normal Purge **ONLY**

ANSWER KEY

Question: 46

Which of the following events would result in increasing radiation levels in the Plant Vent Stack?

- a. Steam Generator Tube Rupture
- b. Waste Gas Decay Tank Rupture
- c. Fuel Handling Accident
- d. Radioactive Spill in the Chemistry Hot Lab

Answer:

- c. Fuel Handling Accident

ANSWER KEY

Question: 47

Given the following conditions:

- The plant is operating at 22% power.
- PRZ pressure transmitter PT-444 has failed high.
- 1RC-107, PRZ Spray Valve 444C, has stuck open.

Which of the following actions is to be taken?

- Stop 1A RCP and stabilize the plant at power
- Trip the reactor and stop 1A RCP
- Stop 1C RCP and stabilize the plant at power
- Trip the reactor and stop 1C RCP

Answer:

- Stop 1A RCP and stabilize the plant at power

Question: 48

Which of the following gives the parameters monitored for SI Reinitiation criteria on the EPP-009, Post LOCA Cooldown and Depressurization, foldout page?

- a. RCS subcooling and RVLIS level
- b. RCS pressure and pressurizer level
- c. RCS pressure and RVLIS level
- d. RCS subcooling and pressurizer level

Answer:

- d. RCS subcooling and pressurizer level

ANSWER KEY

Question: 49

The plant was operating at 100% power when an accident occurred.

Assuming **NO** operator action is taken, a Main Steam Line Isolation Signal (MSIS) will be generated when ...

- a. PRZ pressure drops to 1832 psig.
- b. containment pressure rises to 2.0 psig.
- c. steam line pressure drops to 547 psig.
- d. steam line pressure drops faster than 100 psig/sec.

Answer:

- c. steam line pressure drops to 547 psig.

ANSWER KEY

Question: 50

Given the following conditions:

- Power is at 45% during a power increase following a short maintenance outage.
- Rod K-6 in Control Bank 'D' is determined to be inoperable due to a power cabinet malfunction.
- The rod, determined to be at 153 steps, is **NOT** capable of being moved, but is considered to be trippable.
- The crew realigns the remaining rods in Control Bank 'D' with the inoperable rod.

What is the maximum power level that can be achieved under these conditions while maintaining **ALL** associated alarms clear?

- a. 45%
- b. 50%
- c. 75%
- d. 80%

Answer:

- c. 75%

Question: 51

Given the following conditions:

- The plant was operating at 100% power when an accident occurred.
- All feedwater is isolated to three faulted SGs IAW EPP-015, Uncontrolled Depressurization of All SGs.
- The STA reports a red path requirement for the heat sink CSF.

Which of the following describes why FRP-H.1, Response to Loss of Secondary Heat Sink, would **NOT** be used in this situation?

- a. FRPs are implemented only after completion of PATH-1, entry Point C
- b. Feed flow has been reduced by operator action
- c. RHR is capable of providing an adequate heat sink
- d. Heat transfer coupling has been lost between the RCS and the SGs

Answer:

- b. Feed flow has been reduced by operator action

Question: 52

ALB-15-1-3, Protection System A/B Trouble, has alarmed.

Local indications are as follows:

	<u>Train A</u>	<u>Train B</u>
General Warning Light	On	Off
#1 48-V DC Power Supply	On	On
#1 15-V DC Power Supply	On	On
#2 48-V DC Power Supply	Off	On
#2 15-V DC Power Supply	Off	On
Trip Bypass Breaker	Racked Out/Open	Racked Out/Open

These conditions would be caused by ...

- a. a loss of instrument Channel SIII power supply.
- b. a loss of instrument Channel SIV power supply.
- c. a logic test switch being out of position inside an SSPS 'A' Train cabinet.
- d. a logic test switch being out of position inside an SSPS 'B' Train cabinet.

Answer:

- a. a loss of instrument Channel SIII power supply.

Question: 53

Given the following conditions:

- Reactor power is at 30% and stable.
- Control Bank 'D' rods are at 185 steps.
- RCS Tavg is 564 °F.
- All control systems are in automatic.
- TE-144, Letdown HX Outlet Temp, fails high.

Which of the following describes the expected response of RCS temperature and rod position?

	RCS TAVG	BANK 'D' POSITION
a.	Greater than 564 °F	Greater than 185 steps
b.	Greater than 564 °F	Less than 185 steps
c.	Less than 564 °F	Greater than 185 steps
d.	Less than 564 °F	Less than 185 steps

Answer:

b.	Greater than 564 °F	Less than 185 steps
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Question: 54

A large break LOCA has occurred and PATH-1 is being performed.

The following have been reset:

- Safety Injection
- Phase A Isolation
- Phase B Isolation

The RWST level subsequently decreases to the Low-Low level setpoint.

Which of the following describes the response of the RHR Pump and the Containment Spray Pump Suction Valves?

	RHR CONTAINMENT SUMP SUCTION VALVES	RWST TO RHR SUCTION VALVES	CONTAINMENT SPRAY CONTAINMENT SUMP SUCTION VALVES	RWST TO CONTAINMENT SPRAY SUCTION VALVES
a.	Must be manually opened	Must be manually closed	Automatically open	Must be manually closed
b.	Must be manually opened	Automatically close	Automatically open	Automatically close
c.	Automatically open	Must be manually closed	Must be manually opened	Must be manually closed
d.	Automatically open	Must be manually closed	Automatically open	Automatically close

Answer:

d.	Automatically open	Must be manually closed	Automatically open	Automatically close
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Question: 55

How is the clearance preparer notified of a Temporary Modification which affects an item being placed under clearance?

- a. The standard clearances in PTR are updated with Temporary Modification information
- b. The 400 screen of EDBS for each component affected lists the applicable Temporary Modifications
- c. The Category A drawings are annotated with the ESR number of the applicable Temporary Modifications
- d. During the schedule review, the responsible engineer notifies the WCC of any Temporary Modifications which may affect clearances needed for the current schedule

Answer:

- c. The Category A drawings are annotated with the ESR number of the applicable Temporary Modifications

Question: 56

Given the following conditions:

- Containment temperature is 124 °F.
- Containment hydrogen concentration is 2.2%.
- RCS pressure is 600 psig.
- FRP-I.3, Response to Voids in Reactor Vessel, is being implemented.

Which of the following identifies the **MAXIMUM** allowed Reactor Vessel head venting time?

- a. 5.6 minutes
- b. 6.6 minutes
- c. 7.6 minutes
- d. 9.6 minutes

Answer:

- c. 7.6 minutes

ANSWER KEY

Question: 57

Given the following conditions:

- The plant is in Mode 4.
- A work activity to increase the reliability of the Control Room Emergency Filtration System is being planned.
- With one of the filtration systems inoperable in Modes 1-4, the system must be returned to operable within 7 days.

Which of the following describes the required work schedule for this activity, assuming the plant is maintained in Mode 4?

- a. Work during normal working hours until the activity is complete
- b. Work during normal working hours until less than 50% of the allotted LCO time is remaining, and then work on a 24 hour/day schedule until the activity is complete
- c. Work during normal working hours until less than 72 hours of the allotted LCO time is remaining, and then work on a 24 hour/day schedule until the activity is complete
- d. Work on a 24 hour/day schedule until the activity is complete

Answer:

- c. Work during normal working hours until less than 72 hours of the allotted LCO time is remaining, and then work on a 24 hour/day schedule until the activity is complete

Question: 58

Given the following conditions:

- A small break LOCA has occurred.
- The Unit-SCO has just been directed to implement FRPs.

The STA reports the following CSFST conditions:

- Heat Sink YELLOW
- Inventory YELLOW
- Subcriticality MAGENTA
- Containment MAGENTA
- Core Cooling RED
- Integrity RED

Which of the following procedures should be entered?

- a. FRP-C.1, Response to Inadequate Core Cooling
- b. FRP-J.1, Response to High Containment Pressure
- c. FRP-P.1, Response to Imminent Pressurized Thermal Shock
- d. FRP-S.1, Response to Nuclear Power Generation / ATWS

Answer:

- a. FRP-C.1, Response to Inadequate Core Cooling

Question: 59

The Superintendent - Shift Operations has designated the following personnel to be on the Fire Brigade Team:

- Leader - Outside AO (licensed Reactor Operator)
- Member 2 - Turbine Building AO (non-licensed)
- Member 3 - HP Technician
- Member 4 - I&C Technician
- Member 5 - Mechanic

Which of the following describes the makeup of the team?

- a. The team makeup is acceptable
- b. The Team Leader must be replaced by a licensed Senior Reactor Operator
- c. Member 2 must be replaced by a licensed Reactor Operator or Senior Reactor Operator
- d. Member 3, 4, or 5 must be replaced by an operator

Answer:

- d. Member 3, 4, or 5 must be replaced by an operator

Question: 60

Given the following conditions:

- Following a large break LOCA, PATH-1 is in progress.
- 1A-SA RHR pump is out of service due to a ground.
- 1B-SB RHR pump is running with 3000 gpm flow.
- 'B' Train of RHR has **NO** power to the valves powered from 'B' Train (fire in 1B21-SB).

Which of the following procedures should be implemented upon exiting PATH-1?

- a. EPP-009, Post LOCA Cooldown and Depressurization
- b. EPP-010, Transfer to Cold Leg Recirculation
- c. EPP-011, Transfer to Hot Leg Recirculation
- d. EPP-012, Loss of Emergency Coolant Recirculation

Answer:

- d. EPP-012, Loss of Emergency Coolant Recirculation

Question: 61

Given the following conditions:

- At 1315, the Reactor Operator must leave the Control Room for a short period of time.
- All requirements for this short term relief have been conducted
- An entry has been made into OMM-002, Attachment 14, Documentation of Short Term Assumption of Duties.

An entry must also be made in the Control Operators Log if the relieved operator does **NOT** resume the watch by ...

- a. 1330.
- b. 1345.
- c. 1415.
- d. 1515.

Answer:

- c. 1415.

ANSWER KEY

Question: 62

Given the following conditions:

- A loss of off-site power has occurred.
- The plant is being cooled down and depressurized per EPP-005, Natural Circulation Cooldown.
- The RCS cooldown rate is 40 °F/hour.
- RVLIS Upper Range indication is 96% and lowering slowly.
- The S-SO has determined that RCS depressurization must continue.

Which of the following actions should be taken?

- Continue in EPP-005, Natural Circulation Cooldown, AND maintain the cooldown rate <50 °F/hour
- Initiate safety injection to collapse the vessel head voids
- Transition to EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, AND continue the cooldown and depressurization
- Transition to EPP-007, Natural Circulation Cooldown with Steam Void in Vessel without RVLIS, AND continue the cooldown and depressurization

Answer:

- Transition to EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, AND continue the cooldown and depressurization

Question: 63

Given the following conditions:

- CP&L hired an employee on May 5th of this year.
- The employee's TEDE for this year prior to May 5th was 400 mRem.
- The employee's TEDE at SHNPP for this year is 1500 mRem.

Which of the following describes the **MAXIMUM ADDITIONAL** exposure allowed at CP&L facilities for this employee for the remainder of the year, without receiving an extension, **AND** what is the **LOWEST** level of authorization required if an extension is required during non-emergency conditions?

	MAXIMUM ADDITIONAL EXPOSURE W/OUT EXTENSION	LOWEST LEVEL OF AUTHORIZATION FOR EXTENSION
a.	100 mRem	E&RC Manager
b.	100 mRem	Site Vice President
c.	500 mRem	E&RC Manager
d.	500 mRem	Site Vice President

Answer:

d.	500 mRem	Site Vice President
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Question: 64

Given the following conditions:

- The unit is operating at 20% power with all systems in automatic.
- Bank 'D' control rods are at 130 steps.
- Control Bank 'C' rod H6 drops to the bottom of the core.
- **NO** rod control urgent failure alarms occur.

In response to the dropped rod, where will thermal power and RCS Tavg stabilize, in comparison to their values prior to the dropped rod, **WITHOUT** any operator action?

	REACTOR THERMAL POWER	RCS T-AVG
a.	Within 1%	More than 5°F lower
b.	More than 2% different	More than 5°F lower
c.	Within 1%	Within 1°F
d.	More than 2% different	Within 1°F

Answer:

c.	Within 1%	Within 1°F
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Question: 65

Which of the following identifies when the Diesel and Motor Fire Pumps will start on lowering Fire Header pressure?

	MOTOR FIRE PUMP	DIESEL FIRE PUMP
a.	93 psig	83 psig
b.	83 psig	93 psig
c.	93 psig	105 psig
d.	105 psig	83 psig

Answer:

a.	93 psig	83 psig
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Question: 66

Given the following conditions:

- The plant is at 100% power.
- One minute ago, the normal feeder breaker to 6.9kV bus 1A-SA (BKR 105) tripped open.
- The 1A-SA EDG failed to start.

Which of the following actions is required?

- a. Start 1B-SB MDAFW Pump to supply the SGs
- b. Trip the reactor and enter PATH-1
- c. Open all load breakers on 6.9kV bus 1A-SA
- d. Place the 1A-SA EDG Emergency Stop switch to EMER STOP

Answer:

- d. Place the 1A-SA EDG Emergency Stop switch to EMER STOP

Question: 67

Given the following conditions:

- The plant is at 100% power.
- 1A and 1B ESW Pumps are off.
- 'A' and 'B' ESW headers are being supplied from NSW.
- 1A NSW Pump is running.
- 1B NSW Pump is off.

Subsequently, the following events occur:

- A breaker failure results in a loss of power to 1A-SA.
- The 'A' EDG starts, re-energizes the bus, and sequences the loads properly.

Which of the following describes how the ESW alignment is affected?

	'A' TRAIN ESW HEADER SUPPLY	'B' TRAIN ESW HEADER SUPPLY
a.	1A ESW Pump	1B ESW Pump
b.	1A ESW Pump	1A NSW Pump
c.	1A NSW Pump	1B ESW Pump
d.	1A NSW Pump	1A NSW Pump

Answer:

b.	1A ESW Pump	1A NSW Pump
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Question: 68

During FRP-C.1, Response to Inadequate Core Cooling, the steam generators are depressurized to 90 psig.

Which of the following is the basis for stopping at 90 psig?

- a. To prevent N2 injection into the RCS from the Cold Leg Accumulators
- b. To maintain gases in solution while low head SI recovers core cooling
- c. To ensure the SG U-Tubes remain covered
- d. To maintain adequate pressure for running any available RCPs

Answer:

- a. To prevent N2 injection into the RCS from the Cold Leg Accumulators

ANSWER KEY

SHNPP NRC EXAMINATION
SENIOR REACTOR OPERATOR

Question: 69

The plant is operating at 100% power with the following conditions:

<u>Time</u>	<u>Ambient Temp</u>	<u>CT Basin Temp</u>
1200	25 °F	55 °F
1600	30 °F	60 °F
2000	40 °F	64 °F

Which of the following describes the correct CT Deicing Gate Valve alignment for these conditions?

	1600	2000
a.	Full Open	Full Open
b.	Half Open	Full Open
c.	Full Open	Half Open
d.	Half Open	Half Open

Answer:

b.	Half Open	Full Open
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Question: 70

Reactor power is being increased and is at 37%.

All indications for 1A and 1C RCPs are normal.

Given the following conditions for 1B RCP:

- ALB-008-4-3, RCP 'B' SEAL #1 LEAKOFF HIGH/LOW FLOW, alarms.
- #1 seal leakoff flow has increased to 6.8 gpm.
- Shaft vibration levels are 6 mils and increasing at 0.4 mil/hr.
- Frame vibration levels are 2.1 mils and increasing at 0.3 mil/hr.
- Motor upper radial bearing temperature is 172 °F and stable.
- Motor lower radial bearing temperature is 176 °F and stable.
- Motor upper thrust bearing temperature is 168 °F and stable.
- Motor lower thrust bearing temperature is 178 °F and stable.
- Pump radial bearing temperature is 193 °F and increasing slowly.
- Seal inlet water temperature is 198 °F and increasing slowly.
- Pump bearing water temperature is 158 °F and increasing slowly.
- Motor stator winding temperature is 310 °F and increasing slowly.

Which of the following actions should be taken, in accordance with AOP-018?

- a. Trip the reactor and trip 1B RCP immediately.
- b. Trip 1B RCP immediately and perform a plant shutdown.
- c. Be in Hot Standby within 6 hours, then stop 1B RCP.
- d. Trip 1B RCP within 10 minutes and perform a plant shutdown.

Answer:

- b. Trip 1B RCP immediately and perform a plant shutdown.

Question: 71

Given the following conditions:

- The plant is in Mode 3.
- ALB 5-6-1, CCW SURGE TANK HIGH-LOW LEVEL, alarms.
- ALB 10-4-5, RAD MONITOR SYSTEM TROUBLE, alarms.
- ALB 5-1-2A, RCP THERM BAR HDR HIGH FLOW, alarms.
- ALB 5-2-2B, RCP THERM BAR HDR HIGH TEMP, alarms.
- CCW RAD monitor alarm on RM-11 console, alarms.
- CCW surge tank level is increasing.

Which of the following actions should automatically occur?

- a. 1CC-251, CCW From RCP Thermal Barrier Coolers, CLOSES
- b. CCW Holdup Tank Transfer Pump, STARTS
- c. CCW Drain Tank Transfer Pump, STARTS
- d. 1CC-252, RCP Thermal Barriers Flow Control, CLOSES

Answer:

- d. 1CC-252, RCP Thermal Barriers Flow Control, CLOSES

Question: 72

Given the following conditions:

- The plant is in Mode 3.
- 1A-SA CCW Pump is running.
- 1B-SB CCW Pump is in standby.
- A leak occurs in the non-essential header, causing a low pressure condition in the CCW system.

Which of the following describes the response of the CCW system?

	CCW PUMP(S) RUNNING	NON-ESSENTIAL HEADER
a.	1A-SA Pump ONLY	Isolated
b.	1A-SA Pump ONLY	NOT Isolated
c.	1A-SA AND 1B-SB Pumps	Isolated
d.	1A-SA AND 1B-SB Pumps	NOT Isolated

Answer:

d.	1A-SA AND 1B-SB Pumps	NOT Isolated
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Question: 73

Given the following conditions:

- The unit is in a Refueling Outage.
- A spent fuel assembly is attached to the manipulator crane.
- A failure of the Reactor Vessel permanent cavity seal ring causes cavity level to drop approximately 3" every minute.
- Non-essential personnel have been evacuated from Containment.
- The Refueling Crew is in the process of placing the assembly in the Reactor Vessel when a Loss of Off-Site Power occurs.

Refueling Crew members are immediately evacuated from Containment because there are **NO** means for ...

- a. making up to the cavity.
- b. monitoring radiological levels inside Containment.
- c. placing the fuel assembly in the vessel.
- d. providing ventilation to Containment.

Answer:

- c. placing the fuel assembly in the vessel.

Question: 74

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, is being performed.
- RVLIS indicates that voids exist in the upper head of the vessel.
- An hour later, Off-Site power is restored.
- Conditions are being established to start an RCP.

Prior to starting the RCP, pressurizer level must be ...

- increased to accommodate the expected outsurge when the voids in the head are collapsed.
- decreased to accommodate the expected insurge when the RCS heats up.
- increased to accommodate the expected outsurge when the RCS cools down.
- decreased to accommodate the expected insurge when PRZ spray flow lowers pressure.

Answer:

- increased to accommodate the expected outsurge when the voids in the head are collapsed.

Question: 75

Which of the following describes the automatic actions performed by the AMSAC system **AND** the basis for each action?

- a.
 - Reactor is tripped to remove the heat source
 - Turbine is tripped to preserve SG inventory
- b.
 - Reactor is tripped to remove the heat source
 - AFW is initiated in anticipation of a loss of SG inventory
- c.
 - Turbine is tripped to preserve SG inventory
 - AFW is initiated in anticipation of a loss of SG inventory
- d.
 - Turbine is tripped to establish a Tave-Tref deviation to force auto rod insertion
 - AFW is initiated in anticipation of a loss of SG inventory

Answer:

- c.
 - Turbine is tripped to preserve SG inventory
 - AFW is initiated in anticipation of a loss of SG inventory

Question: 76

Which of the following conditions would require a One-Hour Notification in accordance with AP-617, Reportability Determination and Notification?

- a. A manual reactor trip is actuated from 40% power due to a trip of the running Main Feedwater Pump
- b. An automatic safety injection is actuated at 100% power due to an I&C Technician lifting an incorrect lead
- c. While at 400°F during a plant cooldown, all warning sirens in Lee County are reported to be out-of-service due to severe weather.
- d. While at 400°F during a plant heatup following a refueling outage, the plant is cooled down to Mode 4 to meet a Technical Specification action statement.

Answer:

- c. While at 400°F during a plant cooldown, all warning sirens in Lee County are reported to be out-of-service due to severe weather.

Question: 77

The following series of procedure transitions are made:

- A transition is made from PATH-1, Step 69, to EPP-009, Post-LOCA Cooldown and Depressurization.
- While performing EPP-009, Step 16, a foldout page item directs a transition to PATH-2, Entry Point J.
- While performing PATH-2, Step 9, a MAGENTA path on the CSFST directs a transition to FRP-P.1, Response to Imminent Pressurized Thermal Shock.

The last step in FRP-P.1 states, "Return to Procedure and Step in Effect."

The crew should transition to ...

- a. PATH-1, Step 69.
- b. EPP-009, Step 16.
- c. PATH-2, Entry Point J.
- d. PATH-2, Step 9.

Answer:

- d. PATH-2, Step 9.

Question: 78

A reactor startup is being performed following a mid-cycle outage per GP-004, "Reactor Startup (Mode 3 to Mode 2)".

Estimated Critical Conditions are as follows:

TIME	1830
BORON CONC.	1215 ppm
CONT BANK 'C' POSTION	218 steps
CONT BANK 'D' POSTION	90 steps
ECC - 500 PCM POSITION	45 steps on Bank 'D'
ECC + 500 PCM POSITION	197 steps on Bank 'D'
ROD INSERTION LIMIT	0 steps on Bank 'D'

The Actual Critical Conditions are as follows:

TIME	1836
BORON CONC.	1198 ppm
CONT BANK 'C' POSTION	110 steps
CONT BANK 'D' POSTION	0 steps

Which of the following actions must be taken?

- a. Shut down the reactor using GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)," **AND** borate, as needed, to increase RCS boron concentration to 1215 ppm
- b. Maintain critical conditions **AND** borate, as needed, to increase RCS boron concentration to 1215 ppm
- c. Shut down the reactor using GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)," **AND** initiate Emergency Boration per AOP-002
- d. Trip the reactor **AND** initiate Emergency Boration per AOP-002

Answer:

- c. Shut down the reactor using GP-006 **AND** initiate Emergency Boration per AOP-002

Question: 79

Given the following conditions:

- Three hours ago, Chemistry reported that secondary chemistry parameters were exceeding Action Level 2 limits.
- Reactor power is currently 38% and being reduced at 10% per hour.
- Chemistry now reports that Action Level 3 limits have been exceeded.

Which of the following actions should be taken?

- a. Stabilize the plant at the current power level
- b. Continue the power reduction at the current rate until $< 30\%$ power
- c. Initiate a rapid plant shutdown
- d. Trip the reactor

Answer:

- c. Initiate a rapid plant shutdown

Question: 80

Given the following conditions:

- The plant is operating at 100% power.
- A tube leak has been detected on 'B' SG.
- The Condenser Vacuum Pump Rad Monitor, REM-1TV-3534, and Curve H-X-15 are being monitored every 15 minutes to estimate the leak rate.

Which of the following readings noted on REM-1TV-3534 is the **MINIMUM** reading that would require a plant shutdown per Technical Specifications?

- a. $5.5 \text{ E } -7$
- b. $1.05 \text{ E } -6$
- c. $1.45 \text{ E } -6$
- d. $1.55 \text{ E } -6$

Answer:

- c. $1.45 \text{ E } -6$

Question: 81

Given the following conditions:

- A reactor trip with SI has occurred.
- The immediate action steps, ECCS flow verifications, and AFW flow verifications are performed.
- SG levels are < 10% and the required AFW flow **CANNOT** be established.
- FRP-H.1, Response to Loss of Secondary Heat Sink, is entered.
- RCS pressure is checked and determined to be less than intact SG pressure.

Which of the following describes the plant conditions?

- a. A large break LOCA is in progress **AND** a secondary heat sink is required.
- b. A large break LOCA is in progress **AND** a secondary heat sink is **NOT** required.
- c. A small break LOCA is in progress **AND** a secondary heat sink is required.
- d. A small break LOCA is in progress **AND** a secondary heat sink is **NOT** required.

Answer:

- b. A large break LOCA is in progress **AND** a secondary heat sink is **NOT** required.

Question: 82

If the suction pipe from the 'B' Spent Fuel Pool to the Spent Fuel Pool Cooling Pump completely severed, level in the Spent Fuel Pool would decrease ...

- a. to 18 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- b. to 18 feet above the fuel assemblies and stabilize without any automatic action.
- c. to 21 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- d. to 21 feet above the fuel assemblies and stabilize without any automatic action.

Answer:

- b. to 18 feet above the fuel assemblies and stabilize without any automatic action.

Question: 83

Given the following conditions:

- The plant is solid in Mode 5 with one (1) RCP in operation.
- RHR Pump A-SA is providing letdown flow with PK-145.1, LTDN PRESSURE 1CS-38, in **MAN**.
- CSIP A-SA is providing RCS makeup and seal injection.

If instrument air is lost to 1CS-38 (PCV-145), the operator should ...

- a. trip CSIP A-SA.
- b. trip RHR Pump A-SA.
- c. maintain letdown flow using HC-142.1, RHR Letdown 1CS-28.
- d. open one PRZ PORV.

Answer:

- a. trip CSIP A-SA.

ANSWER KEY

Question: 84

RCS temperature is 220 °F.

Which of the following sets of conditions is the **MINIMUM** required to meet the Technical Specification requirements for DC Electrical Sources?

	125 VDC BATTERIES		BATTERY CHARGERS			
	1A-SA	1B-SB	1A-SA	1B-SA	1A-SB	1B-SB
a.	Operable	Operable	Operable	Operable	Operable	Operable
b.	Operable	Operable	Operable	NOT Operable	NOT Operable	Operable
c.	Operable	NOT Operable	Operable	Operable	NOT Operable	NOT Operable
d.	NOT Operable	Operable	NOT Operable	Operable	Operable	Operable

Answer:

b.	Operable	Operable	Operable	NOT Operable	NOT Operable	Operable
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ANSWER

Question: 85

Given the following conditions:

- A liquid waste discharge from a Treated Laundry and Hot Shower (TL&HS) Tank is in progress.
- REM-1WL-3540, Treated Laundry and Hot Shower Tank Pump Discharge Monitor, goes into high alarm.

Which of the following terminates the discharge?

- a. The running TL&HS Tank Pump will automatically trip.
- b. An operator must take manual action to shut the TL&HS Tank Pump Discharge Isolation Valve.
- c. The running TL&HS Tank Pump Recirc Valve will automatically open.
- d. The TL&HS Tank Pump Discharge Isolation Valve will automatically close.

Answer:

- d. The TL&HS Tank Pump Discharge Isolation Valve will automatically close.

Question: 86

The unit is in Mode 3 with the reactor trip breakers closed.

If 125 VDC Bus 1A-SA deenergizes due to a fault on the bus ...

- a. Train SA reactor trip breaker will open due to an undervoltage (UV) trip.
- b. Train SA reactor trip breaker will open due to a shunt trip.
- c. an undervoltage (UV) trip signal will **NOT** be capable of opening Train SA reactor trip breaker.
- d. a shunt trip signal will **NOT** be capable of opening Train SA reactor trip breaker.

Answer:

- d. a shunt trip signal will **NOT** be capable of opening Train SA reactor trip breaker

Question: 87

Given the following conditions:

- The plant experiences a reactor trip and SI from 100% power.
- **ONLY** one train of SI has actuated.
- Four Containment Fan Cooler fans are running in fast on one train.
- Two Containment Fan Cooler fans are running in slow on the other train.

Which of the following is the Containment Fan Cooler fan alignment following operator action in response to this situation?

- a. Four fans running in slow
- b. Four fans running in fast
- c. Eight fans running in fast
- d. Eight fans running in slow

Answer:

- a. Four fans running in slow

ANSWER KEY

Question: 88

Given the following conditions:

- A recovery from an SGTR on the 1B SG is being performed using the backfill method.
- ERFIS in **NOT** available.
- **NO** RCPs are running.
- RCS pressure channels read:
 - PI-402 = 600 psig
 - PI-403 = 620 psig
 - PI-402A = 650 psig
- Thot channels read:
 - TI-413 = 420 °F
 - TI-423 = 480 °F
 - TI-433 = 415 °F
- The five hottest ICCM TCs read:
 - 490 °F
 - 486 °F
 - 459 °F
 - 430 °F
 - 425 °F

Which of the following identifies the amount of subcooling present?

- a. 8 °F
- b. 18 °F
- c. 30 °F
- d. 40 °F

Answer:

- a. 8 °F

Question: 89

Given the following conditions:

- ALB-13-6-2, RPI NON-URGENT ALARM, alarms.
- The General Warning LED for Control Rod H2 is flashing.
- The Data B Failure 1, 2, 3 LEDs are flashing.
- The position LED for Control Rod H2 at Step 48 is LIT.

Which of the following describes the **MINIMUM** and **MAXIMUM** known positions of Control Rod H2?

	MINIMUM POSITION	MAXIMUM POSITION
a.	38 Steps	52 Steps
b.	44 Steps	52 Steps
c.	38 Steps	58 Steps
d.	44 Steps	58 Steps

Answer:

a.	38 Steps	52 Steps
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Question: 90

Which of the following describes the effect a Containment Phase A isolation will have on RCP seal leakoff?

- a. No. 1 seal leakoff will discharge to the PRT via a relief valve
- b. No. 1 seal leakoff will discharge to the RCDT via a relief valve
- c. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the PRT
- d. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the RCDT

Answer:

- a. No. 1 seal leakoff will discharge to the PRT via a relief valve

ANSWER KEY

Question: 91

During the performance of PATH-1, the crew must determine if "RCS temperature is stable at or trending to 557 °F."

Which of the following describes the temperature to be used when RCPs are running AND when RCPs are off?

	RCPs ON	RCPs OFF
a.	T-avg	Cold Leg Temps
b.	T-avg	Hot Leg Temps
c.	Incore TCs	Cold Leg Temps
d.	Incore TCs	Hot Leg Temps

Answer:

a.	T-avg	Cold Leg Temps
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Question: 92

Given the following conditions:

- A reactor trip occurred due to a loss of offsite power.
- The plant is being cooled down on RHR per EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS.
- RVLIS upper range indicates greater than 100%.
- Three CRDM fans have been running during the entire cooldown.
- RCS cold leg temperatures are 190 °F.
- Steam generator pressures are 50 psig.

Steam should be dumped from all SGs to ensure ...

- a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.
- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.
- c. RCS and SG temperatures are equalized prior to any subsequent RCP restart.
- d. RCS temperatures do **NOT** increase during the required 29-hour vessel soak period.

Answer:

- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.

Question: 93

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- ALB-17-5-5, CONDENSATE STORAGE TANK LOW MINIMUM LEVEL, alarms (65%).

Which of the following describes the significance of this alarm?

- CST level is nearing the level where it will be inadequate to maintain the required suction pressure to the TDAFW pump
- Manual swap to the backup source Emergency Service Water System should be initiated
- Normal Condenser Makeup System must be manually isolated to prevent drain down of the CST
- CST level is nearing the level where it will be inadequate to maintain hot standby for 12 hours

Answer:

- CST level is nearing the level where it will be inadequate to maintain hot standby for 12 hours

Question: 94

Given the following conditions:

- RCS temperature is 300 °F.
- The Low Temperature Overpressure Protection system (LTOP) is armed.
- PT-441, RCS Wide Range Pressure, has failed low.

Which of the following describes the effect on LTOP?

- a. **ONLY** PRZ PORV PCV-445A is available for LTOP
- b. Both PRZ PORVs are available for LTOP
- c. Neither PRZ PORV is available for LTOP
- d. **ONLY** PRZ PORV PCV-444B is available for LTOP

Answer:

- a. **ONLY** PRZ PORV PCV-445A is available for LTOP

Question: 95

Given the following conditions:

- Reactor power is at 70%.
- Rod Control is in AUTO.
- Bank 'D' control rods are at 195 steps.
- Loop 1 Tavg is 576 °F.
- Loop 2 Tavg is 574 °F.
- Loop 3 Tavg is 572 °F.

Which of the following failures will cause control rods to step out?

- a. Loop 1 Thot fails high
- b. Loop 3 Thot fails low
- c. Loop 2 Tcold fails high
- d. Loop 2 Tcold fails low

Answer:

- d. Loop 2 Tcold fails low

ANSWER KEY

Question: 96

Which of the following would require a call to chemistry so they can initiate surveillances per RST-204 and RST-211?

- a. Load reduction from 100% to 80% at 2 MWe/min
- b. Load reduction from 100% to 90% at 10 MWe/min
- c. Loss of one running MFP from 78% power
- d. Loss of one running HDP from 100% power

Answer:

- c. Loss of one running MFP from 78% power

ANSWER KEY

Question: 97

Given the following conditions:

- An accident has occurred which has resulted in activation of the Emergency Plan.
- A repair team is preparing to enter an area to effect repairs that will protect a piece of valuable company property.
- The dose rate in the area is 25 Rem/hour.

Which of the following identifies the **MAXIMUM** amount of time that each individual can stay in the area without exceeding allowable emergency dose limits?

- a. 12 minutes
- b. 24 minutes
- c. 36 minutes
- d. 60 minutes

Answer:

- b. 24 minutes

ANSWER KEY

Question: 98

Given the following conditions:

- A small break LOCA has occurred.
- Core exit thermocouple temperatures are approximately 618 °F and stable.
- RCS hot legs temperatures are approximately 550 °F.
- RCS cold leg temperatures are approximately 330 °F.
- RCS pressure is 1100 psig.

Which of the following describes the status of RCS inventory and core cooling?

- a. The core is covered and being cooled by natural circulation
- b. The core is partially uncovered and being cooled by natural circulation
- c. The core is covered and being cooled by reflux boiling
- d. The core is partially uncovered and being cooled by reflux boiling

Answer:

- d. The core is partially uncovered and being cooled by reflux boiling

Question: 99

Given the following conditions:

- A reactor trip and safety injection has occurred.
- A transition has been made to FRP-H.1, Response to Loss of Secondary Heat Sink.
- RCS bleed and feed has been initiated.
- Core exit thermocouples are still rising.
- RCS hot leg temperatures are all approximately 650 °F and rising slowly.
- All SG levels are approximately 5% wide range.
- Containment pressure is 6 psig.
- The TDAFW Pump has been made available.

Which of the following describes how AFW flow should be restored to the SGs?

- a. Feed one SG at 50 KPPH until core exit thermocouples start decreasing
- b. Feed one SG at 50 KPPH until SG narrow range level is > 40%
- c. Feed one SG at maximum rate until core exit thermocouples start decreasing
- d. Feed one SG at maximum rate until SG narrow range level is > 40%

Answer:

- d. Feed one SG at maximum rate until SG narrow range level is > 40%

Question: 100

Given the following conditions:

- On May 1, at 0100, a plant shutdown was initiated from 100% in preparations for conducting a refueling.
- The reactor was shutdown at 1100 on the same date.
- CCW heat exchanger outlet temperature is currently 88 °F.

When is the **EARLIEST** that fuel movement in the reactor vessel is allowed to begin?

- a. May 6th at 1200
- b. May 7th at 1200
- c. May 7th at 2200
- d. May 8th at 2200

Answer:

- c. May 7th at 2200

ANSWER KEY

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

FINAL RO WRITTEN EXAMINATION

DECEMBER 15, 2000

**U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination****Applicant Information**

Name:	Region: II
Date:	Facility/Unit: Shearon Harris
License Level: RO	Reactor Type: Westinghouse
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

Examination Value _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

Question: 1

Given the following conditions:

- A Safety Injection has just occurred.
- Following the SI, leakage from the CCW system to the ESW system is suspected.

Which of the following sets of conditions would provide confirmation of this diagnosis?

- a. Decreasing CCW surge tank level **AND** ESW discharge radiation alarm
- b. Automatic makeup to the CCW surge tank **AND** ESW discharge sample
- c. Decreasing CCW surge tank level **AND** ESW discharge sample
- d. Automatic makeup to the CCW surge tank **AND** ESW discharge radiation alarm

Question: 2

Which of the following conditions would require that Attachment 2, "Cycle Log," of OMM-013, Cycle and Transient Monitoring Program, be completed?

- a. With the plant in Mode 2, a failed Source Range channel results in a Source Range High Flux Trip
- b. With the plant at 100% power, a failed actuation relay results in Auxiliary Feedwater flow to the SGs
- c. With RCS temperature at 240°F, a trip of Emergency Bus 1A-SA normal supply breaker 105 results in EDG 1A-SA starting automatically
- d. With the plant at 100% power, a failed pressurizer level instrument results in normal letdown isolating

Question: 3

Which of the following indications are **BOTH** used by EPP-013, LOCA Outside Containment, to identify that the leak is isolated?

- a. RCS pressure increasing **AND** RAB radiation decreasing
- b. RCS pressure increasing **AND** Local observation
- c. PRZ level increasing **AND** Local observation
- d. PRZ level increasing **AND** RAB radiation decreasing

Question: 4

Given the following conditions:

- Control Room Ventilation is in a normal lineup with 'A' Train fans in operation.
- Power is lost to the 'B' Train North Emergency Intake Radiation Monitor.

What is the response of the Control Room Ventilation System to this failure?

- a. Remains in the normal alignment, but a subsequent Train 'A' radiation monitor reaching the high alarm will cause an isolation
- b. Isolation occurs and **CANNOT** be reset
- c. Isolation occurs, but can be reset
- d. Remains in the normal alignment, but a subsequent Train 'B' radiation monitor reaching the high alarm will cause an isolation

Question: 5

Given the following conditions:

- The plant is operating at 100% power with 'A' Train equipment in service.
- The 1B-SB emergency bus supply breaker (125) opens.

Which of the following is expected to occur?

- a. Containment Fan Cooler Fans for AH2 and AH3 will automatically start in low speed
- b. Both sequencers will run and load equipment selected by the UV program
- c. 1MS-72, MS 'C' to Aux FW Turbine, will open
- d. The 'B' ESW Header will be supplied by the NSW System

Question: 6

Given the following conditions:

- Emergency Boration is required.
- 1CS-278, Emergency Boric Acid Addition, **CANNOT** be opened.

Which of the following alignments will provide adequate boric acid flow?

	1CS-283 Boric Acid to Boric Acid Blender FCV-113A	1CS-156 Makeup to CSIP Suction FCV-113B	1CS-155 Makeup to VCT FCV-114A	1CS-291 CSIP Suction from RWST LCV-115B	1CS-292 CSIP Suction from RWST LCV-115D	1CS-165 VCT Outlet LCV-115C	1CS-166 VCT Outlet LCV-115E
a.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
b.	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED
c.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	OPEN	OPEN
d.	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED

Question: 7

Given the following conditions:

- The plant is in Mode 5 on RHR cooling.
- A 170 gpm leak develops from the RCS.
- Letdown has been isolated.

Which of the following methods of makeup is to be used to restore level?

- a. Normal Charging from VCT
- b. Normal Charging from RWST
- c. Opening SI Accumulator Isolation valves
- d. CSIP flow through the BIT valves

Question: 8

The generator is being taken off line during a normal shutdown in accordance with GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)".

Which of the following describes the proper sequence for operation of the generator output breakers, 52-7 and 52-9?

- a. Trip the turbine and verify the generator lockout opens both generator output breakers
- b. Manually open one generator output breaker, trip the turbine, and manually open the second output breaker
- c. Manually open both the generator output breakers, then trip the turbine
- d. Manually open one generator output breaker, trip the turbine, and allow the generator lockout to open the second output breaker

Question: 9

Which of the following is the **MOST SIGNIFICANT ACTION** the operator can take during a SGTR concurrent with a loss of off-site power to minimize the PTS challenge?

- a. Maintain the RCS temperature at or below the required cooldown target temperature
- b. Secure AFW flow to the affected SG once minimum required level is achieved
- c. Ensure the affected SG does **NOT** become water solid
- d. Terminate SI after meeting termination criteria

Question: 10

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Containment pressure is 4.5 psig.
- SI has **NOT** been reset.
- Phase A has **NOT** been reset.
- Phase B has **NOT** been reset.

Which of the following describes the conditions required to allow opening of the SG sample valves?

- a. Containment pressure must be reduced below 3.0 psig before SI can be reset to allow opening the sample valves
- b. SI can be reset to allow opening the sample valves
- c. Containment pressure must be reduced below 3.0 psig before Phase A can be reset to allow opening the sample valves
- d. Phase A can be reset to allow opening the sample valves

Question: 11

Given the following conditions:

- Condenser vacuum is 5.4 inches Hg and degrading.
- Turbine first stage pressure is 38% turbine load.
- Turbine load is being reduced.

Which of the following actions must be taken in accordance with AOP-012, "Partial Loss of Condenser Vacuum"?

- a. Continue reducing turbine load as necessary to maintain condenser vacuum
- b. Trip the reactor and verify the turbine trips
- c. Throttle open the Cooling Tower Bypass Valves to lower Circulating Water temperature
- d. Trip the turbine and verify the plant stabilizes at the point of adding heat on the steam dumps

Question: 12

Given the following conditions:

- The plant is operating at 100% power.
- Bank 'C' control rod D12 DRPI is indicating 206 steps
- Bank 'C' Step Counters are indicating 228 steps

When comparing incore thermocouple positions to determine if the rod is actually out of position, which of the following thermocouples should be compared?

- a. Compare incore thermocouple C12 to the average of incore thermocouples C08, D03, D05, and H13
- b. Compare incore thermocouple C12 to the average of incore thermocouples F09, F11, F13, H11, and H13
- c. Compare incore thermocouple E12 to the average of incore thermocouples E08, E10, E14, and G15
- d. Compare incore thermocouple E12 to the average of incore thermocouples D05, E04, L12, and M11

Question: 13

Which of the following sets of conditions would **NOT** permit waiving the Independent Verification requirement for a clearance removal?

	EXPECTED DOSE	AREA TEMPERATURE
a.	12 mRem	105°F
b.	9 mRem	115°F
c.	6 mRem	125°F
d.	3 mRem	135°F

Question: 14

Given the following conditions:

- The RCS is solid.
- 'B' RCP is running.
- Both trains of RHR cooling are in service.
- The RCS is at 300 psig and 160 °F.

How is RCS pressure **INITIALLY** affected by the following valve failures?

	HCV-142 (RHR to letdown) fails SHUT	FCV-122 (charging flow control) fails OPEN
a.	Increase	Increase
b.	Increase	Decrease
c.	Decrease	Increase
d.	Decrease	Decrease

Question: 15

With the plant at 100 percent steady-state condition, the following occurs:

- ALB-06-7-3, TOTAL MAKEUP WATER FLOW DEVIATION, alarms.
- ALB-06-8-4, BORIC ACID FLOW DEVIATION, alarms.
- VCT level is at 19.5% and decreasing at the same rate it has been for the last few days.

Which of the following procedures should be addressed?

- a. AOP-002, Emergency Boration
- b. AOP-003, Malfunction of Reactor Makeup Control
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-017, Loss of Instrument Air

Question: 16

Given the following conditions:

- While performing an OP valve lineup, two valves are found under clearance.
- One of the valves is in the position required by the OP valve lineup.
- The other valve is **NOT** in the position required by the OP valve lineup.

Which of the following describes the action to take for each valve?

- a.
 - **CORRECT POSITION** - initial as being in the correct position, using the clearance number as a reference
 - **WRONG POSITION** - enter the clearance number in the initials space
- b.
 - **CORRECT POSITION** - circle the component number on the checklist **AND** leave the initial space blank
 - **WRONG POSITION** - make a note in the comment section **AND** leave the initial space blank
- c.
 - **CORRECT POSITION** - enter the clearance number in the initials space
 - **WRONG POSITION** - circle the component number on the checklist **AND** leave the initial space blank
- d.
 - **CORRECT POSITION** - initial as being in the correct position, using the clearance number as a reference
 - **WRONG POSITION** - make a note in the comment section **AND** leave the initial space blank

Question: 17

A leak in the Instrument Air system has occurred.

Which of the following describes an automatic response **AND** the pressure at which the response will occur?

- a. The Standby Air Compressor starts at 105 psig
- b. The in-service Air Dryer is bypassed at 90 psig
- c. 1SA-506 opens to supply Instrument Air from Service Air at 90 psig
- d. The FW preheater bypass valves shut at 66 psig

Question: 18

Given the following conditions:

- Essential Services Chilled Water System (ESCWS) 'A' Train is in service.
- A reactor trip and safety injection occurs.

Which of the following describes the expected ESCWS alignment?

- a.
 - Both ESCW chillers running
 - ESCWS trains split with 'A' Train supplying the non-safety ESCWS loop
- b.
 - Both ESCW chillers running
 - ESCWS trains split with the non-safety ESCWS loop isolated
- c.
 - **ONLY** 'A' Train ESCWS chiller running
 - ESCWS trains cross-connected with the non-safety ESCWS loop isolated
- d.
 - **ONLY** 'A' Train ESCWS chiller running
 - ESCWS trains cross-connected with the 'A' Train supplying the non-safety ESCWS loop

Question: 19

Given the following conditions:

- An SGTR has occurred.
- A transition has been made from PATH-2 to EPP-020, SGTR with Loss of Reactor Coolant: Sub-Cooled Recovery.
- After several steps have been completed in EPP-020, it becomes apparent that the wrong procedure is being implemented.

Which of the following actions should be taken?

- a. Return to the point in PATH-2 where the transition was made to EPP-20
- b. Return to the top left entry in PATH-2
- c. Return to the point in PATH-1 where the transition was made to PATH-2
- d. Return to the top left entry in PATH-1

Question: 20

During the review of a clearance request to support preventative maintenance work activities, it is determined that there is an existing Standard Clearance.

Which of the following would be the appropriate course of action?

- a. The work can be performed under the Standard Clearance, and the technician signing on is responsible for ensuring adequate clearance boundary
- b. The work can be performed under the Standard Clearance, and Clearance Preparer is responsible for ensuring adequate clearance boundary
- c. The work can be performed using the Standard Clearance to create a new clearance if the Clearance Preparer and Verifier confirm the accuracy of the Standard Clearance
- d. The work **CANNOT** be performed using the Standard Clearance since Standard Clearance use is limited to support corrective maintenance work activities only

Question: 21

Given the following conditions:

- A reactor trip and safety injection has occurred.
- ESW pump operation is being verified in PATH-1.
- Containment pressure is 7 psig.
- RCS pressure is 950 psig.
- SI Flow indicator FI-943, Normal HDR Flow, indicates 0 gpm.
- Both CSIPs are running and all SI valves are properly aligned.

Which of the following actions is to be taken?

- a. Trip the RCPs immediately due to RCP Trip Criteria being met
- b. Leave the RCPs running until a transition is made to Entry Point C
- c. Leave the RCPs running until containment pressure reaches 10 psig
- d. Trip the RCPs immediately due to a loss of CCW cooling to the pumps

Question: 22

Given the following conditions:

- The plant is in Mode 5.
- ALB-008-1-4, RWMU STORAGE TANK MINIMUM/HIGH LEVEL, alarms.
- RWMU tank level is decreasing with **NO** VCT makeup in progress.

Which one of the following procedures would be the most appropriate to implement?

- a. AOP-003, Malfunction of Reactor Makeup Control
- b. AOP-008, Accidental Release of Liquid Waste
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-020, Loss of Reactor Coolant Inventory / RHR While Shutdown

Question: 23

Given the following conditions:

- Fuel cladding failure has occurred.
- The CVCS Cation Bed demineralizer has been placed in service.

Which of the following provide positive indications of the fuel cladding failure?

- a.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Volume Control Tank Room radiation monitor alarming
- b.
 - Reactor Coolant Filter high ΔP
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- c.
 - Chemistry samples
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- d.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Gross Failed Fuel Detector alarming

Question: 24

Given the following conditions:

- The plant is at 30% power.
- A dropped control rod has just been re-aligned.
- While attempting to reset the Rod Control Urgent Failure alarm, the operator inadvertently operates the Rod Control Start Up switch.

Which of the following describes the effect of operating the incorrect switch?

- a. All Control Bank control rods drop into the core, causing an automatic reactor trip
- b. All rods, including Control Bank and Shutdown Bank rods, drop into the core, causing an automatic reactor trip
- c. All rods remain in their current position and there is **NO** effect on the Rod Control System circuitry
- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Question: 25

Given the following conditions:

- ALB-26-1-4, ANNUN SYS 1 POWER SUPPLY FAILURE, alarms.
- Investigation determines a 12 VDC (1C#1) power supply has failed.

Which of the following ALBs should be considered inoperable?

- a. Containment Spray & Accumulator System
- b. Diesel Generator System
- c. Reactor First Out System
- d. Auxiliary Feedwater System

Question: 26

Given the following conditions:

- Several Fuel Handling Building (FHB) area radiation monitors on both trains have reached the high alarm setpoint.
- AOP-005 has directed the operator to verify that the FHB ventilation has shifted to the emergency exhaust lineup.
- Both FHB Emergency Exhaust Fans, E-12 and E-13, are RUNNING.
- FHB Emergency Exhaust Fan Inlets, 1FV-2 SA and 1FV-4 SB, are OPEN

Which of the following additional alignments is expected?

	FHB OPERATING FLOOR SUPPLY FANS AH-56, AH-57, AH-58, and AH-59	FHB NORMAL EXHAUST ISOLATION DAMPERS FL-D4, FL-D5, FL-D21 and FL-D22
a.	Secured	Open
b.	Running	Open
c.	Secured	Shut
d.	Running	Shut

Question: 27

Why do actions concerning CNMT spray operation contained in EPP-12, Loss of Emergency Coolant Recirculation, take precedence over the actions contained in FRP-J.1, Response to High Containment Pressure?

- a. Actions required by EPPs have priority over those in FRPs
- b. CNMT spray is **NOT** used if the plant is in a recirculation mode
- c. CNMT pressure may be too low to require CNMT spray
- d. Conservation of RWST inventory has priority over containment pressure control

Question: 28

Following a load reduction, Axial Flux Difference (AFD) is being verified.

Using the attached curve numbered F-10-2, which of the following combinations of power and AFD are outside the acceptable operating limits?

	POWER	AFD
a.	82%	-17
b.	77%	-21
c.	63%	-27
d.	56%	-30

Question: 29

Given the following conditions:

- The unit is operating at 50% power.
- LT-460, Channel III Pressurizer Level, has failed and all associated bistables are in the tripped condition.
- Power is subsequently lost to UPS Bus IDP-1A-SI.

Which train(s) of Reactor Protection will actuate, if any?

- a. Neither train
- b. Train SA **ONLY**
- c. Train SB **ONLY**
- d. Both trains

Question: 30

Given the following conditions:

- Reactor power is 80% and stable.
- Tavg is stable.
- Pressurizer level is stable with the control system in AUTO.
- A small leak develops across the differential pressure bellows for the controlling channel of pressurizer level, resulting in pressure equalizing across the bellows.

How will this leak affect the operation of FCV-122, Charging Flow Control Valve?

- a. It will throttle open slightly during the course of the pressure equalization and then return to its original position
- b. It will throttle closed slightly during the course of the pressure equalization and then return to its original position
- c. It will throttle open slightly during the course of the pressure equalization and remain in that position
- d. It will throttle closed slightly during the course of the pressure equalization and remain in that position

Question: 31

Which of the following describes the result if 1B Condensate Pump trips on motor overcurrent at 80% power?

	CONDENSATE BOOSTER PUMPS	MAIN FEED PUMPS
a.	1A and 1B Remain Running	1A and 1B Remain Running
b.	1B Trips	1B Trips
c.	1B Trips	1A and 1B Remain Running
d.	1A and 1B Remain Running	1B Trips

Question: 32

Given the following conditions:

- A Loss of Coolant Accident (LOCA) has occurred.
- Containment pressure is 2 psig.
- Containment hydrogen concentration is 3.5%.
- Containment temperature is 140 °F.
- Containment temperature prior to the accident was 90 °F.

Which one of the following is the required power setting for the 1A Hydrogen Recombiner?

- a. 44.7 kW
- b. 45.8 kW
- c. 46.7 kW
- d. 47.9 kW

Question: 33

During operation at 100% power, an inadvertent SI occurs on 'B' Train **ONLY**.

Which of the following actions is required?

- a. Manually actuate SI on 'A' Train and continue in PATH-1
- b. Continue in PATH-1 noting which 'A' Train ESF equipment is **NOT** running
- c. Start **ONLY** the 'A' Train of ESF equipment for which the redundant 'B' Train equipment failed
- d. Transition directly to EPP-008, SI Termination

Question: 34

Given the following conditions:

- The plant is at 22% power during a shutdown.
- Intermediate Range Channel N-35 has been declared inoperable as a result of failing to meet Operational Test Criteria of MST-I0167.
- The test was performed, per GP-006, during a Tech Spec 3.0.3 required shutdown (i.e., the shutdown must continue).
- OWP-RP-21 has been performed, which places the LEVEL TRIP BYPASS switch in the BYPASS position and verifies the associated light on the Bypass Permissive Light Panel.
- The I&C Supervisor states that both control and instrument power must be removed from the drawer to replace a bistable module.

Assuming the instrument and control power are removed for the remainder of the shutdown, the shutdown continues and ...

- a. the reactor trips when the fuses are removed.
- b. the reactor trips when power is reduced below P-10.
- c. the reactor trips when power is reduced below P-6.
- d. **NO** reactor trip occurs.

Question: 35

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Instrument Bus SIII de-energizes, causing a loss of power to PT-2250A, AFW Pump A Suct Press.

Which of the following describes the effect of the loss of this instrument on MDAFW Pump 1A-SA?

	MDAFW PUMP 1A-SA ALREADY RUNNING	MDAFW PUMP 1A-SA NOT RUNNING
a.	Automatically Trips	Can Be Started
b.	Automatically Trips	CANNOT Be Started
c.	Remains Running	Can Be Started
d.	Remains Running	CANNOT Be Started

Question: 36

Given the following conditions:

- EPP-008, SI Termination, is being performed following an inadvertent SI.
- One CSIP has been secured.
- The normal CSIP miniflow isolation valves will **NOT** open.

Which of the following actions should be taken?

- a. Maintain BIT flow until the miniflow isolation valves are manually opened
- b. Direct an NLO to open the valves locally and continue to the next step once the directions have been provided
- c. Initiate and maintain at least 30 GPM RCP seal injection flow until the miniflow isolation valves are open
- d. Initiate and maintain at least 60 GPM CSIP flow until the miniflow isolation valves are open

Question: 37

Given the following conditions:

- The plant is operating at 100% power.
- The Steam Dump System is in the T-AVG Mode.
- A transient results in a rapid loss of load to 45%.

Which of the following describes the **INITIAL** response of the listed valves to this event?

	CONDENSER DUMPS	ATMOSPHERIC DUMPS	INTERCEPT VALVES
a.	Open	Open	Remain Open
b.	Open	Open	Close
c.	Open	Remain Closed	Remain Open
d.	Remain Closed	Open	Close

Question: 38

Given the following conditions:

- The plant is operating at 100% power.
- Charging flow is 150 gpm.
- Letdown flow is 45 gpm.
- Seal injection flow is 10 gpm to each RCP.
- RCP #1 Seal Return is 3 gpm from each RCP.
- Pressurizer level is stable.

Which of the following describes the RCS leak rate **AND** the required action based on the leak rate?

	LEAK RATE	REQUIRED ACTION
a.	126 gpm	Perform a plant shutdown per GP-006
b.	126 gpm	Manually trip the reactor and initiate safety injection
c.	135 gpm	Perform a plant shutdown per GP-006
d.	135 gpm	Manually trip the reactor and initiate safety injection

Question: 39

Given the following conditions:

- A fire has occurred in cable spread Room A - RAB 286 which requires a plant shutdown.
- 'A' SG pressure is 950 psig.
- 'A' SG wide range level is 70%.
- 'A' SG narrow range level is unavailable.
- AFW flow is being supplied to 'A' SG.

Which of the following actions should be taken?

- a. Decrease AFW flow to lower 'A' SG wide range level to < 67%
- b. Decrease AFW flow to lower 'A' SG wide range level to < 50%
- c. Increase AFW flow to raise 'A' SG wide range level to > 50%
- d. Increase AFW flow to raise 'A' SG wide range level to > 67%

Question: 40

You are the on-shift control operator and you are assigned to perform an Operations Surveillance Test (OST).

Which of the following must be performed by someone other than you?

- a. Sign off step completion for actions that you direct the AOs to perform
- b. Complete the prerequisites section before the test starts
- c. Sign the test verifying that **ALL** prerequisites have been met and that the Unit SCO has given permission for the test to begin
- d. Sign the test as completed with **NO** exceptions and submit to Document Records

Question: 41

Following a steam break inside containment, the Containment Spray System actuated.

Containment pressure has been reduced to 2.5 psig. The following signals have been reset:

- Safety Injection
- Phase A
- Phase B
- Containment Spray

Several minutes after securing Containment Spray, containment pressure increases to 11 psig due to a subsequent large break LOCA.

Which of the following describes the expected response of the Containment Spray System?

	CS PUMPS	CS DISCHARGE VALVES
a.	Automatically Start	Automatically Open
b.	Automatically Start	Must be Manually Opened
c.	Must be Manually Started	Automatically Open
d.	Must be Manually Started	Must be Manually Opened

Question: 42

Given the following conditions:

- A load rejection has occurred, causing RCS pressure to increase.
- The PRZ Spray Valves and PRZ PORVs have opened.
- During the pressure transient, PRZ pressure transmitter PT-445 failed high.

Which of the following will occur?

- a. PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will close when RCS pressure drops below 2000 psig
- b. All PRZ PORVs will remain open as PT-444 senses a lowering pressure and must be manually closed
- c. PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will remain open and must be manually closed
- d. PRZ PORV 444B will close as PT-444 senses a lowering pressure; PRZ PORVs 445A and 445B will close when RCS pressure drops below 2000 psig

Question: 43

Given the following conditions:

- Instrument Bus SI is de-energized.
- A reactor trip and safety injection occurs.

Which of the following describes the plant response **AND** required operator actions?

- a.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'A' Train equipment
- b.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'B' Train equipment
- c.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - 'A' Train equipment must be manually aligned/started **ONLY** if the corresponding 'B' Train equipment fails
- d.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - 'B' Train equipment must be manually aligned/started **ONLY** if the corresponding 'A' Train equipment fails

Question: 44

Given the following conditions:

- Reactor power is 8% during a plant startup.
- 1A Main Feed Pump is operating.
- The Main Feed Regulating Valves are in MAN and are throttled open.
- The Main Feed Regulating Bypass Valves are in AUTO and are throttled open.
- 'C' SG level rises to 85%.

Which of the following will occur?

- a. 1A Main Feed Pump trips **AND** MFW is isolated to 'C' SG **ONLY**
- b. 1A Main Feed Pump trips **AND** MFW is isolated to all SGs
- c. 1A Main Feed Pump remains running **AND** MFW is isolated to 'C' SG **ONLY**
- d. 1A Main Feed Pump remains running **AND** MFW is isolated to all SGs

Question: 45

A high (red) alarm on the Containment Leak Detection Monitor particulate channel (3502A-SA) causes which of the following automatic isolations/trips to occur?

- a.
 - Containment Normal Purge
 - Containment Pre-Entry Purge
 - Containment Vacuum Relief
- b.
 - Containment Normal Purge **ONLY**
- c.
 - Containment Pre-Entry Purge **ONLY**
- d.
 - Containment Vacuum Relief **ONLY**

Question: 46

Which of the following events would result in increasing radiation levels in the Plant Vent Stack?

- a. Steam Generator Tube Rupture
- b. Waste Gas Decay Tank Rupture
- c. Fuel Handling Accident
- d. Radioactive Spill in the Chemistry Hot Lab

Question: 47

Given the following conditions:

- The plant is operating at 22% power.
- PRZ pressure transmitter PT-444 has failed high.
- 1RC-107, PRZ Spray Valve 444C, has stuck open.

Which of the following actions is to be taken?

- a. Stop 1A RCP and stabilize the plant at power
- b. Trip the reactor and stop 1A RCP
- c. Stop 1C RCP and stabilize the plant at power
- d. Trip the reactor and stop 1C RCP

Question: 48

Which of the following gives the parameters monitored for SI Reinitiation criteria on the EPP-009, Post LOCA Cooldown and Depressurization, foldout page?

- a. RCS subcooling and RVLIS level
- b. RCS pressure and pressurizer level
- c. RCS pressure and RVLIS level
- d. RCS subcooling and pressurizer level

Question: 49

The plant was operating at 100% power when an accident occurred.

Assuming **NO** operator action is taken, a Main Steam Line Isolation Signal (MSIS) will be generated when ...

- a. PRZ pressure drops to 1832 psig.
- b. containment pressure rises to 2.0 psig.
- c. steam line pressure drops to 547 psig.
- d. steam line pressure drops faster than 100 psig/sec.

Question: 50

Given the following conditions:

- Power is at 45% during a power increase following a short maintenance outage.
- Rod K-6 in Control Bank 'D' is determined to be inoperable due to a power cabinet malfunction.
- The rod, determined to be at 153 steps, is **NOT** capable of being moved, but is considered to be trippable.
- The crew realigns the remaining rods in Control Bank 'D' with the inoperable rod.

What is the maximum power level that can be achieved under these conditions while maintaining **ALL** associated alarms clear?

- a. 45%
- b. 50%
- c. 75%
- d. 80%

Question: 51

Given the following conditions:

- The plant was operating at 100% power when an accident occurred.
- All feedwater is isolated to three faulted SGs IAW EPP-015, Uncontrolled Depressurization of All SGs.
- The STA reports a red path requirement for the heat sink CSF.

Which of the following describes why FRP-H.1, Response to Loss of Secondary Heat Sink, would **NOT** be used in this situation?

- a. FRPs are implemented only after completion of PATH-1, entry Point C
- b. Feed flow has been reduced by operator action
- c. RHR is capable of providing an adequate heat sink
- d. Heat transfer coupling has been lost between the RCS and the SGs

Question: 52

ALB-15-1-3, Protection System A/B Trouble, has alarmed.

Local indications are as follows:

	<u>Train A</u>	<u>Train B</u>
General Warning Light	On	Off
#1 48-V DC Power Supply	On	On
#1 15-V DC Power Supply	On	On
#2 48-V DC Power Supply	Off	On
#2 15-V DC Power Supply	Off	On
Trip Bypass Breaker	Racked Out/Open	Racked Out/Open

These conditions would be caused by ...

- a loss of instrument Channel SIII power supply.
- a loss of instrument Channel SIV power supply.
- a logic test switch being out of position inside an SSPS 'A' Train cabinet.
- a logic test switch being out of position inside an SSPS 'B' Train cabinet.

Question: 53

Given the following conditions:

- Reactor power is at 30% and stable.
- Control Bank 'D' rods are at 185 steps.
- RCS Tavg is 564 °F.
- All control systems are in automatic.
- TE-144, Letdown HX Outlet Temp, fails high.

Which of the following describes the expected response of RCS temperature and rod position?

	RCS TAVG	BANK 'D' POSITION
a.	Greater than 564 °F	Greater than 185 steps
b.	Greater than 564 °F	Less than 185 steps
c.	Less than 564 °F	Greater than 185 steps
d.	Less than 564 °F	Less than 185 steps

Question: 54

A large break LOCA has occurred and PATH-1 is being performed.

The following have been reset:

- Safety Injection
- Phase A Isolation
- Phase B Isolation

The RWST level subsequently decreases to the Low-Low level setpoint.

Which of the following describes the response of the RHR Pump and the Containment Spray Pump Suction Valves?

	RHR CONTAINMENT SUMP SUCTION VALVES	RWST TO RHR SUCTION VALVES	CONTAINMENT SPRAY CONTAINMENT SUMP SUCTION VALVES	RWST TO CONTAINMENT SPRAY SUCTION VALVES
a.	Must be manually opened	Must be manually closed	Automatically open	Must be manually closed
b.	Must be manually opened	Automatically close	Automatically open	Automatically close
c.	Automatically open	Must be manually closed	Must be manually opened	Must be manually closed
d.	Automatically open	Must be manually closed	Automatically open	Automatically close

Question: 55

How is the clearance preparer notified of a Temporary Modification which affects an item being placed under clearance?

- a. The standard clearances in PTR are updated with Temporary Modification information
- b. The 400 screen of EDBS for each component affected lists the applicable Temporary Modifications
- c. The Category A drawings are annotated with the ESR number of the applicable Temporary Modifications
- d. During the schedule review, the responsible engineer notifies the WCC of any Temporary Modifications which may affect clearances needed for the current schedule

Question: 56

What are the normal and alternate power supplies to PIC-17?

	Normal	Alternate
a.	UPS Instrument Bus IDP-1A-S1	Appendix R Inverter
b.	UPS Instrument Bus IDP-1A-S1	UPP-1
c.	Appendix R Inverter	UPS Instrument Bus IDP-1A-S1
d.	Appendix R Inverter	UPP-1

Question: 57

Given the following conditions:

- A rapid shutdown is required per GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)".
- The SCO has directed you to perform a rapid addition of boric acid in accordance with OP-107, "Chemical and Volume Control System".
- It is estimated that 1300 gallons of boric acid will be required to complete the shutdown, but the actual required volume has **NOT** yet been calculated.

The actual required volume must be calculated prior to ...

- a. reducing power below 50%.
- b. borating > 500 gallons.
- c. borating > 650 gallons.
- d. reducing turbine load.

Question: 58

Given the following conditions:

- The AutoLog is **NOT** functioning.
- The Reactor Operator is maintaining a manual log.

The following log entries have been made:

- 0956 B-SB CSIP trip
- 1005 Started A-SA CSIP per AOP-018
- 1011 Established normal letdown

At 1030, the Reactor Operator realizes he forgot to make a 0957 entry that letdown had been isolated.

Which of the following entries would be a proper entry in accordance with OMM-016, Operator Logs?

- a. *1030 Isolated normal letdown
- b. L.E. 1030 Isolated normal letdown
- c. *0957 Isolated normal letdown
- d. L.E. 0957 Isolated normal letdown

Question: 59

Both Condensate Pumps, both Condensate Booster Pumps (CBPs), and the 'A' Main Feed Pump (MFP) are running.

Which of the following will cause an automatic start of the 'B' MFP?

- a. 'A' MFP trips on low lube oil pressure
- b. 'A' MFP trips on low discharge pressure
- c. 'A' MFP trips on low flow
- d. 'A' MFP control switch is taken to the STOP position

Question: 60

Given the following conditions:

- The plant was at 100% power when a Main Steam Line break occurred outside containment.
- 'A' SG is indicating 400 psig.
- Containment pressure is -0.27 inches water gauge.

Which of the following Containment Ventilation fans will be operating?

- a. Containment Pre-entry Purge Exhaust
- b. Containment Pre-entry Purge Make-up
- c. Normal Containment Purge Make-up
- d. Airborne Radioactivity Removal

Question: 61

Given the following conditions:

- At 1315, the Reactor Operator must leave the Control Room for a short period of time.
- All requirements for this short term relief have been conducted
- An entry has been made into OMM-002, Attachment 14, Documentation of Short Term Assumption of Duties.

An entry must also be made in the Control Operators Log if the relieved operator does **NOT** resume the watch by ...

- a. 1330.
- b. 1345.
- c. 1415.
- d. 1515.

Question: 62

Given the following conditions:

- A loss of off-site power has occurred.
- The plant is being cooled down and depressurized per EPP-005, Natural Circulation Cooldown.
- The RCS cooldown rate is 40 °F/hour.
- RVLIS Upper Range indication is 96% and lowering slowly.
- The S-SO has determined that RCS depressurization must continue.

Which of the following actions should be taken?

- a. Continue in EPP-005, Natural Circulation Cooldown, AND maintain the cooldown rate <50 °F/hour
- b. Initiate safety injection to collapse the vessel head voids
- c. Transition to EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, AND continue the cooldown and depressurization
- d. Transition to EPP-007, Natural Circulation Cooldown with Steam Void in Vessel without RVLIS, AND continue the cooldown and depressurization

Question: 63

Given the following conditions:

- CP&L hired an employee on May 5th of this year.
- The employee's TEDE for this year prior to May 5th was 400 mRem.
- The employee's TEDE at SHNPP for this year is 1500 mRem.

Which of the following describes the **MAXIMUM ADDITIONAL** exposure allowed at CP&L facilities for this employee for the remainder of the year, without receiving an extension, **AND** what is the **LOWEST** level of authorization required if an extension is required during non-emergency conditions?

	MAXIMUM ADDITIONAL EXPOSURE W/OUT EXTENSION	LOWEST LEVEL OF AUTHORIZATION FOR EXTENSION
a.	100 mRem	E&RC Manager
b.	100 mRem	Site Vice President
c.	500 mRem	E&RC Manager
d.	500 mRem	Site Vice President

Question: 64

Given the following conditions:

- The unit is operating at 20% power with all systems in automatic.
- Bank 'D' control rods are at 130 steps.
- Control Bank 'C' rod H6 drops to the bottom of the core.
- **NO** rod control urgent failure alarms occur.

In response to the dropped rod, where will thermal power and RCS Tavg stabilize, in comparison to their values prior to the dropped rod, **WITHOUT** any operator action?

	REACTOR THERMAL POWER	RCS T-AVG
a.	Within 1%	More than 5°F lower
b.	More than 2% different	More than 5°F lower
c.	Within 1%	Within 1°F
d.	More than 2% different	Within 1°F

Question: 65

Which of the following identifies when the Diesel and Motor Fire Pumps will start on lowering Fire Header pressure?

	MOTOR FIRE PUMP	DIESEL FIRE PUMP
a.	93 psig	83 psig
b.	83 psig	93 psig
c.	93 psig	105 psig
d.	105 psig	83 psig

Question: 66

Given the following conditions:

- The plant is at 100% power.
- One minute ago, the normal feeder breaker to 6.9kV bus 1A-SA (BKR 105) tripped open.
- The 1A-SA EDG failed to start.

Which of the following actions is required?

- a. Start 1B-SB MDAFW Pump to supply the SGs
- b. Trip the reactor and enter PATH-1
- c. Open all load breakers on 6.9kV bus 1A-SA
- d. Place the 1A-SA EDG Emergency Stop switch to EMER STOP

Question: 67

Given the following conditions:

- The plant is at 100% power.
- 1A and 1B ESW Pumps are off.
- 'A' and 'B' ESW headers are being supplied from NSW.
- 1A NSW Pump is running.
- 1B NSW Pump is off.

Subsequently, the following events occur:

- A breaker failure results in a loss of power to 1A-SA.
- The 'A' EDG starts, re-energizes the bus, and sequences the loads properly.

Which of the following describes how the ESW alignment is affected?

	'A' TRAIN ESW HEADER SUPPLY	'B' TRAIN ESW HEADER SUPPLY
a.	1A ESW Pump	1B ESW Pump
b.	1A ESW Pump	1A NSW Pump
c.	1A NSW Pump	1B ESW Pump
d.	1A NSW Pump	1A NSW Pump

Question: 68

During FRP-C.1, Response to Inadequate Core Cooling, the steam generators are depressurized to 90 psig.

Which of the following is the basis for stopping at 90 psig?

- a. To prevent N2 injection into the RCS from the Cold Leg Accumulators
- b. To maintain gases in solution while low head SI recovers core cooling
- c. To ensure the SG U-Tubes remain covered
- d. To maintain adequate pressure for running any available RCPs

Question: 69

The plant is operating at 100% power with the following conditions:

<u>Time</u>	<u>Ambient Temp</u>	<u>CT Basin Temp</u>
1200	25 °F	55 °F
1600	30 °F	60 °F
2000	40 °F	64 °F

Which of the following describes the correct CT Deicing Gate Valve alignment for these conditions?

	1600	2000
a.	Full Open	Full Open
b.	Half Open	Full Open
c.	Full Open	Half Open
d.	Half Open	Half Open

Question: 70

Reactor power is being increased and is at 37%.

All indications for 1A and 1C RCPs are normal.

Given the following conditions for 1B RCP:

- ALB-008-4-3, RCP 'B' SEAL #1 LEAKOFF HIGH/LOW FLOW, alarms.
- #1 seal leakoff flow has increased to 6.8 gpm.
- Shaft vibration levels are 6 mils and increasing at 0.4 mil/hr.
- Frame vibration levels are 2.1 mils and increasing at 0.3 mil/hr.
- Motor upper radial bearing temperature is 172 °F and stable.
- Motor lower radial bearing temperature is 176 °F and stable.
- Motor upper thrust bearing temperature is 168 °F and stable.
- Motor lower thrust bearing temperature is 178 °F and stable.
- Pump radial bearing temperature is 193 °F and increasing slowly.
- Seal inlet water temperature is 198 °F and increasing slowly.
- Pump bearing water temperature is 158 °F and increasing slowly.
- Motor stator winding temperature is 310 °F and increasing slowly.

Which of the following actions should be taken, in accordance with AOP-018?

- a. Trip the reactor and trip 1B RCP immediately
- b. Trip 1B RCP immediately and perform a plant shutdown
- c. Be in Hot Standby within 6 hours, then stop 1B RCP
- d. Trip 1B RCP within 10 minutes and perform a plant shutdown

Question: 71

Given the following conditions:

- The plant is in Mode 3.
- ALB 5-6-1, CCW SURGE TANK HIGH-LOW LEVEL, alarms.
- ALB 10-4-5, RAD MONITOR SYSTEM TROUBLE, alarms.
- ALB 5-1-2A, RCP THERM BAR HDR HIGH FLOW, alarms.
- ALB 5-2-2B, RCP THERM BAR HDR HIGH TEMP, alarms.
- CCW RAD monitor alarm on RM-11 console, alarms.
- CCW surge tank level is increasing.

Which of the following actions should automatically occur?

- a. 1CC-251, CCW From RCP Thermal Barrier Coolers, CLOSES
- b. CCW Holdup Tank Transfer Pump, STARTS
- c. CCW Drain Tank Transfer Pump, STARTS
- d. 1CC-252, RCP Thermal Barriers Flow Control, CLOSES

Question: 72

Given the following conditions:

- The plant is in Mode 3.
- 1A-SA CCW Pump is running.
- 1B-SB CCW Pump is in standby.
- A leak occurs in the non-essential header, causing a low pressure condition in the CCW system.

Which of the following describes the response of the CCW system?

	CCW PUMP(S) RUNNING	NON-ESSENTIAL HEADER
a.	1A-SA Pump ONLY	Isolated
b.	1A-SA Pump ONLY	NOT Isolated
c.	1A-SA AND 1B-SB Pumps	Isolated
d.	1A-SA AND 1B-SB Pumps	NOT Isolated

Question: 73

Given the following conditions:

- The unit is in a Refueling Outage.
- A spent fuel assembly is attached to the manipulator crane.
- A failure of the Reactor Vessel permanent cavity seal ring causes cavity level to drop approximately 3" every minute.
- Non-essential personnel have been evacuated from Containment.
- The Refueling Crew is in the process of placing the assembly in the Reactor Vessel when a Loss of Off-Site Power occurs.

Refueling Crew members are immediately evacuated from Containment because there are **NO** means for ...

- a. making up to the cavity.
- b. monitoring radiological levels inside Containment.
- c. placing the fuel assembly in the vessel.
- d. providing ventilation to Containment.

Question: 74

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, is being performed.
- RVLIS indicates that voids exist in the upper head of the vessel.
- An hour later, Off-Site power is restored.
- Conditions are being established to start an RCP.

Prior to starting the RCP, pressurizer level must be ...

- a. increased to accommodate the expected outsurge when the voids in the head are collapsed.
- b. decreased to accommodate the expected insurge when the RCS heats up.
- c. increased to accommodate the expected outsurge when the RCS cools down.
- d. decreased to accommodate the expected insurge when PRZ spray flow lowers pressure.

Question: 75

Which of the following describes the automatic actions performed by the AMSAC system **AND** the basis for each action?

- a.
 - Reactor is tripped to remove the heat source
 - Turbine is tripped to preserve SG inventory
- b.
 - Reactor is tripped to remove the heat source
 - AFW is initiated in anticipation of a loss of SG inventory
- c.
 - Turbine is tripped to preserve SG inventory
 - AFW is initiated in anticipation of a loss of SG inventory
- d.
 - Turbine is tripped to establish a Tave-Tref deviation to force auto rod insertion
 - AFW is initiated in anticipation of a loss of SG inventory

Question: 76

Given the following conditions:

- The plant is at 80% power.
- A dropped rod in Group 2 of Control Bank 'D' has occurred.
- A recovery of the dropped rod has begun.
- The ROD CONTROL URGENT ALARM (ALB-013-7-1) has just alarmed.

The power cabinet causing the urgent alarm is ...

- a. 1AC.
- b. 2AC
- c. 1BD.
- d. 2BD.

Question: 77

Given the following conditions:

- A plant cooldown is being performed per GP-007, "Normal Plant Cooldown (Mode 3 to Mode 5)".
- RCPs 'A' and 'C' are running.
- RCS temperature is 170 °F.
- RCS pressure is 180 psig.
- VCT pressure is 30 psig.

Which of the following describes when the operating RCPs are to be stopped?

	A' RCP	C' RCP
a.	When the RCS is < 160 °F	Immediately
b.	Immediately	Immediately
c.	When the RCS is < 160 psig	Immediately
d.	When the RCS is < 160 °F	When the RCS is < 160 °F

Question: 78

Which of the following conditions would be considered a loss of Containment Integrity?

- a. Failure of the inner door on the emergency air lock to seal with the plant in Mode 6 during core alterations
- b. Failure of 1SP-948, RCS Sample, to open when given an OPEN signal with the plant in Mode 3
- c. Equipment hatch **NOT** closed and sealed with the plant in Mode 5
- d. Locking device on 1SA-80, Service Air Supply, is discovered missing with the plant in Mode 4

Question: 79

Given the following conditions:

- A LOCA has occurred inside Containment.
- Containment pressure is 5.5 psig.
- RCS Wide Range Pressure indications are:

(BLACK BEZELED INSTRUMENTS)

PI-440 = 1060 psig

PI-441 = 1040 psig

(YELLOW BEZELED INSTRUMENTS)

PI-402 = 980 psig

PI-403 = 980 psig

PI-402A = 700 psig

RCS pressure should be reported as ...

- a. 700 psig.
- b. 980 psig.
- c. 1040 psig.
- d. 1060 psig.

Question: 80

Given the following conditions:

- A reactor trip and safety injection has occurred.
- A transition has been made to FRP-H.1, Response to Loss of Secondary Heat Sink.
- The Condensate Storage Tank (CST) level is dropping rapidly due to a tank rupture.

Which of the following will result in the Emergency Service Water System (ESW) supplying suction to the Auxiliary Feedwater (AFW) Pump?

- a. Manual operator action when the CST drops below 10% level
- b. Automatic alignment when the CST drops below 10% level
- c. Manual operator action when AFW suction pressure drops below 14 psig
- d. Automatic alignment when AFW suction pressure drops below 14 psig

Question: 81

Given the following conditions:

- A reactor trip with SI has occurred.
- The immediate action steps, ECCS flow verifications, and AFW flow verifications are performed.
- SG levels are < 10% and the required AFW flow **CANNOT** be established.
- FRP-H.1, Response to Loss of Secondary Heat Sink, is entered.
- RCS pressure is checked and determined to be less than intact SG pressure.

Which of the following describes the plant conditions?

- a. A large break LOCA is in progress **AND** a secondary heat sink is required
- b. A large break LOCA is in progress **AND** a secondary heat sink is **NOT** required
- c. A small break LOCA is in progress **AND** a secondary heat sink is required
- d. A small break LOCA is in progress **AND** a secondary heat sink is **NOT** required

Question: 82

If the suction pipe from the 'B' Spent Fuel Pool to the Spent Fuel Pool Cooling Pump completely severed, level in the Spent Fuel Pool would decrease ...

- a. to 18 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- b. to 18 feet above the fuel assemblies and stabilize without any automatic action.
- c. to 21 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- d. to 21 feet above the fuel assemblies and stabilize without any automatic action.

Question: 83

Given the following conditions:

- The plant is solid in Mode 5 with one (1) RCP in operation.
- RHR Pump A-SA is providing letdown flow with PK-145.1, LTDN PRESSURE 1CS-38, in **MAN**.
- CSIP A-SA is providing RCS makeup and seal injection.

If instrument air is lost to 1CS-38 (PCV-145), the operator should ...

- a. trip CSIP A-SA.
- b. trip RHR Pump A-SA.
- c. maintain letdown flow using HC-142.1, RHR Letdown 1CS-28.
- d. open one PRZ PORV.

Question: 84

RCS temperature is 220 °F.

Which of the following sets of conditions is the **MINIMUM** required to meet the Technical Specification requirements for DC Electrical Sources?

	125 VDC BATTERIES		BATTERY CHARGERS			
	1A-SA	1B-SB	1A-SA	1B-SA	1A-SB	1B-SB
a.	Operable	Operable	Operable	Operable	Operable	Operable
b.	Operable	Operable	Operable	NOT Operable	NOT Operable	Operable
c.	Operable	NOT Operable	Operable	Operable	NOT Operable	NOT Operable
d.	NOT Operable	Operable	NOT Operable	Operable	Operable	Operable

Question: 85

Given the following conditions:

- A liquid waste discharge from a Treated Laundry and Hot Shower (TL&HS) Tank is in progress.
- REM-1WL-3540, Treated Laundry and Hot Shower Tank Pump Discharge Monitor, goes into high alarm.

Which of the following terminates the discharge?

- a. The running TL&HS Tank Pump will automatically trip.
- b. An operator must take manual action to shut the TL&HS Tank Pump Discharge Isolation Valve.
- c. The running TL&HS Tank Pump Recirc Valve will automatically open.
- d. The TL&HS Tank Pump Discharge Isolation Valve will automatically close.

Question: 86

The unit is in Mode 3 with the reactor trip breakers closed.

If 125 VDC Bus 1A-SA deenergizes due to a fault on the bus ...

- a. Train SA reactor trip breaker will open due to an undervoltage (UV) trip.
- b. Train SA reactor trip breaker will open due to a shunt trip.
- c. an undervoltage (UV) trip signal will **NOT** be capable of opening Train SA reactor trip breaker.
- d. a shunt trip signal will **NOT** be capable of opening Train SA reactor trip breaker.

Question: 87

Given the following conditions:

- The plant experiences a reactor trip and SI from 100% power.
- **ONLY** one train of SI has actuated.
- Four Containment Fan Cooler fans are running in fast on one train.
- Two Containment Fan Cooler fans are running in slow on the other train.

Which of the following is the Containment Fan Cooler fan alignment following operator action in response to this situation?

- a. Four fans running in slow
- b. Four fans running in fast
- c. Eight fans running in fast
- d. Eight fans running in slow

Question: 88

Given the following conditions:

- A recovery from an SGTR on the 1B SG is being performed using the backfill method.
- ERFIS in **NOT** available.
- **NO** RCPs are running.
- RCS pressure channels read:
 - PI-402 = 600 psig
 - PI-403 = 620 psig
 - PI-402A = 650 psig
- Thot channels read:
 - TI-413 = 420 °F
 - TI-423 = 480 °F
 - TI-433 = 415 °F
- The five hottest ICCM TCs read:
 - 490 °F
 - 486 °F
 - 459 °F
 - 430 °F
 - 425 °F

Which of the following identifies the amount of subcooling present?

- a. 8 °F
- b. 18 °F
- c. 30 °F
- d. 40 °F

Question: 89

Given the following conditions:

- ALB-13-6-2, RPI NON-URGENT ALARM, alarms.
- The General Warning LED for Control Rod H2 is flashing.
- The Data B Failure 1, 2, 3 LEDs are flashing.
- The position LED for Control Rod H2 at Step 48 is LIT.

Which of the following describes the **MINIMUM** and **MAXIMUM** known positions of Control Rod H2?

	MINIMUM POSITION	MAXIMUM POSITION
a.	38 Steps	52 Steps
b.	44 Steps	52 Steps
c.	38 Steps	58 Steps
d.	44 Steps	58 Steps

Question: 90

Which of the following describes the effect a Containment Phase A isolation will have on RCP seal leakoff?

- a. No. 1 seal leakoff will discharge to the PRT via a relief valve
- b. No. 1 seal leakoff will discharge to the RCDT via a relief valve
- c. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the PRT
- d. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the RCDT

Question: 91

During the performance of PATH-1, the crew must determine if RCS temperature is "stable at or trending to 557 °F."

Which of the following describes the temperature to be used when RCPs are running AND when RCPs are off?

	RCPs ON	RCPs OFF
a.	T-avg	Cold Leg Temps
b.	T-avg	Hot Leg Temps
c.	Incore TCs	Cold Leg Temps
d.	Incore TCs	Hot Leg Temps

Question: 92

Given the following conditions:

- A reactor trip occurred due to a loss of offsite power.
- The plant is being cooled down on RHR per EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS.
- RVLIS upper range indicates greater than 100%.
- Three CRDM fans have been running during the entire cooldown.
- RCS cold leg temperatures are 190 °F.
- Steam generator pressures are 50 psig.

Steam should be dumped from all SGs to ensure ...

- a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.
- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.
- c. RCS and SG temperatures are equalized prior to any subsequent RCP restart.
- d. RCS temperatures do **NOT** increase during the required 29-hour vessel soak period.

Question: 93

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- ALB-17-5-5, CONDENSATE STORAGE TANK LOW MINIMUM LEVEL, alarms (65%).

Which of the following describes the significance of this alarm?

- a. CST level is nearing the level where it will be inadequate to maintain the required suction pressure to the TDAFW pump
- b. Manual swap to the backup source Emergency Service Water System should be initiated
- c. Normal Condenser Makeup System must be manually isolated to prevent drain down of the CST
- d. CST level is nearing the level where it will be inadequate to maintain hot standby for 12 hours

Question: 94

Given the following conditions:

- RCS temperature is 300 °F.
- The Low Temperature Overpressure Protection system (LTOP) is armed.
- PT-441, RCS Wide Range Pressure, has failed low.

Which of the following describes the effect on LTOP?

- a. **ONLY** PRZ PORV PCV-445A is available for LTOP
- b. Both PRZ PORVs are available for LTOP
- c. Neither PRZ PORV is available for LTOP
- d. **ONLY** PRZ PORV PCV-444B is available for LTOP

Question: 95

Given the following conditions:

- Reactor power is at 70%.
- Rod Control is in AUTO.
- Bank 'D' control rods are at 195 steps.
- Loop 1 Tavg is 576 °F.
- Loop 2 Tavg is 574 °F.
- Loop 3 Tavg is 572 °F.

Which of the following failures will cause control rods to step out?

- a. Loop 1 Thot fails high
- b. Loop 3 Thot fails low
- c. Loop 2 Tcold fails high
- d. Loop 2 Tcold fails low

Question: 96

Given the following conditions:

- A reactor trip has occurred due to a SG low-low level trip.
- RCS temperature has stabilized at no-load Tavg.

Which of the following describes the expected condition of the Feedwater System when directed to check the status?

	Main Feed Pumps	Main Feed Reg Valves	Feed Isolation Valves
a.	Tripped	Closed	Closed
b.	Tripped	Closed	Open
c.	Running	Open	Closed
d.	Running	Closed	Closed

Question: 97

Which of the following air compressors would be available during a Loss of Off-Site Power?

- a. A and B **ONLY**
- b. A and C **ONLY**
- c. B and C **ONLY**
- d. A, B and C

Question: 98

Given the following conditions:

- The plant is operating at 40% power.
- AOP-005, Radiation Monitoring System, has been entered.
- A high (red) alarm on REM-1WC-3544, WPB CCW HX Inlet Monitor, has just been received.

As a result of the high radiation alarm, which of the following will automatically occur?

- a. 1CC-252, RCP Thermal Barrier Flow Control Valve, CLOSES
- b. 3WC-4, WPB CCW Surge Tank Overflow Valve, CLOSES
- c. 1CC-304, CCW to Gross Failed Fuel Detector, OPENS
- d. 3WC-7, WPB CCW Surge Tank Drain Valve, OPENS

Question: 99

Given the following conditions:

- The plant has tripped from 100% power due to a trip of 'B' RCP.
- 'A' and 'C' RCPs are running.

Which of the following is the expected RVLIS Dynamic Head indication?

- a. 36%
- b. 41%
- c. 63%
- d. 100%

Question: 100

Given the following conditions:

- A reactor shutdown is in progress.
- Intermediate Range Channel N-35 compensating voltage is set too low.
- Intermediate Range Channel N-36 compensating voltage is set correctly.

How will this affect the Source Range Nuclear Instruments?

- Source Range Channel N-31 will automatically re-energize prematurely
 - Source Range Channel N-32 will automatically re-energize at the correct power level
- Both Source Range Channels N-31 and N-32 will automatically re-energize prematurely
- Source Range Channel N-31 must be manually re-energized
 - Source Range Channel N-32 will automatically re-energize at the correct power level
- Both Source Range Channels N-31 and N-32 must be manually re-energized

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

FINAL SRO WRITTEN EXAMINATION

DECEMBER 15, 2000

**U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination****Applicant Information**

Name:	Region: II
Date:	Facility/Unit: Shearon Harris
License Level: SRO	Reactor Type: Westinghouse
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

Examination Value _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

Question: 1

Given the following conditions:

- A Safety Injection has just occurred.
- Following the SI, leakage from the CCW system to the ESW system is suspected.

Which of the following sets of conditions would provide confirmation of this diagnosis?

- a. Decreasing CCW surge tank level **AND** ESW discharge radiation alarm
- b. Automatic makeup to the CCW surge tank **AND** ESW discharge sample
- c. Decreasing CCW surge tank level **AND** ESW discharge sample
- d. Automatic makeup to the CCW surge tank **AND** ESW discharge radiation alarm

Question: 2

Which of the following conditions would require that Attachment 2, "Cycle Log," of OMM-013, Cycle and Transient Monitoring Program, be completed?

- a. With the plant in Mode 2, a failed Source Range channel results in a Source Range High Flux Trip
- b. With the plant at 100% power, a failed actuation relay results in Auxiliary Feedwater flow to the SGs
- c. With RCS temperature at 240°F, a trip of Emergency Bus 1A-SA normal supply breaker 105 results in EDG 1A-SA starting automatically
- d. With the plant at 100% power, a failed pressurizer level instrument results in normal letdown isolating

Question: 3

Which of the following indications are **BOTH** used by EPP-013, LOCA Outside Containment, to identify that the leak is isolated?

- a. RCS pressure increasing **AND** RAB radiation decreasing
- b. RCS pressure increasing **AND** Local observation
- c. PRZ level increasing **AND** Local observation
- d. PRZ level increasing **AND** RAB radiation decreasing

Question: 4

Given the following conditions:

- Control Room Ventilation is in a normal lineup with 'A' Train fans in operation.
- Power is lost to the 'B' Train North Emergency Intake Radiation Monitor.

What is the response of the Control Room Ventilation System to this failure?

- a. Remains in the normal alignment, but a subsequent Train 'A' radiation monitor reaching the high alarm will cause an isolation
- b. Isolation occurs and **CANNOT** be reset
- c. Isolation occurs, but can be reset
- d. Remains in the normal alignment, but a subsequent Train 'B' radiation monitor reaching the high alarm will cause an isolation

Question: 5

Given the following conditions:

- The plant is operating at 100% power with 'A' Train equipment in service.
- The 1B-SB emergency bus supply breaker (125) opens.

Which of the following is expected to occur?

- a. Containment Fan Cooler Fans for AH2 and AH3 will automatically start in low speed
- b. Both sequencers will run and load equipment selected by the UV program
- c. 1MS-72, MS 'C' to Aux FW Turbine, will open
- d. The 'B' ESW Header will be supplied by the NSW System

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Question: 6

Given the following conditions:

- Emergency Boration is required.
- 1CS-278, Emergency Boric Acid Addition, **CANNOT** be opened.

Which of the following alignments will provide adequate boric acid flow?

	1CS-283 Boric Acid to Boric Acid Blender FCV-113A	1CS-156 Makeup to CSIP Suction FCV-113B	1CS-155 Makeup to VCT FCV-114A	1CS-291 CSIP Suction from RWST LCV-115B	1CS-292 CSIP Suction from RWST LCV-115D	1CS-165 VCT Outlet LCV-115C	1CS-166 VCT Outlet LCV-115E
a.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
b.	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED
c.	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	OPEN	OPEN
d.	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED

Question: 7

Given the following conditions:

- The plant is in Mode 5 on RHR cooling.
- A 170 gpm leak develops from the RCS.
- Letdown has been isolated.

Which of the following methods of makeup is to be used to restore level?

- a. Normal Charging from VCT
- b. Normal Charging from RWST
- c. Opening SI Accumulator Isolation valves
- d. CSIP flow through the BIT valves

Question: 8

The generator is being taken off line during a normal shutdown in accordance with GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)".

Which of the following describes the proper sequence for operation of the generator output breakers, 52-7 and 52-9?

- a. Trip the turbine and verify the generator lockout opens both generator output breakers
- b. Manually open one generator output breaker, trip the turbine, and manually open the second output breaker
- c. Manually open both the generator output breakers, then trip the turbine
- d. Manually open one generator output breaker, trip the turbine, and allow the generator lockout to open the second output breaker

Question: 9

Which of the following is the **MOST SIGNIFICANT ACTION** the operator can take during a SGTR concurrent with a loss of off-site power to minimize the PTS challenge?

- a. Maintain the RCS temperature at or below the required cooldown target temperature
- b. Secure AFW flow to the affected SG once minimum required level is achieved
- c. Ensure the affected SG does **NOT** become water solid
- d. Terminate SI after meeting termination criteria

Question: 10

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Containment pressure is 4.5 psig.
- SI has **NOT** been reset.
- Phase A has **NOT** been reset.
- Phase B has **NOT** been reset.

Which of the following describes the conditions required to allow opening of the SG sample valves?

- a. Containment pressure must be reduced below 3.0 psig before SI can be reset to allow opening the sample valves
- b. SI can be reset to allow opening the sample valves
- c. Containment pressure must be reduced below 3.0 psig before Phase A can be reset to allow opening the sample valves
- d. Phase A can be reset to allow opening the sample valves

Question: 11

Given the following conditions:

- Condenser vacuum is 5.4 inches Hg and degrading.
- Turbine first stage pressure is 38% turbine load.
- Turbine load is being reduced.

Which of the following actions must be taken in accordance with AOP-012, "Partial Loss of Condenser Vacuum"?

- a. Continue reducing turbine load as necessary to maintain condenser vacuum
- b. Trip the reactor and verify the turbine trips
- c. Throttle open the Cooling Tower Bypass Valves to lower Circulating Water temperature
- d. Trip the turbine and verify the plant stabilizes at the point of adding heat on the steam dumps

Question: 12

Given the following conditions:

- The plant is operating at 100% power.
- Bank 'C' control rod D12 DRPI is indicating 206 steps
- Bank 'C' Step Counters are indicating 228 steps

When comparing incore thermocouple positions to determine if the rod is actually out of position, which of the following thermocouples should be compared?

- a. Compare incore thermocouple C12 to the average of incore thermocouples C08, D03, D05, and H13
- b. Compare incore thermocouple C12 to the average of incore thermocouples F09, F11, F13, H11, and H13
- c. Compare incore thermocouple E12 to the average of incore thermocouples E08, E10, E14, and G15
- d. Compare incore thermocouple E12 to the average of incore thermocouples D05, E04, L12, and M11

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Question: 13

Which of the following sets of conditions would **NOT** permit waiving the Independent Verification requirement for a clearance removal?

	EXPECTED DOSE	AREA TEMPERATURE
a.	12 mRem	105°F
b.	9 mRem	115°F
c.	6 mRem	125°F
d.	3 mRem	135°F

Question: 14

Given the following conditions:

- The RCS is solid.
- 'B' RCP is running.
- Both trains of RHR cooling are in service.
- The RCS is at 300 psig and 160 °F.

How is RCS pressure **INITIALLY** affected by the following valve failures?

	HCV-142 (RHR to letdown) fails SHUT	FCV-122 (charging flow control) fails OPEN
a.	Increase	Increase
b.	Increase	Decrease
c.	Decrease	Increase
d.	Decrease	Decrease

Question: 15

With the plant at 100 percent steady-state condition, the following occurs:

- ALB-06-7-3, TOTAL MAKEUP WATER FLOW DEVIATION, alarms.
- ALB-06-8-4, BORIC ACID FLOW DEVIATION, alarms.
- VCT level is at 19.5% and decreasing at the same rate it has been for the last few days.

Which of the following procedures should be addressed?

- a. AOP-002, Emergency Boration
- b. AOP-003, Malfunction of Reactor Makeup Control
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-017, Loss of Instrument Air

Question: 16

Given the following conditions:

- A reactor shutdown is being performed.
- Source Range Channel N-31 is known to be failed high due to a detector problem.

Which of the following SR channel N-31 configurations will permit a continued normal shutdown when the Intermediate Range NIs drop below the P-6 reset point?

	INSTRUMENT POWER FUSES	CONTROL POWER FUSES	LEVEL TRIP SWITCH POSITION
a.	Removed	Installed	Bypass
b.	Installed	Removed	Bypass
c.	Removed	Installed	Normal
d.	Installed	Removed	Normal

Question: 17

Given the following conditions:

- FRP-S.1, Response to Nuclear Power Generation/ATWS, is being implemented.
- An SI actuation has occurred.
- The Foldout page is applicable.

Which of the following actions should be taken?

- a. Continue with FRP-S.1 while verifying proper operation of safeguard equipment
- b. Continue with FRP-S.1 until the reactor is tripped or made subcritical, then immediately exit to PATH-1
- c. Transition to PATH-1 and verify all automatic actions required for an SI have occurred, then return to FRP-S.1 only when directed by PATH-1
- d. Reset SI and FW isolation as soon as possible to restore feed flow to the steam generators, then continue with FRP-S.1

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Question: 18

Given the following conditions:

- The plant is operating at 100% power.
- While investigating an alarm condition at 0600, the S-SO determines that EDG 1B-SB is inoperable.
- Engineering reports at 1030 that a test deficiency on RHR Pump 1A-SA causes the pump to be declared inoperable.

When is the **LATEST** time that RHR Pump 1A-SA must be returned to service before TS 3.0.3 must be entered?

- a. 1030
- b. 1130
- c. 1430
- d. 1630

Question: 19

Given the following conditions:

- 1CS-235, Charging Line Isolation, was closed to establish a clearance boundary for maintenance on 1CS-238.
- 1CS-235 had to be manually torqued shut.
- 1CS-235 is a Limitorque SMB-00/SB-00 motor-operated valve.

Prior to declaring 1CS-235 operable after the clearance is removed, the valve must be ...

- a. verified to have the torque switch calibrated correctly.
- b. stroked with the control switch.
- c. monitored for seat leakage.
- d. manually stroked full open.

Question: 20

Given the following conditions:

- AOP-036, Safe Shutdown Following a Major Fire, is being implemented.
- A safety injection occurs concurrently with a loss of off-site power.
- 1A-SA EDG starts and loads.
- 1B-SB EDG fails to start.

Which of the following actions should be taken?

- a. Continue with AOP-036 while referencing EOP-PATH 1
- b. Follow EOP-PATH 1 and continue with AOP-036 when directed to perform a plant cooldown
- c. Continue with AOP-036 while referencing EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses
- d. Follow EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses, and continue with AOP-036 when directed to perform a plant cooldown

Question: 21

Given the following conditions:

- A reactor trip and safety injection has occurred.
- ESW pump operation is being verified in PATH-1.
- Containment pressure is 7 psig.
- RCS pressure is 950 psig.
- SI Flow indicator FI-943, Normal HDR Flow, indicates 0 gpm.
- Both CSIPs are running and all SI valves are properly aligned.

Which of the following actions is to be taken?

- a. Trip the RCPs immediately due to RCP Trip Criteria being met
- b. Leave the RCPs running until a transition is made to Entry Point C
- c. Leave the RCPs running until containment pressure reaches 10 psig
- d. Trip the RCPs immediately due to a loss of CCW cooling to the pumps

Question: 22

Given the following conditions:

- The plant is in Mode 5.
- ALB-008-1-4, RWMU STORAGE TANK MINIMUM/HIGH LEVEL, alarms.
- RWMU tank level is decreasing with **NO** VCT makeup in progress.

Which one of the following procedures would be the most appropriate to implement?

- a. AOP-003, Malfunction of Reactor Makeup Control
- b. AOP-008, Accidental Release of Liquid Waste
- c. AOP-016, Excessive Primary Plant Leakage
- d. AOP-020, Loss of Reactor Coolant Inventory / RHR While Shutdown

Question: 23

Given the following conditions:

- Fuel cladding failure has occurred.
- The CVCS Cation Bed demineralizer has been placed in service.

Which of the following provide positive indications of the fuel cladding failure?

- a.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Volume Control Tank Room radiation monitor alarming
- b.
 - Reactor Coolant Filter high ΔP
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- c.
 - Chemistry samples
 - Gross Failed Fuel Detector alarming
 - Volume Control Tank Room radiation monitor alarming
- d.
 - Reactor Coolant Filter high ΔP
 - Chemistry samples
 - Gross Failed Fuel Detector alarming

Question: 24

Given the following conditions:

- The plant is at 30% power.
- A dropped control rod has just been re-aligned.
- While attempting to reset the Rod Control Urgent Failure alarm, the operator inadvertently operates the Rod Control Start Up switch.

Which of the following describes the effect of operating the incorrect switch?

- a. All Control Bank control rods drop into the core, causing an automatic reactor trip
- b. All rods, including Control Bank and Shutdown Bank rods, drop into the core, causing an automatic reactor trip
- c. All rods remain in their current position and there is **NO** effect on the Rod Control System circuitry
- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Question: 25

Given the following conditions:

- ALB-26-1-4, ANNUN SYS 1 POWER SUPPLY FAILURE, alarms.
- Investigation determines a 12 VDC (1C#1) power supply has failed.

Which of the following ALBs should be considered inoperable?

- a. Containment Spray & Accumulator System
- b. Diesel Generator System
- c. Reactor First Out System
- d. Auxiliary Feedwater System

Question: 26

Given the following conditions:

- Several Fuel Handling Building (FHB) area radiation monitors on both trains have reached the high alarm setpoint.
- AOP-005 has directed the operator to verify that the FHB ventilation has shifted to the emergency exhaust lineup.
- Both FHB Emergency Exhaust Fans, E-12 and E-13, are RUNNING.
- FHB Emergency Exhaust Fan Inlets, 1FV-2 SA and 1FV-4 SB, are OPEN

Which of the following additional alignments is expected?

	FHB OPERATING FLOOR SUPPLY FANS AH-56, AH-57, AH-58, and AH-59	FHB NORMAL EXHAUST ISOLATION DAMPERS FL-D4, FL-D5, FL-D21 and FL-D22
a.	Secured	Open
b.	Running	Open
c.	Secured	Shut
d.	Running	Shut

Question: 27

Why do actions concerning CNMT spray operation contained in EPP-12, Loss of Emergency Coolant Recirculation, take precedence over the actions contained in FRP-J.1, Response to High Containment Pressure?

- a. Actions required by EPPs have priority over those in FRPs
- b. CNMT spray is **NOT** used if the plant is in a recirculation mode
- c. CNMT pressure may be too low to require CNMT spray
- d. Conservation of RWST inventory has priority over containment pressure control

Question: 28

Following a load reduction, Axial Flux Difference (AFD) is being verified.

Using the attached curve numbered F-10-2, which of the following combinations of power and AFD are outside the acceptable operating limits?

	POWER	AFD
a.	82%	-17
b.	77%	-21
c.	63%	-27
d.	56%	-30

Question: 29

Given the following conditions:

- The unit is operating at 50% power.
- LT-460, Channel III Pressurizer Level, has failed and all associated bistables are in the tripped condition.
- Power is subsequently lost to UPS Bus IDP-1A-SI.

Which train(s) of Reactor Protection will actuate, if any?

- a. Neither train
- b. Train SA **ONLY**
- c. Train SB **ONLY**
- d. Both trains

Question: 30

Given the following conditions:

- Reactor power is 80% and stable.
- Tavg is stable.
- Pressurizer level is stable with the control system in AUTO.
- A small leak develops across the differential pressure bellows for the controlling channel of pressurizer level, resulting in pressure equalizing across the bellows.

How will this leak affect the operation of FCV-122, Charging Flow Control Valve?

- a. It will throttle open slightly during the course of the pressure equalization and then return to its original position
- b. It will throttle closed slightly during the course of the pressure equalization and then return to its original position
- c. It will throttle open slightly during the course of the pressure equalization and remain in that position
- d. It will throttle closed slightly during the course of the pressure equalization and remain in that position

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Question: 31

Which of the following describes the result if 1B Condensate Pump trips on motor overcurrent at 80% power?

	CONDENSATE BOOSTER PUMPS	MAIN FEED PUMPS
a.	1A and 1B Remain Running	1A and 1B Remain Running
b.	1B Trips	1B Trips
c.	1B Trips	1A and 1B Remain Running
d.	1A and 1B Remain Running	1B Trips

Question: 32

Given the following conditions:

- A Loss of Coolant Accident (LOCA) has occurred.
- Containment pressure is 2 psig.
- Containment hydrogen concentration is 3.5%.
- Containment temperature is 140 °F.
- Containment temperature prior to the accident was 90 °F.

Which one of the following is the required power setting for the 1A Hydrogen Recombiner?

- a. 44.7 kW
- b. 45.8 kW
- c. 46.7 kW
- d. 47.9 kW

Question: 33

During operation at 100% power, an inadvertent SI occurs on 'B' Train **ONLY**.

Which of the following actions is required?

- a. Manually actuate SI on 'A' Train and continue in PATH-1
- b. Continue in PATH-1 noting which 'A' Train ESF equipment is **NOT** running
- c. Start **ONLY** the 'A' Train of ESF equipment for which the redundant 'B' Train equipment failed
- d. Transition directly to EPP-008, SI Termination

Question: 34

Given the following conditions:

- The plant is at 22% power during a shutdown.
- Intermediate Range Channel N-35 has been declared inoperable as a result of failing to meet Operational Test Criteria of MST-I0167.
- The test was performed, per GP-006, during a Tech Spec 3.0.3 required shutdown (i.e., the shutdown must continue).
- OWP-RP-21 has been performed, which places the LEVEL TRIP BYPASS switch in the BYPASS position and verifies the associated light on the Bypass Permissive Light Panel.
- The I&C Supervisor states that both control and instrument power must be removed from the drawer to replace a bistable module.

Assuming the instrument and control power are removed for the remainder of the shutdown, the shutdown continues and ...

- a. the reactor trips when the fuses are removed.
- b. the reactor trips when power is reduced below P-10.
- c. the reactor trips when power is reduced below P-6.
- d. **NO** reactor trip occurs.

Question: 35

Given the following conditions:

- A reactor trip and safety injection has occurred.
- Instrument Bus SIII de-energizes, causing a loss of power to PT-2250A, AFW Pump A Suct Press.

Which of the following describes the effect of the loss of this instrument on MDAFW Pump 1A-SA?

	MDAFW PUMP 1A-SA ALREADY RUNNING	MDAFW PUMP 1A-SA NOT RUNNING
a.	Automatically Trips	Can Be Started
b.	Automatically Trips	CANNOT Be Started
c.	Remains Running	Can Be Started
d.	Remains Running	CANNOT Be Started

Question: 36

Given the following conditions:

- A Loss of All AC Power has occurred.
- EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses, directs that SI be actuated and immediately reset.

Actuating SI and immediately resetting it is performed to ensure the ...

- a. EDG will be capable of tripping on any trip signal when started.
- b. SI valves will **NOT** automatically realign when power is restored.
- c. CCW pumps do **NOT** automatically start when power is restored.
- d. DC battery capacity is conserved until power is restored.

Question: 37

The plant is in Mode 4. The following RCS leak rates are noted:

- Primary to secondary – SG 'A' 0.08 gpm
- Primary to secondary – SG 'B' 0.11 gpm
- Primary to secondary – SG 'C' 0.07 gpm
- Leakage by PRZ Safeties to PRT 5.40 gpm
- Leakage from RCS to RCDT 4.00 gpm
- Total leakage from RCS 10.30 gpm

Which of the following RCS Technical Specification leakage limits is being exceeded for this Mode?

- a. Pressure Boundary Leakage
- b. Unidentified Leakage
- c. Primary to Secondary Leakage
- d. Identified Leakage

Question: 38

Given the following conditions:

- A large break LOCA has occurred.
- During the performance of the EOPs, a transition has been made to EPP-012, Loss of Emergency Coolant Recirculation.

Conditions upon entry to EPP-012 are:

- RWST level at 68%.
- Three (3) Containment Fan Coolers operating in slow speed.
- Containment pressure at 14 psig.
- Containment wide range sump level < 100 inches.

Which of the following describes the Containment Spray (CS) System configuration required?

- a. One CS Pump running, taking a suction off the Containment Sump
- b. Both CS Pumps running, taking a suction off the Containment Sump
- c. One CS Pump running, taking a suction off the RWST
- d. Both CS Pumps running, taking a suction off the RWST

Question: 39

Given the following conditions:

- A loss of secondary heat sink has occurred and FRP-H.1, Response to Loss of Secondary Heat Sink, is being performed.
- Containment pressure is 0.5 psig.
- All RCPs are stopped.
- SG levels (WR) are all between 30% and 35% and decreasing slowly.
- Core exit thermocouple temperatures are stable.
- PRZ pressure is 2270 psig and increasing slowly.
- AFW is **NOT** available.
- The crew has just attempted to start the MFW Pumps, but neither Main Feedwater Pump can be started.

Which of the following actions should be taken to provide core cooling?

- a. Depressurize the RCS to inject the CLAs
- b. Depressurize at least one SG below CBP discharge pressure
- c. Restart one RCP and establish an RCS vent path
- d. Initiate SI flow and establish an RCS vent path

Question: 40

Given the following conditions:

- While at 100% power, a steam line break occurs.
- Safety injection actuates.
- The steam break is isolated per EPP-014, Faulted SG Isolation.

Which of the following describes the expected EOP flowpath used to stabilize and restore plant systems upon exiting EPP-014?

- a. PATH-1, Entry Point C, then to EPP-008, SI Termination
- b. PATH-1, Entry Point C, then to EPP-009, Post-LOCA Cooldown and Depressurization
- c. Directly to EPP-008, SI Termination
- d. Directly to EPP-009, Post-LOCA Cooldown and Depressurization

Question: 41

Following a steam break inside containment, the Containment Spray System actuated.

Containment pressure has been reduced to 2.5 psig. The following signals have been reset:

- Safety Injection
- Phase A
- Phase B
- Containment Spray

Several minutes after securing Containment Spray, containment pressure increases to 11 psig due to a subsequent large break LOCA.

Which of the following describes the expected response of the Containment Spray System?

	CS PUMPS	CS DISCHARGE VALVES
a.	Automatically Start	Automatically Open
b.	Automatically Start	Must be Manually Opened
c.	Must be Manually Started	Automatically Open
d.	Must be Manually Started	Must be Manually Opened

Question: 42

Given the following conditions:

- A load rejection has occurred, causing RCS pressure to increase.
- The PRZ Spray Valves and PRZ PORVs have opened.
- During the pressure transient, PRZ pressure transmitter PT-445 failed high.

Which of the following will occur?

- PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will close when RCS pressure drops below 2000 psig
- All PRZ PORVs will remain open as PT-444 senses a lowering pressure and must be manually closed
- PRZ PORVs 445A and 445B will close as PT-444 senses a lowering pressure; PRZ PORV 444B will remain open and must be manually closed
- PRZ PORV 444B will close as PT-444 senses a lowering pressure; PRZ PORVs 445A and 445B will close when RCS pressure drops below 2000 psig

Question: 43

Given the following conditions:

- Instrument Bus SI is de-energized.
- A reactor trip and safety injection occurs.

Which of the following describes the plant response AND required operator actions?

- a.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'A' Train equipment
- b.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - Manual action must be taken to properly align/start 'B' Train equipment
- c.
 - 'A' Train safeguards equipment will **NOT** automatically function
 - 'A' Train equipment must be manually aligned/started **ONLY** if the corresponding 'B' Train equipment fails
- d.
 - 'B' Train safeguards equipment will **NOT** automatically function
 - 'B' Train equipment must be manually aligned/started **ONLY** if the corresponding 'A' Train equipment fails

Question: 44

Given the following conditions:

- Reactor power is 8% during a plant startup.
- 1A Main Feed Pump is operating.
- The Main Feed Regulating Valves are in MAN and are throttled open.
- The Main Feed Regulating Bypass Valves are in AUTO and are throttled open.
- 'C' SG level rises to 85%.

Which of the following will occur?

- a. 1A Main Feed Pump trips **AND** MFW is isolated to 'C' SG **ONLY**
- b. 1A Main Feed Pump trips **AND** MFW is isolated to all SGs
- c. 1A Main Feed Pump remains running **AND** MFW is isolated to 'C' SG **ONLY**
- d. 1A Main Feed Pump remains running **AND** MFW is isolated to all SGs

Question: 45

A high (red) alarm on the Containment Leak Detection Monitor particulate channel (3502A-SA) causes which of the following automatic isolations/trips to occur?

- a.
 - Containment Normal Purge
 - Containment Pre-Entry Purge
 - Containment Vacuum Relief
- b.
 - Containment Normal Purge **ONLY**
- c.
 - Containment Pre-Entry Purge **ONLY**
- d.
 - Containment Vacuum Relief **ONLY**

Question: 46

Which of the following events would result in increasing radiation levels in the Plant Vent Stack?

- a. Steam Generator Tube Rupture
- b. Waste Gas Decay Tank Rupture
- c. Fuel Handling Accident
- d. Radioactive Spill in the Chemistry Hot Lab

Question: 47

Given the following conditions:

- The plant is operating at 22% power.
- PRZ pressure transmitter PT-444 has failed high.
- 1RC-107, PRZ Spray Valve 444C, has stuck open.

Which of the following actions is to be taken?

- a. Stop 1A RCP and stabilize the plant at power
- b. Trip the reactor and stop 1A RCP
- c. Stop 1C RCP and stabilize the plant at power
- d. Trip the reactor and stop 1C RCP

Question: 48

Which of the following gives the parameters monitored for SI Reinitiation criteria on the EPP-009, Post LOCA Cooldown and Depressurization, foldout page?

- a. RCS subcooling and RVLIS level
- b. RCS pressure and pressurizer level
- c. RCS pressure and RVLIS level
- d. RCS subcooling and pressurizer level

Question: 49

The plant was operating at 100% power when an accident occurred.

Assuming **NO** operator action is taken, a Main Steam Line Isolation Signal (MSIS) will be generated when ...

- a. PRZ pressure drops to 1832 psig.
- b. containment pressure rises to 2.0 psig.
- c. steam line pressure drops to 547 psig.
- d. steam line pressure drops faster than 100 psig/sec.

Question: 50

Given the following conditions:

- Power is at 45% during a power increase following a short maintenance outage.
- Rod K-6 in Control Bank 'D' is determined to be inoperable due to a power cabinet malfunction.
- The rod, determined to be at 153 steps, is **NOT** capable of being moved, but is considered to be trippable.
- The crew realigns the remaining rods in Control Bank 'D' with the inoperable rod.

What is the maximum power level that can be achieved under these conditions while maintaining **ALL** associated alarms clear?

- a. 45%
- b. 50%
- c. 75%
- d. 80%

Question: 51

Given the following conditions:

- The plant was operating at 100% power when an accident occurred.
- All feedwater is isolated to three faulted SGs IAW EPP-015, Uncontrolled Depressurization of All SGs.
- The STA reports a red path requirement for the heat sink CSF.

Which of the following describes why FRP-H.1, Response to Loss of Secondary Heat Sink, would **NOT** be used in this situation?

- a. FRPs are implemented only after completion of PATH-1, entry Point C
- b. Feed flow has been reduced by operator action
- c. RHR is capable of providing an adequate heat sink
- d. Heat transfer coupling has been lost between the RCS and the SGs

Question: 52

ALB-15-1-3, Protection System A/B Trouble, has alarmed.

Local indications are as follows:

	<u>Train A</u>	<u>Train B</u>
General Warning Light	On	Off
#1 48-V DC Power Supply	On	On
#1 15-V DC Power Supply	On	On
#2 48-V DC Power Supply	Off	On
#2 15-V DC Power Supply	Off	On
Trip Bypass Breaker	Racked Out/Open	Racked Out/Open

These conditions would be caused by ...

- a. a loss of instrument Channel SIII power supply.
- b. a loss of instrument Channel SIV power supply.
- c. a logic test switch being out of position inside an SSPS 'A' Train cabinet.
- d. a logic test switch being out of position inside an SSPS 'B' Train cabinet.

Question: 53

Given the following conditions:

- Reactor power is at 30% and stable.
- Control Bank 'D' rods are at 185 steps.
- RCS Tavg is 564 °F.
- All control systems are in automatic.
- TE-144, Letdown HX Outlet Temp, fails high.

Which of the following describes the expected response of RCS temperature and rod position?

	RCS TAVG	BANK 'D' POSITION
a.	Greater than 564 °F	Greater than 185 steps
b.	Greater than 564 °F	Less than 185 steps
c.	Less than 564 °F	Greater than 185 steps
d.	Less than 564 °F	Less than 185 steps

Question: 54

A large break LOCA has occurred and PATH-1 is being performed.

The following have been reset:

- Safety Injection
- Phase A Isolation
- Phase B Isolation

The RWST level subsequently decreases to the Low-Low level setpoint.

Which of the following describes the response of the RHR Pump and the Containment Spray Pump Suction Valves?

	RHR CONTAINMENT SUMP SUCTION VALVES	RWST TO RHR SUCTION VALVES	CONTAINMENT SPRAY CONTAINMENT SUMP SUCTION VALVES	RWST TO CONTAINMENT SPRAY SUCTION VALVES
a.	Must be manually opened	Must be manually closed	Automatically open	Must be manually closed
b.	Must be manually opened	Automatically close	Automatically open	Automatically close
c.	Automatically open	Must be manually closed	Must be manually opened	Must be manually closed
d.	Automatically open	Must be manually closed	Automatically open	Automatically close

Question: 55

How is the clearance preparer notified of a Temporary Modification which affects an item being placed under clearance?

- a. The standard clearances in PTR are updated with Temporary Modification information
- b. The 400 screen of EDBS for each component affected lists the applicable Temporary Modifications
- c. The Category A drawings are annotated with the ESR number of the applicable Temporary Modifications
- d. During the schedule review, the responsible engineer notifies the WCC of any Temporary Modifications which may affect clearances needed for the current schedule

Question: 56

Given the following conditions:

- Containment temperature is 124 °F.
- Containment hydrogen concentration is 2.2%.
- RCS pressure is 600 psig.
- FRP-I.3, Response to Voids in Reactor Vessel, is being implemented.

Which of the following identifies the **MAXIMUM** allowed Reactor Vessel head venting time?

- a. 5.6 minutes
- b. 6.6 minutes
- c. 7.6 minutes
- d. 9.6 minutes

Question: 57

Given the following conditions:

- The plant is in Mode 4.
- A work activity to increase the reliability of the Control Room Emergency Filtration System is being planned.
- With one of the filtration systems inoperable in Modes 1-4, the system must be returned to operable within 7 days.

Which of the following describes the required work schedule for this activity, assuming the plant is maintained in Mode 4?

- a. Work during normal working hours until the activity is complete
- b. Work during normal working hours until less than 50% of the allotted LCO time is remaining, and then work on a 24 hour/day schedule until the activity is complete
- c. Work during normal working hours until less than 72 hours of the allotted LCO time is remaining, and then work on a 24 hour/day schedule until the activity is complete
- d. Work on a 24 hour/day schedule until the activity is complete

Question: 58

Given the following conditions:

- A small break LOCA has occurred.
- The Unit-SCO has just been directed to implement FRPs.

The STA reports the following CSFST conditions:

- Heat Sink YELLOW
- Inventory YELLOW
- Subcriticality MAGENTA
- Containment MAGENTA
- Core Cooling RED
- Integrity RED

Which of the following procedures should be entered?

- a. FRP-C.1, Response to Inadequate Core Cooling
- b. FRP-J.1, Response to High Containment Pressure
- c. FRP-P.1, Response to Imminent Pressurized Thermal Shock
- d. FRP-S.1, Response to Nuclear Power Generation / ATWS

Question: 59

The Superintendent - Shift Operations has designated the following personnel to be on the Fire Brigade Team:

- Leader - Outside AO (licensed Reactor Operator)
- Member 2 - Turbine Building AO (non-licensed)
- Member 3 - HP Technician
- Member 4 - I&C Technician
- Member 5 - Mechanic

Which of the following describes the makeup of the team?

- a. The team makeup is acceptable
- b. The Team Leader must be replaced by a licensed Senior Reactor Operator
- c. Member 2 must be replaced by a licensed Reactor Operator or Senior Reactor Operator
- d. Member 3, 4, or 5 must be replaced by an operator

Question: 60

Given the following conditions:

- Following a large break LOCA, PATH-1 is in progress.
- 1A-SA RHR pump is out of service due to a ground.
- 1B-SB RHR pump is running with 3000 gpm flow.
- 'B' Train of RHR has **NO** power to the valves powered from 'B' Train (fire in 1B21-SB).

Which of the following procedures should be implemented upon exiting PATH-1?

- a. EPP-009, Post LOCA Cooldown and Depressurization
- b. EPP-010, Transfer to Cold Leg Recirculation
- c. EPP-011, Transfer to Hot Leg Recirculation
- d. EPP-012, Loss of Emergency Coolant Recirculation

Question: 61

Given the following conditions:

- At 1315, the Reactor Operator must leave the Control Room for a short period of time.
- All requirements for this short term relief have been conducted
- An entry has been made into OMM-002, Attachment 14, Documentation of Short Term Assumption of Duties.

An entry must also be made in the Control Operators Log if the relieved operator does **NOT** resume the watch by ...

- a. 1330.
- b. 1345.
- c. 1415.
- d. 1515.

Question: 62

Given the following conditions:

- A loss of off-site power has occurred.
- The plant is being cooled down and depressurized per EPP-005, Natural Circulation Cooldown.
- The RCS cooldown rate is 40 °F/hour.
- RVLIS Upper Range indication is 96% and lowering slowly.
- The S-SO has determined that RCS depressurization must continue.

Which of the following actions should be taken?

- a. Continue in EPP-005, Natural Circulation Cooldown, AND maintain the cooldown rate <50 °F/hour
- b. Initiate safety injection to collapse the vessel head voids
- c. Transition to EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, AND continue the cooldown and depressurization
- d. Transition to EPP-007, Natural Circulation Cooldown with Steam Void in Vessel without RVLIS, AND continue the cooldown and depressurization

Question: 63

Given the following conditions:

- CP&L hired an employee on May 5th of this year.
- The employee's TEDE for this year prior to May 5th was 400 mRem.
- The employee's TEDE at SHNPP for this year is 1500 mRem.

Which of the following describes the **MAXIMUM ADDITIONAL** exposure allowed at CP&L facilities for this employee for the remainder of the year, without receiving an extension, **AND** what is the **LOWEST** level of authorization required if an extension is required during non-emergency conditions?

	MAXIMUM ADDITIONAL EXPOSURE W/OUT EXTENSION	LOWEST LEVEL OF AUTHORIZATION FOR EXTENSION
a.	100 mRem	E&RC Manager
b.	100 mRem	Site Vice President
c.	500 mRem	E&RC Manager
d.	500 mRem	Site Vice President

Question: 64

Given the following conditions:

- The unit is operating at 20% power with all systems in automatic.
- Bank 'D' control rods are at 130 steps.
- Control Bank 'C' rod H6 drops to the bottom of the core.
- **NO** rod control urgent failure alarms occur.

In response to the dropped rod, where will thermal power and RCS Tavg stabilize, in comparison to their values prior to the dropped rod, **WITHOUT** any operator action?

	REACTOR THERMAL POWER	RCS T-AVG
a.	Within 1%	More than 5°F lower
b.	More than 2% different	More than 5°F lower
c.	Within 1%	Within 1°F
d.	More than 2% different	Within 1°F

Question: 65

Which of the following identifies when the Diesel and Motor Fire Pumps will start on lowering Fire Header pressure?

	MOTOR FIRE PUMP	DIESEL FIRE PUMP
a.	93 psig	83 psig
b.	83 psig	93 psig
c.	93 psig	105 psig
d.	105 psig	83 psig

Question: 66

Given the following conditions:

- The plant is at 100% power.
- One minute ago, the normal feeder breaker to 6.9kV bus 1A-SA (BKR 105) tripped open.
- The 1A-SA EDG failed to start.

Which of the following actions is required?

- a. Start 1B-SB MDAFW Pump to supply the SGs
- b. Trip the reactor and enter PATH-1
- c. Open all load breakers on 6.9kV bus 1A-SA
- d. Place the 1A-SA EDG Emergency Stop switch to EMER STOP

Question: 67

Given the following conditions:

- The plant is at 100% power.
- 1A and 1B ESW Pumps are off.
- 'A' and 'B' ESW headers are being supplied from NSW.
- 1A NSW Pump is running.
- 1B NSW Pump is off.

Subsequently, the following events occur:

- A breaker failure results in a loss of power to 1A-SA.
- The 'A' EDG starts, re-energizes the bus, and sequences the loads properly.

Which of the following describes how the ESW alignment is affected?

	'A' TRAIN ESW HEADER SUPPLY	'B' TRAIN ESW HEADER SUPPLY
a.	1A ESW Pump	1B ESW Pump
b.	1A ESW Pump	1A NSW Pump
c.	1A NSW Pump	1B ESW Pump
d.	1A NSW Pump	1A NSW Pump

Question: 68

During FRP-C.1, Response to Inadequate Core Cooling, the steam generators are depressurized to 90 psig.

Which of the following is the basis for stopping at 90 psig?

- a. To prevent N₂ injection into the RCS from the Cold Leg Accumulators
- b. To maintain gases in solution while low head SI recovers core cooling
- c. To ensure the SG U-Tubes remain covered
- d. To maintain adequate pressure for running any available RCPs

Question: 69

The plant is operating at 100% power with the following conditions:

<u>Time</u>	<u>Ambient Temp</u>	<u>CT Basin Temp</u>
1200	25 °F	55 °F
1600	30 °F	60 °F
2000	40 °F	64 °F

Which of the following describes the correct CT Deicing Gate Valve alignment for these conditions?

	1600	2000
a.	Full Open	Full Open
b.	Half Open	Full Open
c.	Full Open	Half Open
d.	Half Open	Half Open

Question: 70

Reactor power is being increased and is at 37%.

All indications for 1A and 1C RCPs are normal.

Given the following conditions for 1B RCP:

- ALB-008-4-3, RCP 'B' SEAL #1 LEAKOFF HIGH/LOW FLOW, alarms.
- #1 seal leakoff flow has increased to 6.8 gpm.
- Shaft vibration levels are 6 mils and increasing at 0.4 mil/hr.
- Frame vibration levels are 2.1 mils and increasing at 0.3 mil/hr.
- Motor upper radial bearing temperature is 172 °F and stable.
- Motor lower radial bearing temperature is 176 °F and stable.
- Motor upper thrust bearing temperature is 168 °F and stable.
- Motor lower thrust bearing temperature is 178 °F and stable.
- Pump radial bearing temperature is 193 °F and increasing slowly.
- Seal inlet water temperature is 198 °F and increasing slowly.
- Pump bearing water temperature is 158 °F and increasing slowly.
- Motor stator winding temperature is 310 °F and increasing slowly.

Which of the following actions should be taken, in accordance with AOP-018?

- a. Trip the reactor and trip 1B RCP immediately
- b. Trip 1B RCP immediately and perform a plant shutdown
- c. Be in Hot Standby within 6 hours, then stop 1B RCP
- d. Trip 1B RCP within 10 minutes and perform a plant shutdown

Question: 71

Given the following conditions:

- The plant is in Mode 3.
- ALB 5-6-1, CCW SURGE TANK HIGH-LOW LEVEL, alarms.
- ALB 10-4-5, RAD MONITOR SYSTEM TROUBLE, alarms.
- ALB 5-1-2A, RCP THERM BAR HDR HIGH FLOW, alarms.
- ALB 5-2-2B, RCP THERM BAR HDR HIGH TEMP, alarms.
- CCW RAD monitor alarm on RM-11 console, alarms.
- CCW surge tank level is increasing.

Which of the following actions should automatically occur?

- a. 1CC-251, CCW From RCP Thermal Barrier Coolers, CLOSES
- b. CCW Holdup Tank Transfer Pump, STARTS
- c. CCW Drain Tank Transfer Pump, STARTS
- d. 1CC-252, RCP Thermal Barriers Flow Control, CLOSES

Question: 72

Given the following conditions:

- The plant is in Mode 3.
- 1A-SA CCW Pump is running.
- 1B-SB CCW Pump is in standby.
- A leak occurs in the non-essential header, causing a low pressure condition in the CCW system.

Which of the following describes the response of the CCW system?

	CCW PUMP(S) RUNNING	NON-ESSENTIAL HEADER
a.	1A-SA Pump ONLY	Isolated
b.	1A-SA Pump ONLY	NOT Isolated
c.	1A-SA AND 1B-SB Pumps	Isolated
d.	1A-SA AND 1B-SB Pumps	NOT Isolated

Question: 73

Given the following conditions:

- The unit is in a Refueling Outage.
- A spent fuel assembly is attached to the manipulator crane.
- A failure of the Reactor Vessel permanent cavity seal ring causes cavity level to drop approximately 3" every minute.
- Non-essential personnel have been evacuated from Containment.
- The Refueling Crew is in the process of placing the assembly in the Reactor Vessel when a Loss of Off-Site Power occurs.

Refueling Crew members are immediately evacuated from Containment because there are **NO** means for ...

- a. making up to the cavity.
- b. monitoring radiological levels inside Containment.
- c. placing the fuel assembly in the vessel.
- d. providing ventilation to Containment.

Question: 74

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS, is being performed.
- RVLIS indicates that voids exist in the upper head of the vessel.
- An hour later, Off-Site power is restored.
- Conditions are being established to start an RCP.

Prior to starting the RCP, pressurizer level must be ...

- a. increased to accommodate the expected outsurge when the voids in the head are collapsed.
- b. decreased to accommodate the expected insurge when the RCS heats up.
- c. increased to accommodate the expected outsurge when the RCS cools down.
- d. decreased to accommodate the expected insurge when PRZ spray flow lowers pressure.

Question: 75

Which of the following describes the automatic actions performed by the AMSAC system **AND** the basis for each action?

- a.
 - Reactor is tripped to remove the heat source
 - Turbine is tripped to preserve SG inventory
- b.
 - Reactor is tripped to remove the heat source
 - AFW is initiated in anticipation of a loss of SG inventory
- c.
 - Turbine is tripped to preserve SG inventory
 - AFW is initiated in anticipation of a loss of SG inventory
- d.
 - Turbine is tripped to establish a Tave-Tref deviation to force auto rod insertion
 - AFW is initiated in anticipation of a loss of SG inventory

Question: 76

Which of the following conditions would require a One-Hour Notification in accordance with AP-617, Reportability Determination and Notification?

- a. A manual reactor trip is actuated from 40% power due to a trip of the running Main Feedwater Pump
- b. An automatic safety injection is actuated at 100% power due to an I&C Technician lifting an incorrect lead
- c. While at 400°F during a plant cooldown, all warning sirens in Lee County are reported to be out-of-service due to severe weather.
- d. While at 400°F during a plant heatup following a refueling outage, the plant is cooled down to Mode 4 to meet a Technical Specification action statement.

Question: 77

The following series of procedure transitions are made:

- A transition is made from PATH-1, Step 69, to EPP-009, Post-LOCA Cooldown and Depressurization.
- While performing EPP-009, Step 16, a foldout page item directs a transition to PATH-2, Entry Point J.
- While performing PATH-2, Step 9, a MAGENTA path on the CSFST directs a transition to FRP-P.1, Response to Imminent Pressurized Thermal Shock.

The last step in FRP-P.1 states, "Return to Procedure and Step in Effect."

The crew should transition to ...

- a. PATH-1, Step 69.
- b. EPP-009, Step 16.
- c. PATH-2, Entry Point J.
- d. PATH-2, Step 9.

Question: 78

A reactor startup is being performed following a mid-cycle outage per GP-004, "Reactor Startup (Mode 3 to Mode 2)".

Estimated Critical Conditions are as follows:

TIME	1830
BORON CONC.	1215 ppm
CONT BANK 'C' POSTION	218 steps
CONT BANK 'D' POSTION	90 steps
ECC - 500 PCM POSITION	45 steps on Bank 'D'
ECC + 500 PCM POSITION	197 steps on Bank 'D'
ROD INSERTION LIMIT	0 steps on Bank 'D'

The Actual Critical Conditions are as follows:

TIME	1836
BORON CONC.	1198 ppm
CONT BANK 'C' POSTION	110 steps
CONT BANK 'D' POSTION	0 steps

Which of the following actions must be taken?

- a. Shut down the reactor using GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)," **AND** borate, as needed, to increase RCS boron concentration to 1215 ppm
- b. Maintain critical conditions **AND** borate, as needed, to increase RCS boron concentration to 1215 ppm
- c. Shut down the reactor using GP-006, "Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)," **AND** initiate Emergency Boration per AOP-002
- d. Trip the reactor **AND** initiate Emergency Boration per AOP-002

Question: 79

Given the following conditions:

- Three hours ago, Chemistry reported that secondary chemistry parameters were exceeding Action Level 2 limits.
- Reactor power is currently 38% and being reduced at 10% per hour.
- Chemistry now reports that Action Level 3 limits have been exceeded.

Which of the following actions should be taken?

- a. Stabilize the plant at the current power level
- b. Continue the power reduction at the current rate until $< 30\%$ power
- c. Initiate a rapid plant shutdown
- d. Trip the reactor

Question: 80

Given the following conditions:

- The plant is operating at 100% power.
- A tube leak has been detected on 'B' SG.
- The Condenser Vacuum Pump Rad Monitor, REM-1TV-3534, and Curve H-X-15 are being monitored every 15 minutes to estimate the leak rate.

Which of the following readings noted on REM-1TV-3534 is the **MINIMUM** reading that would require a plant shutdown per Technical Specifications?

- a. $5.5 \text{ E } -7$
- b. $1.05 \text{ E } -6$
- c. $1.45 \text{ E } -6$
- d. $1.55 \text{ E } -6$

Question: 81

Given the following conditions:

- A reactor trip with SI has occurred.
- The immediate action steps, ECCS flow verifications, and AFW flow verifications are performed.
- SG levels are < 10% and the required AFW flow **CANNOT** be established.
- FRP-H.1, Response to Loss of Secondary Heat Sink, is entered.
- RCS pressure is checked and determined to be less than intact SG pressure.

Which of the following describes the plant conditions?

- a. A large break LOCA is in progress **AND** a secondary heat sink is required
- b. A large break LOCA is in progress **AND** a secondary heat sink is **NOT** required
- c. A small break LOCA is in progress **AND** a secondary heat sink is required
- d. A small break LOCA is in progress **AND** a secondary heat sink is **NOT** required

Question: 82

If the suction pipe from the 'B' Spent Fuel Pool to the Spent Fuel Pool Cooling Pump completely severed, level in the Spent Fuel Pool would decrease ...

- a. to 18 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- b. to 18 feet above the fuel assemblies and stabilize without any automatic action.
- c. to 21 feet above the fuel assemblies before the Emergency Makeup would automatically start.
- d. to 21 feet above the fuel assemblies and stabilize without any automatic action.

Question: 83

Given the following conditions:

- The plant is solid in Mode 5 with one (1) RCP in operation.
- RHR Pump A-SA is providing letdown flow with PK-145.1, LTDN PRESSURE 1CS-38, in **MAN**.
- CSIP A-SA is providing RCS makeup and seal injection.

If instrument air is lost to 1CS-38 (PCV-145), the operator should ...

- a. trip CSIP A-SA.
- b. trip RHR Pump A-SA.
- c. maintain letdown flow using HC-142.1, RHR Letdown 1CS-28.
- d. open one PRZ PORV.

Question: 84

RCS temperature is 220 °F.

Which of the following sets of conditions is the **MINIMUM** required to meet the Technical Specification requirements for DC Electrical Sources?

	125 VDC BATTERIES		BATTERY CHARGERS			
	1A-SA	1B-SB	1A-SA	1B-SA	1A-SB	1B-SB
a.	Operable	Operable	Operable	Operable	Operable	Operable
b.	Operable	Operable	Operable	NOT Operable	NOT Operable	Operable
c.	Operable	NOT Operable	Operable	Operable	NOT Operable	NOT Operable
d.	NOT Operable	Operable	NOT Operable	Operable	Operable	Operable

Question: 85

Given the following conditions:

- A liquid waste discharge from a Treated Laundry and Hot Shower (TL&HS) Tank is in progress.
- REM-1WL-3540, Treated Laundry and Hot Shower Tank Pump Discharge Monitor, goes into high alarm.

Which of the following terminates the discharge?

- a. The running TL&HS Tank Pump will automatically trip.
- b. An operator must take manual action to shut the TL&HS Tank Pump Discharge Isolation Valve.
- c. The running TL&HS Tank Pump Recirc Valve will automatically open.
- d. The TL&HS Tank Pump Discharge Isolation Valve will automatically close.

Question: 86

The unit is in Mode 3 with the reactor trip breakers closed.

If 125 VDC Bus 1A-SA deenergizes due to a fault on the bus ...

- a. Train SA reactor trip breaker will open due to an undervoltage (UV) trip.
- b. Train SA reactor trip breaker will open due to a shunt trip.
- c. an undervoltage (UV) trip signal will **NOT** be capable of opening Train SA reactor trip breaker.
- d. a shunt trip signal will **NOT** be capable of opening Train SA reactor trip breaker.

Question: 87

Given the following conditions:

- The plant experiences a reactor trip and SI from 100% power.
- **ONLY** one train of SI has actuated.
- Four Containment Fan Cooler fans are running in fast on one train.
- Two Containment Fan Cooler fans are running in slow on the other train.

Which of the following is the Containment Fan Cooler fan alignment following operator action in response to this situation?

- a. Four fans running in slow
- b. Four fans running in fast
- c. Eight fans running in fast
- d. Eight fans running in slow

Question: 88

Given the following conditions:

- A recovery from an SGTR on the 1B SG is being performed using the backfill method.
- ERFIS is **NOT** available.
- **NO** RCPs are running.
- RCS pressure channels read:
 - PI-402 = 600 psig
 - PI-403 = 620 psig
 - PI-402A = 650 psig
- Thot channels read:
 - TI-413 = 420 °F
 - TI-423 = 480 °F
 - TI-433 = 415 °F
- The five hottest ICCM TCs read:
 - 490 °F
 - 486 °F
 - 459 °F
 - 430 °F
 - 425 °F

Which of the following identifies the amount of subcooling present?

- a. 8 °F
- b. 18 °F
- c. 30 °F
- d. 40 °F

Question: 89

Given the following conditions:

- ALB-13-6-2, RPI NON-URGENT ALARM, alarms.
- The General Warning LED for Control Rod H2 is flashing.
- The Data B Failure 1, 2, 3 LEDs are flashing.
- The position LED for Control Rod H2 at Step 48 is LIT.

Which of the following describes the **MINIMUM** and **MAXIMUM** known positions of Control Rod H2?

	MINIMUM POSITION	MAXIMUM POSITION
a.	38 Steps	52 Steps
b.	44 Steps	52 Steps
c.	38 Steps	58 Steps
d.	44 Steps	58 Steps

Question: 90

Which of the following describes the effect a Containment Phase A isolation will have on RCP seal leakoff?

- a. No. 1 seal leakoff will discharge to the PRT via a relief valve
- b. No. 1 seal leakoff will discharge to the RCDT via a relief valve
- c. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the PRT
- d. All No. 1 seal leakoff will be directed through the No. 2 seal and then to the RCDT

Question: 91

During the performance of PATH-1, the crew must determine if "RCS temperature is stable at or trending to 557 °F."

Which of the following describes the temperature to be used when RCPs are running AND when RCPs are off?

	RCPs ON	RCPs OFF
a.	T-avg	Cold Leg Temps
b.	T-avg	Hot Leg Temps
c.	Incore TCs	Cold Leg Temps
d.	Incore TCs	Hot Leg Temps

Question: 92

Given the following conditions:

- A reactor trip occurred due to a loss of offsite power.
- The plant is being cooled down on RHR per EPP-006, Natural Circulation Cooldown with Steam Void in Vessel with RVLIS.
- RVLIS upper range indicates greater than 100%.
- Three CRDM fans have been running during the entire cooldown.
- RCS cold leg temperatures are 190 °F.
- Steam generator pressures are 50 psig.

Steam should be dumped from all SGs to ensure ...

- a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.
- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.
- c. RCS and SG temperatures are equalized prior to any subsequent RCP restart.
- d. RCS temperatures do **NOT** increase during the required 29-hour vessel soak period.

Question: 93

Given the following conditions:

- A Loss of Off-Site Power has occurred.
- ALB-17-5-5, CONDENSATE STORAGE TANK LOW MINIMUM LEVEL, alarms (65%).

Which of the following describes the significance of this alarm?

- a. CST level is nearing the level where it will be inadequate to maintain the required suction pressure to the TDAFW pump
- b. Manual swap to the backup source Emergency Service Water System should be initiated
- c. Normal Condenser Makeup System must be manually isolated to prevent drain down of the CST
- d. CST level is nearing the level where it will be inadequate to maintain hot standby for 12 hours

Question: 94

Given the following conditions:

- RCS temperature is 300 °F.
- The Low Temperature Overpressure Protection system (LTOP) is armed.
- PT-441, RCS Wide Range Pressure, has failed low.

Which of the following describes the effect on LTOP?

- ONLY** PRZ PORV PCV-445A is available for LTOP
- Both PRZ PORVs are available for LTOP
- Neither PRZ PORV is available for LTOP
- ONLY** PRZ PORV PCV-444B is available for LTOP

Question: 95

Given the following conditions:

- Reactor power is at 70%.
- Rod Control is in AUTO.
- Bank 'D' control rods are at 195 steps.
- Loop 1 Tavg is 576 °F.
- Loop 2 Tavg is 574 °F.
- Loop 3 Tavg is 572 °F.

Which of the following failures will cause control rods to step out?

- a. Loop 1 Thot fails high
- b. Loop 3 Thot fails low
- c. Loop 2 Tcold fails high
- d. Loop 2 Tcold fails low

Question: 96

Which of the following would require a call to chemistry so they can initiate surveillances per RST-204 and RST-211?

- a. Load reduction from 100% to 80% at 2 MWe/min
- b. Load reduction from 100% to 90% at 10 MWe/min
- c. Loss of one running MFP from 78% power
- d. Loss of one running HDP from 100% power

Question: 97

Given the following conditions:

- An accident has occurred which has resulted in activation of the Emergency Plan.
- A repair team is preparing to enter an area to effect repairs that will protect a piece of valuable company property.
- The dose rate in the area is 25 Rem/hour.

Which of the following identifies the **MAXIMUM** amount of time that each individual can stay in the area without exceeding allowable emergency dose limits?

- a. 12 minutes
- b. 24 minutes
- c. 36 minutes
- d. 60 minutes

Question: 98

Given the following conditions:

- A small break LOCA has occurred.
- Core exit thermocouple temperatures are approximately 618 °F and stable.
- RCS hot legs temperatures are approximately 550 °F.
- RCS cold leg temperatures are approximately 330 °F.
- RCS pressure is 1100 psig.

Which of the following describes the status of RCS inventory and core cooling?

- a. The core is covered and being cooled by natural circulation
- b. The core is partially uncovered and being cooled by natural circulation
- c. The core is covered and being cooled by reflux boiling
- d. The core is partially uncovered and being cooled by reflux boiling

Question: 99

Given the following conditions:

- A reactor trip and safety injection has occurred.
- A transition has been made to FRP-H.1, Response to Loss of Secondary Heat Sink.
- RCS bleed and feed has been initiated.
- Core exit thermocouples are still rising.
- RCS hot leg temperatures are all approximately 650 °F and rising slowly.
- All SG levels are approximately 5% wide range.
- Containment pressure is 6 psig.
- The TDAFW Pump has been made available.

Which of the following describes how AFW flow should be restored to the SGs?

- a. Feed one SG at 50 KPPH until core exit thermocouples start decreasing
- b. Feed one SG at 50 KPPH until SG narrow range level is > 40%
- c. Feed one SG at maximum rate until core exit thermocouples start decreasing
- d. Feed one SG at maximum rate until SG narrow range level is > 40%

Question: 100

Given the following conditions:

- On May 1, at 0100, a plant shutdown was initiated from 100% in preparations for conducting a refueling.
- The reactor was shutdown at 1100 on the same date.
- CCW heat exchanger outlet temperature is currently 88 °F.

When is the **EARLIEST** that fuel movement in the reactor vessel is allowed to begin?

- a. May 6th at 1200
- b. May 7th at 1200
- c. May 7th at 2200
- d. May 8th at 2200

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

FINAL RO LICENSE EXAM

REFERENCE MATERIAL

SUPPLIED REFERENCE MATERIALS FOR SHNPP NRC REACTOR OPERATOR EXAMINATION

<u>REFERENCE NUMBER</u>	<u>REFERENCE TITLE</u>
AOP-001, Attachment 2	Affected And Symmetric Thermocouple Locations
AOP-018, Attachment 1	Reactor Coolant Pump Trip Limits
AOP-018, Attachment 2	Specific Symptoms of Seal Malfunctions
AOP-036, Attachment 6	SG Wide Range Level Band Vs. SG Pressure
AOP-037, Attachment 3	Affected ALB Determination
OP-125, Attachment 8	Pressure Factor Determination
OP-141, Attachment 5	Cooling Tower Cold Weather Operation
SD-100.03, Figure 7.16	Low Temperature Over Pressure Protection Control Logic
Curve F-10-1	Rod Insertion Limits
Curve F-10-2	Axial Flux Difference Limits as a Function of Rated Thermal Power
NA	Steam Tables

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

FINAL SRO LICENSE EXAM

REFERENCE MATERIAL

SUPPLIED REFERENCE MATERIALS FOR SHNPP NRC SENIOR REACTOR OPERATOR EXAMINATION

<u>REFERENCE NUMBER</u>	<u>REFERENCE TITLE</u>
AOP-001, Attachment 2	Affected And Symmetric Thermocouple Locations
AOP-037, Attachment 3	Affected ALB Determination
AOP-018, Attachment 1	Reactor Coolant Pump Trip Limits
AOP-018, Attachment 2	Specific Symptoms of Seal Malfunctions
AP-617, Attachment 1	Immediate Notification Requirements
EPP-012, Table 1	Containment Spray Requirements
FRP-H.1, Attachment 1	Guidance On Restoration of Feed Flow
FRP-I.3, Attachment 1	Instructions for Determining Venting Time
FRP-I.3, Figure 2	Hydrogen Flow Rate Versus RCS Pressure
OP-125, Attachment 8	Pressure Factor Determination
OP-141, Attachment 5	Cooling Tower Cold Weather Operation
PLP-114, Figure 1	Minimum Decay Time Vs. CCW Temperature
SD-100.03, Figure 7.16	Low Temperature Over Pressure Protection Control Logic
Technical Specification 3.8.1.1	AC Sources, Operating
Curve F-10-1	Rod Insertion Limits
Curve F-10-2	Axial Flux Difference Limits as a Function of Rated Thermal Power
Curve H-X-15	P/S Leak Rate Using Monitor
NA	Steam Tables