

**KEWAUNEE**

**May 2001**

**FINAL, AS-GIVEN  
WRITTEN  
EXAMINATION**

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

**Applicant Information**

Name: MASTER EXAMINATION	Region: III
Date: MAY 16, 2001	Facility/Unit: Kewaunee
License Level: RO	Reactor Type: W
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 five 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	_____ 100 _____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

QUESTION

The following Plant conditions exist:

- Reactor is critical at 10E-3% power.
- RCS Tave: 547°F and steady.
- PZR pressure: 2235 psig and steady.
- Control Bank D rods position: 100 steps.

Control Rods G-11 and G-3 (both in Bank D) drop. Which of the following will be the expected response?

Initially

- A. Tave will decrease and Steam pressure will remain the same and the operator should recover the dropped control rods per E-CRD-49C, Dropped Rod.
- B. Tave and Steam Pressure will both remain the same and the operator should trip the reactor based on TWO (2) dropped control rods per E-CRD-49C, Dropped Rod.
- C. Tave will decrease and Steam pressure will remain the same and the operator should trip the reactor based on low Tave per N-CRD-49B, Reactor Startup.
- D. Tave and Steam Pressure will both remain the same and the operator should shutdown the reactor for the TWO (2) dropped control rods as required by N-CRD-49B, Reactor Startup.

QUESTION

The following Plant conditions exist:

- Burnup is 6000 MWD/MTU.
- The Reactor Tripped from 80% power after two (2) weeks of steady state operation.
  - An ECP is calculated for 7 hours after the Trip.
  - Critical Rod position is 100 steps on Control Bank D.
  - Boron is to remain constant for the Startup.

The Startup is delayed for 2 hours. How many steps will the Control Rods be from the calculated ECP?

- A. 0-4 steps withdrawn
- B. 8-12 steps inserted
- C. 8-12 steps withdrawn
- D. 14-18 step inserted

QUESTION

Containment pressure instrument PT-945, Containment Pressure (Channel I), has failed downscale. All appropriate actions of A-MI-87, Bistable Tripping For Failed Reactor Protection or Safeguards Instrument Procedure, have been completed.

Subsequently PT-949, Containment Pressure (Channel II), fails upscale.

What is the expected response of the plant?

- A. Safety Injection will occur.
- B. Main Steam Isolation Train A will occur.
- C. Safety Injection and Main Steam Isolation Train A will occur.
- D. Safety Injection, Containment Spray, and Main Steam Isolation will occur.

QUESTION

While at 100% power, a manual calorimetric is being performed. During the calorimetric, the feedwater temperature is mistakenly recorded 100 degrees lower than the actual temperature. The gain pot on the power range nuclear instruments are adjusted based on this manual calorimetric. SELECT the statement that describes HOW indicated power compares to actual power and if it is more or less conservative with respect to a trip setpoint.

- A. Actual power is HIGHER than indicated; LESS conservative.
- B. Actual power is LOWER than indicated; LESS conservative.
- C. Actual power is HIGHER than indicated; MORE conservative.
- D. Actual power is LOWER than indicated; MORE conservative.

QUESTION

The following Plant conditions exist:

- The Plant is at 52% and in progress of increasing load to 75% following a plant startup after a refueling shutdown.
- The load pickup to 52% has just been completed when TLA-1, Rod Supervision Alarm, actuates.
- IRPI and Honeywell PPCS indicate Control Rod G11 is at step 100 position, with the remainder of Bank D at 188 steps.
- Bank D Group step counter is at 175 steps
- I&C reports a 1.609 volt DC reading for Rod G11 Conditioning Module voltage.

What are THREE (3) other Control Room indicators or components that may be used to confirm if an actual Control Rod misalignment exists?

- A. Power range instrumentation, Delta-flux indicators and Tave.
- B. Incore moveable detectors (flux maps), Core exit thermocouples and sub-cooling monitor.
- C. Power range instrumentation, Delta-flux indicators and Core exit thermocouples.
- D. Incore moveable detectors (flux maps), Core exit thermocouples and Tave.

QUESTION

Following a Small Break LOCA, the following conditions are observed:

- Core Exit Thermocouple temperatures are approximately 618°F and stable.
- RCS Hot Leg Temperatures are approximately 550°F and stable.
- Pressurizer Pressure is 1085 psig.
- RCS Cold Leg Temperatures are approximately 330°F and lowering slowly.

What is the status of RCS inventory and core cooling?

The core is

- A. covered and being cooled by Natural Circulation.
- B. covered and being cooled by Reflux Boiling.
- C. partially uncovered and being cooled by Natural Circulation.
- D. partially uncovered and being cooled by Reflux Boiling.

QUESTION

The following Plant conditions exist:

- Reactor Trip/Safety Injection has occurred.
- Main Steam Line break in Containment.
- Containment pressure is 4.5 psig.
- Containment humidity is 100%.
- Both RXCPs are running.

Which ONE (1) of the following is the concern if the Containment Fan Coil Units Emergency Discharge Dampers RBV-150 A and B both failed to OPEN and remained in the CLOSED position?

- A. RXCP B overheating.
- B. Loss of cooling to Shroud Coolers if Natural Circulation Cooldown is required.
- C. Reverse airflow through the Containment Fan Coil Unit causing damage to the Containment Fan Coils Unit motors.
- D. Damage to the duct work could reduce Containment cooling due to the lack of air mixing in Containment.

QUESTION

Assume the plant is operating at normal 100% power with NO equipment out of service.

Which ONE (1) of the following indicates the effect that the initiation of ONLY Safety Injection TRAIN A signal will have on the Main Feedwater System?

- A. Both Feedwater Pumps TRIP  
FW-12A ONLY [Main Feedwater Header Isolation Valves] CLOSE  
FW-7A & FW-7B [Main Feedwater Regulating Valves] CLOSE  
FW-10A & FW-10B [Main Feedwater Bypass Control Valves] CLOSE
- B. ONLY Feedwater Pump A TRIPS  
FW-12A ONLY [Main Feedwater Header Isolation Valve] CLOSE  
FW-7A & FW-7B [Main Feedwater Regulating Valves] CLOSE  
FW-10A & FW-10B [Main Feedwater Bypass Control Valves] CLOSE
- C. Both Feedwater Pumps TRIP  
FW-12A & FW-12B [Main Feedwater Header Isolation Valves] CLOSE  
FW-7A ONLY [Main Feedwater Regulating Valve] CLOSE  
FW-10A & FW-10B [Main Feedwater Bypass Control Valves] CLOSE
- D. ONLY Feedwater Pump A TRIPS  
FW-12A & FW-12B [Main Feedwater Header Isolation Valve] CLOSE  
FW-7A ONLY [Main Feedwater Regulating Valve] CLOSE  
FW-10A ONLY [Main Feedwater Bypass Control Valve] CLOSE

**QUESTION**

The plant is operating at 100% power. Turbine Impulse Pressure channel P-485 fails low. Which ONE (1) of the following describes how the feedwater system is affected by this failure?

- A. FW-7A/7B, Main FW Control Valves, continue to control S/G level at 44%.
- B. FW-7A/7B, Main FW Control Valves, position to control S/G level at 33% and manual action is required to restore S/G level to 44%.
- C. FW-7A/7B, Main FW Control Valves, position to control S/G level at 33% and S/G level returns to 44% after signal times out.
- D. FW-7A/7B, Main FW Control Valves, position to control S/G level at 44% and manual action is required to restore S/G level to 33%.

**QUESTION**

KNPP is at 70% power with both Main Feed Pumps and both Condensate Pumps running. If Condensate Pump B trips, which ONE (1) of the following actions will occur?

- A. MFW Pump A trips and Turbine runback occurs
- B. MFW Pump B trips and Turbine runback occurs
- C. MFW Pump A trips and NO Turbine runback occurs
- D. MFW Pump B trips and NO Turbine runback occurs

**RO Exam Number**  
11

**Record Number**  
012

QUESTION

During the performance of SP-05B-104 Task 2, Motor Driven Auxiliary FW Pump and Valve Test-IST, the AFW Pump A has just been stopped at the DSP. The plant IMMEDIATELY experiences a Loss of Off-Site Power. How is the starting of AFW Pump A affected?

- A. AFW Pump A will start on Blackout sequence.
- B. AFW Pump A will start on Steam Generator low level only.
- C. AFW Pump A will NOT start due a load shed signal.
- D. AFW Pump A will NOT start due to the local/remote switch position.

**RO Exam Number**  
12

**Record Number**  
013

QUESTION

The following Plant conditions exist:

- The Plant has tripped from 100% power due to an inadvertent SI.
- IPEOP E-0, "Reactor Trip or Safety Injection", has been completed.
- The current procedure in effect is IPEOP ES-1.1, "SI Termination."
- The level in both Steam Generators is 3%.

At this time AFW Pump A trips on overcurrent. The CRS chooses to continue feeding both Steam generators. What Operator actions, if any, are necessary to provide both Steam Generators with Feedwater? (Assume NO procedure steps other than IPEOP steps have been performed.)

- A. NO action is required, both Steam Generators will continue to be fed from the AFW Pump B since the AFW cross-connect valves, AFW-10A and AFW-10B, are normally open.
- B. Both of the AFW cross-connect valves, AFW-10A and AFW-10B, must be opened since they will have been shut when the Turbine Driven AFW pump was stopped.
- C. The Turbine Driven AFW Pump must be started and the AFW cross-connect valve, AFW-10A, must be opened.
- D. The Turbine Driven AFW Pump must be started and the AFW cross-connect valve, AFW-10A, must be opened and the AFW cross-connect valve, AFW-10B, must be closed.

**RO Exam Number**  
13

**Record Number**  
014

QUESTION

The following Plant conditions exist:

- A release of CVC Monitor Tank B is in progress.
- Annunciator 47011-B, RADIATION INDICATION HIGH ALARM, has actuated.
- R-18, Waste Disposal Liquid Effluent Monitor, is alarming.

Which of the following states the required IMMEDIATE action, if any, after verifying the R-18 reading is above the alarm setpoint?

- A. NO action required, this is an expected alarm.
- B. Direct the Duty Chemist to sample CVC Monitor Tank B.
- C. Direct the Health Physics to survey the area around R-18 to verify the alarm.
- D. Verify the WD-19/CV-31138, WD to Circ Water valve, automatically closed.

**RO Exam Number**  
14

**Record Number**  
015

QUESTION

A normal plant startup is in progress with the following conditions:

- Pressurizer Pressure is at 1585 psig and slowly decreasing
- Pressurizer Level is at 30% and slowly decreasing
- PRT Pressure is 5 psig

Assume pressurizer steam quality is 100%

Which ONE (1) of the following is the CURRENT expected PORV tailpipe temperature if a Pressurizer PORV is leaking by?

- A. 605°F
- B. 547°F
- C. 245°F

D. 228°F

QUESTION

The following Plant conditions exist:

- Reactor is at 100% power
- Annunciator 47043B, PRESSURIZER RELIEF TANK ABNORMAL, is actuated due to low PRT Level.
- PRT level indication is 69% and slowly decreasing.
- PRT temperature is 124°F

How will PRT pressure be affected if a PRZR PORV fails OPEN?

- A. PRT pressure will be lower due to the lowering liquid volume in the PRT.
- B. PRT pressure will only increase slightly due to compression of the gas volume.
- C. PRT pressure will remain constant due to the remaining water absorbing the steam.
- D. PRT pressure will increase to over-pressurization due to an insufficient water volume to cool the steam.

QUESTION

Degassing of the reactor coolant system is in progress. Gas Decay Tank A is on FILL and at 98 psig. Gas Decay Tank A is increasing at about 4 psig/hour. Gas Decay Tank B is selected for STANDBY. Four hours later, you note the following valve alignment:

- Gas Decay Tank A inlet valve WG-10A, Waste Gas to Gas Decay Tank A, is CLOSED
- Gas Decay Tank B inlet valve WG-10B, Waste Gas to Gas Decay Tank B, is OPEN
- Gas Decay Tank C inlet valve WG-10C, Waste Gas to Gas Decay Tank 1C, is CLOSED
- Gas Decay Tank D inlet valve WG-10D, Waste Gas to Gas Decay Tank 1D, is CLOSED

What caused the current valve alignment?

- A. Gas Decay Tank A pressure increased to 110 psig.
- B. Actuation of Zone Special Ventilation (Zone SV)
- C. The operating Waste Gas Compressor moisture separator pressure reached 110 psig.
- D. The gas analyzer detected > 2% oxygen in Gas Decay Tank A being filled.

**RO Exam Number**  
**17**

**Record Number**  
**018**

QUESTION

R-14, Aux Bldg Vent Exhaust Radiation Monitor, fails HIGH.

What effect does this failure have on the Waste Gas system?

- A. All Waste Gas Tank Outlet Valves to the cover gas header CLOSE if open and nitrogen becomes the cover gas supply.
- B. WG-36 is tripped CLOSED if a Gas Decay Tank discharge is in progress.
- C. Gas Decay Tank Gas Analyzer Supply Valves WG-200A, B, C, D CLOSE
- D. All Waste Gas Tank Valves (fill and cover gas supply) CLOSE, the Waste Gas compressors trip and Nitrogen becomes the Cover Gas supply.

**RO Exam Number**  
**18**

**Record Number**  
**019**

QUESTION

Inoperability of which ONE (1) of the area radiation monitors would prohibit refueling operations from occurring?

- A. R-1, Control Room Area Monitor.
- B. R-5, Fuel Handling Area Monitor.
- C. R-7, Incore Seal Table Area Monitor.
- D. R-10, New Fuel Pit Area Monitor.

QUESTION

The following Plant conditions exist:

- A small break LOCA has occurred.
- NO RxCPs are running.

The following RCS indications are available:

- Average of the 10 highest core exit thermocouples = 568°F
- Loop Temperatures: TH = 560°F (both loops)  
TC = 522°F (both loops)  
Tave = 541°F (both loops)
- Pressurizer Pressure instruments PT-429, PT-430, PT-431, and PT-449 indicate 1700 psig
- RCS wide-range pressure instruments PT-419 and PT-420 indicate 1231 psig

Operators are directed to determine the RCS subcooling margin due to unavailability of subcooling indication due to failed instruments. Based on these indications, the RCS is:

- A. Superheated by greater than 10°F.
- B. Superheated by less than 10°F.
- C. Subcooled by less than 10°F.
- D. Subcooled by greater than 10°F.

QUESTION

The following Plant conditions exist:

- Unit is at 90% power.
- Pressurizer level control is in the normal at power lineup (position 2-3).
- Pressurizer level transmitter LT-427 (Channel II) output signal fails off-scale low.

Which of the following describes the short-term plant response to this event?

- A. Charging pump speed increases, letdown isolates, and PZR heaters are tripped.
- B. Charging pump speed is NOT affected, letdown isolates, and PZR heaters are tripped.
- C. Charging pump speed increases, letdown is NOT affected, and PZR heaters are tripped.
- D. Charging pump speed increases, letdown isolates, and PZR heaters are NOT affected.

QUESTION

Which ONE (1) of the below events has the potential to generate an OT delta T runback?

- A. The controlling pressurizer pressure channel fails high.
- B. An RCS boron addition which changes temperature.
- C. Delta Flux increases from -2 to +6 as a result of a xenon transient.
- D. A group of pressurizer backup heaters is energized.

QUESTION

The plant is operating at 60% power with N-36 Out of Service. A loss of power occurs on Instrument Bus II (White Channel). Considering only the impact of the IR NIs, what impact this will have on the Reactor?

- A. It will NOT trip the Reactor because the affected NI channel is N-36 and it is in bypass.
- B. It will trip the Reactor because both control power and instrument power will be lost on the affected channel.
- C. It will NOT trip the Reactor regardless of which IR channel is affected because the IR trip was blocked above P-10.
- D. It will trip the Reactor because the affected channel is N-35 and it becomes deenergized.

QUESTION

The plant is operating at 100% power. All systems are in their normal alignment and in automatic rod control. One of the RCS Hot Leg RTDs fails high causing the rods to drive in. When the RO stops rod motion, the CONTROL BANK LOW LIMIT alarm is in. If NO other action is taken, what happens to the radial and axial flux?

- A. The radial flux profile near the top of the core remains the same; the axial flux is forced toward the bottom of the core.
- B. The radial flux profile near the top of the core changes; the axial flux is forced toward the bottom of the core.
- C. The radial flux profile near the top of the core remains the same; the axial flux is forced toward the top of the core.
- D. The radial flux profile near the top of the core changes; the axial flux is forced toward the top of the core.

**RO Exam Number**  
**24**

**Record Number**  
**025**

QUESTION

With a Condenser vacuum drawn, the Air Ejectors are isolated from the Condenser. How would Condenser vacuum be effected by this action?

- A. Immediate loss of Condenser vacuum because Air Removal is required for steam to condense.
- B. Immediate loss of Condenser vacuum due to non-condensable gases entry into the Condenser.
- C. Gradual loss of Condenser vacuum as non-condensable gases build up in the Condenser.
- D. NO loss of Condenser vacuum as the condensing of the turbine exhaust steam maintains the vacuum.

**RO Exam Number**  
**25**

**Record Number**  
**026**

QUESTION

Which ONE (1) of the following lists the power supplies to 118 vac Bus Inverter BRD-109 in the preferred sequence of connection if needed to supply the Inverter?

- A. Normal - MCC 46B, then BRC 102, then BRB 127
- B. Normal - MCC 62C, then BRD-104, then BRB-105
- C. Normal - MCC 62C, then BRD-103, then BRB-127
- D. Normal - MCC 52C, then BRA-104, then BRA-105

QUESTION

The "Instrument Bus Inverter Trouble" alarms in the control room with the SER point indication BRA-111 as the cause. The Equipment Operator reports that on BRA-111 the "Alternate Source Supplying Load" light is lit. What is the condition of BRA-113 Instrument Bus?

- A. BRA-113 is without 120VAC power.
- B. BRA-113 is now supplied with 120VDC power.
- C. Power source is 120VAC via BRA-105.
- D. Power source is 125VDC cabinet BRA-104 via BRA-111.

QUESTION

The following Plant conditions exist:

- Turbine load 200 MWe
- Plant control systems all in automatic
- Circulating Water (CW) Forebay level 50% and decreasing rapidly due to outsurge caused by seiche in progress
- Turbine back pressure 5.0" Hg Absolute and increasing rapidly.

The correct action(s) that the operators should take is/are ... (choose one)

- A. reduce Turbine load to 30% (165 Mwe) power and isolate one pair of Main Condenser Water Boxes in order to reduce CW flow requirements.
- B. stop ONE CW pump within 10 minutes in order to regain CW Forebay level.
- C. trip the Reactor/Turbine and enter E-0, "Reactor Trip or Safety Injection."
- D. ramp power down at a rate NOT to exceed 5% per minute and trip the Reactor at 15% power.

**RO Exam Number**  
**28**

**Record Number**  
**029**

QUESTION

SA-60/CV 31648, Station Air Crossover Pressure Control Valve, controls air to the Instrument Air System at \_\_\_\_\_ from the Station Air Header.

- A. 110 psi
- B. 100 psi
- C. 95 psi
- D. 90 psi

**RO Exam Number**  
**29**

**Record Number**  
**030**

QUESTION

A failure of which of the following detectors will result in an IMMEDIATE (i.e. NO time delay) discharge of its associated fire protection medium (i.e. water, halon, CO2)?

- A. ONE temperature switch/thermostat in Zone 103, Diesel Generator Room A.
- B. TWO ionization (smoke) detectors in Zone 602, the Aux. Bldg. Record Storage Room.
- C. ONE temperature rise (thermal pneumatic) detector in Zone 1203, Materials Work Storage.
- D. ONE photo-electric detector AND ONE ionization (smoke) detector in Zone 1103, QA/QC Vault.

QUESTION

Maintenance opens a hose station valve to flush the Fire Header.

The Fire Protection System pressure dropped to 107 psig and repressurizes to 170 psig. What is the status of the fire protection system at this time?

(Assume that the fire protection system was in a normal lineup prior to opening the hose station valve.)

	<b>Jockey Pump</b>	<b>A Fire Pump</b>	<b>B Fire Pump</b>
A.	Running	Stopped	Running
B.	Running	Running	Stopped
C.	Stopped	Running	Stopped
D.	Stopped	Stopped	Running

QUESTION

The following plant conditions exist:

- A plant cooldown to cold shutdown is in progress.
- The RCS is at 425 deg. F. and 900 psig.
- A fire occurs in MCC-62B and is extinguished.
- MCC-62B is damaged and CANNOT be re-energized.

How do these conditions effect the plant reaching cold shutdown?

- Since the required Motor Valves are powered from MCC-62A, reaching cold shutdown is unaffected.
- Only RHR Train A Loop Suctions are available due to the loss of power to RHR-1B, Loop B Hot Leg To Residual Heat Removal Pump, and RHR-2B, Loop B Hot Leg To Residual Heat Removal Pump.
- Neither train of RHR can be established since RHR-11, Residual Heat Removal To Loop B Cold Leg Isol., and LD-60, Residual Heat Exchanger To Letdown Line, lose power.
- Flow can only be established through RHR Pump A and Train B of Component Cooling is unavailable due to the loss of power to CC-6B, Component Cooling Heat Exchanger B Outlet.

QUESTION

The following Plant conditions exist:

- Plant cooldown to COLD SHUTDOWN is in progress.
- RHR aligned for cooldown.
- RCS pressure is 400 psig.
- RCS Wide Range temperature, Hot Leg, is 350°F
- Flow Controller RHR-101 is in AUTOMATIC - 10% open.
- Local RHR Heat Exchanger outlet temperature is 300°F

The RHR return header flow transmitter (FT-626) fails low. What is the Plant response to this event?

- A. RHR Heat Exchanger Bypass Valve (RHR-101) position will change to full close to maintain RHR desired system flow rate and RCS cooldown rate will increase.
- B. RHR Heat Exchanger Bypass Valve (RHR-101) will position to full open to maintain RHR desired system flow rate and RCS cooldown rate will decrease.
- C. RHR Heat Exchanger Flow Control Valves (RHR-8A/8B) will automatically close to prevent exceeding RCS cooldown rate of 100°F per hour.
- D. RHR Return Header Isolation Valve (RHR-11) will automatically open to maintain RHR Pump discharge pressure and flow constant to the Reactor Vessel.

QUESTION

The following Plant conditions exist:

- Plant is at 100% power.
- ICS Pump A is OUT-OF-SERVICE for maintenance.
- Plant Electricians request Bus 1-61 be removed from service for maintenance.

The Electricians' request is denied. What is the basis for the denial?

- A. All vital 480V AC Buses shall be energized when the Plant is critical.
- B. All vital 4160V AC Buses shall be energized when the Plant is critical.
- C. It is an error since Bus 1-61 is the power supply for ICS Pump A and would NOT violate Technical Specifications
- D. De-energizing Bus 1-61 will result in both Containment Spray Trains being INOPERABLE and violate Technical Specifications.

QUESTION

The following plant conditions exist:

- Shield Building Annulus To Containment DP Switch (16427) fails in the >0.3 PSID direction.
- Containment pressure is 1 psig.

What effect would these conditions have on the Containment Vent and Purge system?

VB-10A, Power Operated Contmt Vacuum Breaker A, would OPEN and the operator would ...

- A. manually close VB-10A.
- B. manually close VB-10A only after Containment Pressure has equalized with the Annulus
- C. NOT be able to CLOSE VB-10A and Containment Pressure would equalize with the Annulus
- D. NOT be able to CLOSE VB-10A and Containment Pressure would NOT equalize with the Annulus

**RO Exam Number**  
35

**Record Number**  
036

QUESTION

The DG A is running following a recovery for a loss of all AC power. The NCO reports current DG A load is 3100 KW.

What is the MINIMUM amount of load that would have to be shed from the DG A to be below the 7 day/year limit for operation?

- A. 500 KW
- B. 240 KW
- C. 150 KW
- D. 50 KW

**RO Exam Number**  
36

**Record Number**  
037

QUESTION

The plant is at 100% power performing a 2" vent of Containment using Train B when R-21 FAILS HIGH. How is the 2" vent of Containment affected?

- A. LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B and LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner to Contmt go CLOSED.
- B. Only LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B goes CLOSED.
- C. Only LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner to Contmt goes CLOSED
- D. 2" vent of Containment continues until MANUAL Action is taken.

**RO Exam Number**  
37

**Record Number**  
038

QUESTION

Which of the following is a complete list of the radiation monitors that detect and mitigate, on High alarm, a radioactive release from the Aux building by stopping the Aux Building Supply and Exhaust fans and starting a Zone SV (Special Vent) exhaust fan?

- A. R-13 & R-14 Aux Bldg. Vent Monitors, R-35 Aux Bldg. Vent Low range and R-36 Aux Bldg. Vent High Range.
- B. R-13 & R-14 Aux Bldg. Vent Monitors, R-35 Aux Bldg. Vent Low range, R-36 Aux Bldg. Vent High Range and R-22 RHR Pit Exhaust Air Monitoring subsystem.
- C. R-13 & R-14 Aux Bldg. Vent Monitors and R-22 RHR Pit Exhaust Air Monitoring subsystem.
- D. R-13 & R-14 Aux Bldg. Vent Monitors.

**RO Exam Number**  
38

**Record Number**  
039

QUESTION

The following Plant conditions exist:

- The DC Supply and Distribution System is configured for normal operation and is operating properly.
- Annunciator BRB-102 FEEDER BKR UNDERVOLTAGE (47102-B) alarms.

Assuming the system performed as designed, which ONE (1) of the following describes the actions the local operator is directed to perform to allow future faulted circuits on BRB-102 FEEDER BKR UNDERVOLTAGE (47102-B) to annunciate?

- A. Identifies the tripped circuit by the red circuit status light being ON while the toggle switch is in OFF position and places the toggle switch to the ON position.
- B. Identifies the tripped circuit by the red circuit status light being OFF with the toggle switch in the OFF position and places the toggle switch to the ON position.
- C. Identifies the tripped circuit breaker by breaker position and by the red circuit status light being OFF with the toggle switch in ON position and places the toggle switch to the OFF position.
- D. Identifies the tripped circuit breaker by breaker position and by the red circuit status light being OFF with the toggle switch in ON position places the toggle switch first to OFF position and back to ON.

QUESTION

A Steam Generator Tube Rupture (SGTR) has occurred in conjunction with a loss of offsite power. Performing which of the following actions in E-3, "Steam Generator Tube Rupture", could cause an increase in radiation level and humidity in the Containment.

- A. Isolating the ruptured Steam Generator.
- B. Cooling down the Reactor Coolant System.
- C. Depressurizing the Reactor Coolant System.
- D. Establishing Charging flow.

QUESTION

Given the following indications:

- N-31 is reading 25 CPS
- N-32 is reading 30 CPS
- Audible count is selected to N-32

Which of the following conditions would result in an AUTOMATIC Containment Evacuation Alarm during core alterations?

- A. The reading on N-31 increases to 100 CPS.
- B. N-32 fails low.
- C. Source Range High Flux at Shutdown alarm is blocked on N-31.
- D. The Remote Speaker is turned off.

**RO Exam Number**  
41

**Record Number**  
042

QUESTION

In which ONE (1) of the following sets of conditions can a Condenser Cooldown Dump Valve be opened after the Main Steam Dump Interlock Selector Switches have been placed in BYPASS INTLK and returned to the Mid-position?

- A. Condenser pressure is 4.5" HgA  
Tave is 530°F  
1 Circ Water Pump is running
- B. Condenser pressure is 13.5" HgA  
Tave is 550°F  
NO Circ Water Pumps are running
- C. Condenser pressure is 22.5" HgA  
Tave is 550°F  
1 Circ Water Pump is running
- D. Condenser pressure is 8.0" HgA  
Tave is 550°F  
NO Circ Water Pumps are running

**RO Exam Number**  
42

**Record Number**  
043

QUESTION

The normal Main steam temperature and pressure at NO Load Tave is:

- A. 547°F      1005 psig
- B. 547°F      1050 psig
- C. 552°F      1005 psig
- D. 552°F      1050 psig

QUESTION

The following plant conditions exist:

- The plant is at 30% power during a post refueling startup.
- SP 54-063, "Turbine Trip Mechanism Test," is in progress.

With the Overspeed Mechanism Test lever at the Governor End Pedestal being held in the "TEST" position, which ONE (1) of the following would still result in a Turbine trip?

- A. MSIV A closing
- B. Mechanical Overspeed.
- C. Low bearing oil pressure.
- D. Low vacuum.

QUESTION

The following Plant conditions exist:

- Annunciator 47051P, SW HEADER PRESSURE LOW, SER 125, SW Header B LESS THAN 72 psig, actuates.
- Operator identifies 1A Auxiliary Bldg Service Water Header pressure is at 90 psig and 1B header at 55 psig.
- SW-4B, SW Header B to Turbine Bldg Hdr, is open.

What Operator action should be taken first?

- A. Close SW-10B, Aux. Bldg. Header B Isolation.
- B. Shift Turbine Building header to Train A.
- C. Trip the Reactor and Turbine.
- D. Initiate SW isolation for Turbine Building.

QUESTION

The following Plant conditions exist:

- The plant is in REFUELING
- Fuel shuffle is complete
- Preparations are completed to initiate draining of the Reactor Cavity

What is the responsibility of the NCO concerning the Source Range instrumentation?

The operator must verify

- A. TWO channels are OPERABLE and each is visually monitored during the draining operation.
- B. TWO channels are OPERABLE and the audio count can be monitored in Containment.
- C. at least ONE channel is OPERABLE and the audio count can be monitored both in the Control Room and in Containment.
- D. at least ONE channel is OPERABLE and it is visually monitored during the draining operation.

QUESTION

The following Plant conditions exist:

- A LOCA outside Containment has occurred 15 minutes ago at 0130
- The Shift Manager has declared a SITE EMERGENCY
- The faulted line was manually isolated locally, however the NAO performing the task was injured and CANNOT leave the area on his own
- Initial dose estimates for the area are 90 R/hr primarily due to gamma radiation

If the EPA guideline (Emergency) limits are NOT exceeded voluntarily, what is the maximum stay time allowed to rescue the NAO?

- A. 3-4 minutes
- B. 6-7 minutes
- C. 16-17 minutes
- D. Rescue would NOT be allowed.

QUESTION

The following Plant conditions exist:

- Discharge is in progress from Waste Condensate Tanks.
- R-18, Waste Discharge Liquid radiation monitor, fails off-scale high.

Which of the following actions is NOT required prior to reinitiating the release?

Technically qualified members of the Facility Staff must...

- A. complete TWO independent verifications of the discharge line valving.
- B. perform TWO independent verifications of the release rate calculations.
- C. analyze TWO independent samples from the tanks for gamma and tritium.
- D. establish TWO independent locations for taking grab samples during the release.

**RO Exam Number**  
48

**Record Number**  
049

QUESTION

Which of the following is ONE (1) of the requirements for maintaining the Reactor and Control Room Log?

- A. The Shift Manager shall initial all late entries.
- B. At the end of each shift the Control Room Supervisor shall review and sign the Reactor and Control Room Log.
- C. shall include the time in core life, i.e.: MWD/MTU.
- D. All entries shall be in non-smearable black ink.

**RO Exam Number**  
49

**Record Number**  
050

QUESTION

While performing N-HD-11, "Heater and Moisture Separator Drain and Bleed Steam System", to start a second Heater Drain Pump, the procedure directs the operator to "VERIFY that the Heater Drain Pump Demand is at MINIMUM" before the pump is started.

What action should the NCO take if the Demand is reading 20% when he is performing the step?

- A. Leave the speed as found and start the pump.
- B. Adjust the speed to minimum and then start the pump.
- C. Do a temporary change to the procedure to add a step to reduce the speed to minimum and then start the pump.
- D. Contact the Control Room Supervisor and the Superintendent – Plant Operations and if they concur, adjust the speed to minimum and then start the pump.

**RO Exam Number**  
**50**

**Record Number**  
**051**

QUESTION

Which ONE (1) of the following circumstances would require an Independent Verification?

- A. A CVCS valve needs to be throttled 25% open.
- B. An RCS valve within a locked high radiation area must opened.
- C. An AFW valve needs to be shut when the TD AFW pump is returned to service.
- D. The Containment isolation valves are being returned to their normal position after the ILRT during a refueling outage.

**RO Exam Number**  
**51**

**Record Number**  
**052**

QUESTION

The following Plant conditions exist:

- Reactor power is 1320 MWt.
- RCS pressure is in the normal operating band.

Which ONE (1) of the following RCS average temperatures would FIRST result in exceeding a safety limit?

- A. 594°F
- B. 616°F
- C. 627°F
- D. 636°F

**RO Exam Number**  
**52**

**Record Number**  
**053**

QUESTION

Which of the following conditions would require the suspension of all core alterations per Technical Specifications during refueling operations?

- A. The primary coolant system boron had an inadvertent dilution to 1900 ppm.
- B. One of the personnel airlock doors is broken and CANNOT be closed.
- C. The Shift Manager leaving the Control Room for the Morning Meeting.
- D. A review of the RO log indicates that RHR Pumps have been secured for 30 minutes.

**RO Exam Number**  
**53**

**Record Number**  
**054**

QUESTION

The following Plant conditions exist:

- Plant is in Cold Shutdown with RCS temperature at 140°F
- RHR is in service
- Refueling preparations are in progress
- Containment integrity is NOT required
- Containment purge is in progress using the 36" RBV valves.
- R-11 is out of service for filter drive motor replacement
- R-12 has just failed low

Which ONE (1) of the following describes the plant/operator response to this failure?

- A. NO effect, remove R-12 from service, and continue purge.
- B. NO effect, remove R-12 from service, and stop purge until R-12 returned to service.
- C. Containment Vent Isolation occurs stopping the purge, Shift R-21 to vent stack, and restart purge.
- D. Containment Vent Isolation occurs stopping the purge, purge can be restarted when R-11 or R-12 is returned to service.

**RO Exam Number**  
**54**

**Record Number**  
**055**

QUESTION

Which of the following would violate the principle of ALARA?

- A. Identify the hot spots in the area beforehand.
- B. Do a dry run at the job site.
- C. Identify areas where portable shielding should be installed.
- D. Flush a pipe in the job area.

**RO Exam Number**  
**55**

**Record Number**  
**056**

QUESTION

The following Plant conditions exist:

- A small fire occurs in the control room
- The fire is quickly brought under control
- The plant is stable
- The main control room is habitable
- Fire damage is limited to the Moveable In-core Detector System

Which ONE (1) of the following procedures will be the plant CONTROLLING PROCEDURE?

- A. Fire Plan Procedures
- B. E-FP-08, Emergency Operating Procedure – Fire
- C. E-06, Fire in Alternate Fire Zone
- D. E-07, Fire in Dedicated Fire Zone

**RO Exam Number**  
**56**

**Record Number**  
**057**

QUESTION

How would the NCO determine that annunciator power was lost due to a problem with the power supply?

- A. Check the operating status of the Plant Computer.
- B. The Annunciators fail to light when TEST pushbutton is depressed.
- C. Receive report that 125V DC Bus voltage is 115 volts.
- D. LOSS OF ANNUNCIATOR POWER annunciator is in alarm.

**RO Exam Number**  
**57**

**Record Number**  
**058**

QUESTION

Which ONE (1) of the following is indication that the Reactor Coolant Pump interlock with its Oil Lift Pump is satisfied?

- A. The Oil Lift Pump breaker is CLOSED providing the RED Oil Lift Pump light.
- B. Oil Lift pressure is greater than 600 psig providing the RED Oil Lift Pump light.
- C. The Oil Lift Pump has been timed ON for 2 minutes providing the RED Oil Lift Pump light.
- D. The Oil Lift Pump has been timed ON for 2 minutes AND Oil Lift pressure is 600 psig providing the RED Oil Lift Pump light.

**RO Exam Number**  
**58**

**Record Number**  
**059**

QUESTION

Which ONE (1) of the following statements describes the conditions that must be met prior to starting a reactor coolant pump (RXCP) with any of the loop cold leg temperatures less than 200° F?

The secondary water temperature of each Steam Generator must be ...

- A. <75°F above each of the RCS cold leg temperatures.
- B. <100°F above each of the RCS cold leg temperatures.
- C. <125°F above each of the RCS cold leg temperatures.
- D. <150°F above each of the RCS cold leg temperatures

**RO Exam Number**  
**59**

**Record Number**  
**060**

QUESTION

The following Plant conditions exist:

- Control Rod G11 indication is at 195 step with the remainder of Bank D at 205 steps.
- Bank D Group step counter is at 205 steps
- I&C reports a 2.966 volt DC reading for Rod G11 Conditioning Module voltage.
- "UPPER QUADRANT POWER TILT RATIO HIGH" is in alarm
- The Plant is operating at 87%

If the indicated quadrant tilt is determined to be 1.10, what actions are required?

- A. Eliminate the tilt OR restrict maximum power level to 2% for every percent of indicated power tilt ratio greater than 1.0.
- B. Eliminate the tilt within 24 hours or reduce power to 50% or lower.
- C. The Reactor shall immediately be brought to less than or equal to 5% power.
- D. Within 30 minutes correct the tilt or reduce the reactor power to less than or equal to 50%.
- E.

**RO Exam Number**  
**60**

**Record Number**  
**061**

QUESTION

The basis for maintaining S/G levels at 33% during a Natural Circulation Cooldown is to:

- A. Prevent thermal shock to the S/G tube bundle
- B. Provide a stable heat sink for decay heat removal
- C. Conserve inventory in the condensate storage tanks during the cooldown
- D. Maintain the cooldown rate in the RCS cold legs to less than 25 degrees per hour

**RO Exam Number**  
**61**

**Record Number**  
**062**

QUESTION

The following Plant conditions exist::

- The Plant is at 100% steady state power.
- Current RCS boron concentration is 1049 ppm.
- Due to an urgent failure, control rods are currently inoperable.

The following events occur:

- RCS has been inadvertently diluted with 480 gallons of Makeup water.
- Subsequently, emergency boration is established at 80 gpm .

Which ONE (1) of the following is closest to the needed duration of emergency boration to return Tave to its original value?

- A. 1/2 minute
- B. 2 minutes
- C. 4 minutes
- D. 8 minutes

QUESTION

The following Plant conditions exist:

- Plant is operating at 35% power.
- Ramping up to 100%.
- PS-1A/CV-31112, Loop A PRZR Spray Valve, is stuck OPEN.
- PRZR pressure is decreasing.
- PRZR Heaters are verified as energized.

An Operator takes manual control of valve PS-1A/CV-31112, Loop A PRZR Spray Valve, and is unable to close it. What action(s) shall be taken to terminate the pressure reduction caused by the spray valve failure?

- A. Trip the Reactor, trip Reactor Coolant Pump A and Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- B. Initiate Safety Injection, trip Reactor Coolant Pump A and Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- C. Trip the Reactor, trip Reactor Coolant Pump A and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- D. Trip the Reactor, trip Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".

QUESTION

Which ONE (1) of the following has its status indication on the Dedicated Shutdown Panel?

- A. Containment pressure
- B. Containment Fan Coil Unit 1A
- C. Main Turbine Trip
- D. Containment spray pump B

**RO Exam Number**  
64

**Record Number**  
065

QUESTION

The following Plant conditions exist:

- Reactor Trip and Safety Injection actuates.

The Operators determine that window box "SEAL WATER LEAKOFF CVC-211" is NOT LIT. All other required lights are LIT.

What Operator action, if any, shall be taken to close the CVC-211, RXCP Seal Return Isolation valve?

- Manually depress the Safety Injection Initiation Push Buttons for both trains.
- Manually depress the Containment Isolation Push Buttons for both trains.
- Manually close CVC-211, RXCP Seal Return Isolation Valve.
- NO action required if CVC-212, RXCP Seal Return Isolation Valve, is closed.

**RO Exam Number**  
65

**Record Number**  
066

QUESTION

An Alternate Shutdown is in progress due to a fire in the Cable Spreading Room. An immediate Control Room evacuation was required and entry into E-0-06, "Fire in Alternate Fire Zone".

During the performance of E-0-06, the performance of which of the following would stop the Feedwater and Condensate pumps?

- De-energizing buses 1 and 2 by the Control Operator B; Buses 3 and 4 by the CRS.
- Manually tripping Main FW and Condensate pumps prior to evacuating the Control Room.
- Energizing the 4160v and 480v Dedicated Shutdown Electrical system causing a load shed.
- NO Action is taken for Non-Vital electrical power because the loss of off-site power is assumed.

QUESTION

The following Plant conditions exist:

- The plant was operating at 100% power.
- A small break LOCA occurred.
- FR-C.1, "Response to Inadequate Core Cooling", is in progress.
- The crew was unable to start any SI pump.
- RHR pump A is NOT running.
- RHR pump B is running with zero flow.
- PRZR level is off-scale low.
- RVLIS is indicating 0%.
- RXCP "A" is running.
- SI Accumulators have been isolated.

The crew is preparing to depressurize the SGs to atmospheric pressure. Select the statement that explains what should be done concerning RXCP "A" at this point in the procedure.

- A. Leave the RXCP running regardless of plant conditions.
- B. Leave the RXCP running until the SGs have been depressurized to atmospheric.
- C. Trip the RXCP only if a high temperature alarm occurs on the pump.
- D. Trip the RXCP due to the anticipated loss of #1 seal requirements.

QUESTION

The crew is performing FR-C.2, "Response To Degraded Core Cooling", in response to an orange condition on Core Cooling. They are depressurizing the RCS to 210 psig when the STA informs the CRS that there is a red path condition on Integrity.

Which of the following actions should be done and for what reason in response to this information?

- A. Continue in FR-C.2, "Response To Degraded Core Cooling", because Core Cooling is a higher priority than Integrity.
- B. Immediately transition to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", because a red path overrides an orange path.
- C. Transition to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", when the RCS is at 210 psig because it is important to complete this particular step before the transition is made.
- D. Continue in FR-C.2, "Response To Degraded Core Cooling", because the RCS depressurization intentionally caused the red path on Integrity and it would be counter-productive to perform FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition".

QUESTION

Given that a loss of reactor coolant has occurred. What advantage is there to performing a saturated recovery as opposed to performing a subcooled recovery?

- A. It is easier to monitor RCS inventory with a saturated recovery.
- B. Pressure control is easier with a saturated recovery.
- C. RCS leakage is reduced with a saturated recovery.
- D. A saturated recovery provides greater margin to core uncover than a subcooled recovery does.

QUESTION

The following Plant conditions exist:

Steam Generator A is FAULTED and FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", has been entered.

- A soak is required by FR-P.1
- All plant equipment was in a normal lineup and operable prior to the event.

Which of the following failures, if they occurred, would have a negative impact of the RCS soak?  
(Assume NO operator action)

- A. PT-419, RCS Pressure Wide Range, fails off scale HIGH.
- B. PT-449, Pressurizer Pressure, fails off scale LOW.
- C. S/G B Outlet Pressure Switch (PS-16113) failure to HIGH pressure position.
- D. AFW Pump A TRIP on low discharge pressure.

QUESTION

The following Plant conditions exist:

- A natural circulation cooldown is in progress per ES-0.2, "NATURAL CIRCULATION COOLDOWN".
- The operator has established a stable 25°F / hour cooldown rate.
- It is estimated that average AFW flow rate for the cooldown will be 200 gpm.
- It is estimated that average AFW flow rate to maintain Hot Shutdown for 24 hours would be 100 gpm.
- CSTs currently have 50,000 gallons available and Makeup water is limited to a total of 60 gallons per minute.
- Current RCS temperature is 547°F.

Which ONE (1) of the following describes the appropriate procedural actions?

- A. Stop the cooldown and remain in ES-0.2 until CST level is recovered.
- B. Increase the cooldown rate and remain in ES-0.2 until Cold Shutdown is reached.
- C. Transition to ES-1.3, TRANSFER TO CONTAINMENT SUMP RECIRCULATION, when CST is <4% level.
- D. Transition to ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL and increase the cooldown rate.

QUESTION

The following Plant conditions exist:

- A natural circulation cooldown is in progress per ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel
- A steam bubble exists in the head region.
- Prior to the event the plant was in a normal at power lineup.
- LT-427, PRZR Level (Channel II), failed low TWO (2) minutes ago.

PRZR level would ...

- A. increase due to the loss of PRZR Heaters and Letdown.
- B. remain the same due to the continued Charging flow and loss of Letdown.
- C. decrease due to the collapsing steam bubble.
- D. remain the same due to LT-428 being the controlling channel.

QUESTION

The following Plant conditions exist:

- The Plant was operating at 100% power.
- An earthquake resulted in a rupture of the Main Steam Header A.
- The operating crew was unable to close either MSIV and transitioned to ECA-2.1, "UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS".

The Auxiliary Operator reports MS-1A was closed locally.  
The RO observes S/G A and S/G B pressures are NOT increasing.

Based on the above information, the operating crew should:

- A. Transition to E-2, "FAULTED STEAM GENERATOR ISOLATION".
- B. Transition to E-3, "STEAM GENERATOR TUBE RUPTURE".
- C. Remain in ECA-2.1, "UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS".

D. Transition to ES-1.1, "SI TERMINATION".

QUESTION

The following Plant conditions exist:

- Operators are performing ECA 2.1, "Uncontrolled Depressurization of All Steam Generators."
- Cooldown rate is 125 degrees per hour.
- Narrow range Steam Generator levels are off scale LOW.
- AFW flow on A and B Steam Generators indicates 100 gpm each.

Which of the following is the appropriate action to take?

- A. Adjust AFW flow to 60 gpm on each Steam Generator.
- B. Adjust AFW flow to 0 gpm on each Steam Generator.
- C. Do NOT adjust AFW flow to insure that heat sink criteria are maintained.
- D. Transition to E-2, "FAULTED STEAM GENERATOR ISOLATION".

QUESTION

One (1) Shutdown Bank A rod has fallen into the core. A Dropped Rod Recovery is in progress per E-CRD-49C, "Dropped Rod". Rod recovery has commenced and an "Rod Control Urgent Failure" alarm is present.

Which of the following explains why the urgent failure alarm is received?

- A. There is NO master cyclor input for Shutdown Bank A.
- B. Shutdown Rods receive NO input from the bank overlap unit.
- C. Shutdown Rods have NO multiplexing thyristors.
- D. There are two groups of rods in Shutdown Bank A.

QUESTION

The plant is at 100% power when Rod K-9 drops into the core without generating a Negative Rate Trip.

Consider the changes in the following parameters:

	<u>BEFORE</u>	<u>AFTER</u>
N-41	100%	101%
N-42	100%	101%
N-43	100%	103%
N-44	100%	95%
Tave	559°F	559°F
RCS Pressure	2235 psig	2230 psig

What is the concern with these parameters?

- A. Due to the constant Tave, Hot Channel Factor in a channel may exceed Tech. Spec. Limits
- B. Due to the difference in power readings, the NIs will need to be adjusted.
- C. The shadow effect of K-9 may effect the Reactor Protection capabilities.
- D. These are expected parameters for a dropped rod and only the dropped rod is of concern

QUESTION

The following Plant conditions exist:

Pressurizer PORVs have OPENED and the accelerometers indicate PR-3A, Pressurizer Safety, has also OPENED due to a pressure transient.

- A Reactor TRIP has occurred.
- PRESSURIZER PORV DISCHARGE TEMP HIGH is in alarm
- PRESSURIZER SAFETY DISH TEMP HIGH is in alarm

Pressurizer level and pressure have been recovered.

Which of the below indications are used to determine that the Pressurizer Safeties and PORVs have CLOSED and are NOT leaking?

- A. The Red light closed indications on the PORVs are ON and accelerometers for PR-3A have cleared.
- B. The Green light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared and PORV Outlet TI-438 is holding stable at 300°F and Safety A Outlet TI-436 is stable at 289°F.
- C. The Red light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared and PORV Outlet TI-438 is at 250°F, and Safety A Outlet TI-436 is at 253°F.
- D. The Green light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared, PORV Outlet TI-438 is less than 200°F, and Safety A Outlet TI-436 is less than 200°F.

QUESTION

The following Plant conditions exist:

- The plant was tripped from 100% power
- A small break LOCA has occurred after the trip
- One train of Safety Injection is available and has started

How would voiding in the core affect the SUBCRITICALLY Critical Safety Function indicator on the SAS Unit?

- A. Intermittently flash ORANGE
- B. Indicate solid YELLOW
- C. Intermittently flash RED
- D. Indicate solid ORANGE

QUESTION

Which ONE (1) of the following statements explains the importance of a secondary heat sink as it relates to a Loss of Coolant Accident?

- A. In response to a small break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase but it is NOT important during the reflux boiling phase.
- B. In response to a small break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase and during the reflux boiling phase.
- C. In response to a large break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase but it is NOT important during the reflux boiling phase.
- D. In response to a large break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase and during the reflux boiling phase.

QUESTION

A Large Break LOCA (DBA) has occurred approximately 2 minutes ago, which ONE (1) of the following describes the expected conditions of the pumps?

- A. SI and RHR pumps running and injecting into the RCS, ICS pumps OFF
- B. SI pumps running and injecting into the RCS, RHR pumps running, ICS pumps OFF
- C. SI pumps running and injecting into the RCS, RHR and ICS pumps running
- D. SI and RHR pumps running and injecting into the RCS, ICS pumps running

QUESTION

The following Plant conditions exist:

- The plant is in cold shutdown (Shutdown for 3 days) with RHR cooling in progress.
- Pressurizer level is 30% with the RCS intact.
- Both S/G WR levels are 65%.
- The RCS is depressurized.
- Buses 1 and 2 are deenergized for maintenance.

RHR flow is lost and CANNOT be restored. Which ONE (1) of the following methods of cooling will be utilized to remove the core decay heat?

- A. Feed S/Gs with AFW and open SG PORV(s) to remove decay heat.
- B. Start a RXCP and open S/G PORV(s) to remove decay heat.
- C. Maximize charging flow to the RCS and use letdown to remove decay heat.
- D. Align an SI pump to inject into the vessel and open a PZR PORV for heat removal.

QUESTION

The following Plant conditions exist:

- The crew is initiating Emergency Boration in response to an ATWS.
- RCS pressure is 2335 psig.
- CVC-11, Charging Line Isolation, has failed CLOSED.

Which of the following actions would maximize negative reactivity and minimize the addition of positive reactivity being added to the RCS?

- A. Place Steam Dump Controller to Manual and open the steam dumps.
- B. Raise AFW flow to 500 gpm and fill all Steam Generators to 5% narrow range level.
- C. Verify Pressurizer PORV Block valve OPEN and VERIFY/OPEN a Pressurizer PORV.
- D. LOWER Charging flows to 40 gpm and RAISE Letdown flow to 80 gpm by placing TWO (2) Letdown Orifices in service.

QUESTION

The following Plant conditions exist:

- Reactor power is 100%
- Reactor Trip Breaker testing is being performed with Reactor Trip Bypass Breaker A (52/BYA) RACKED IN and CLOSED
- BOTH Reactor Trip Breakers (52/RTA and 52/RTB) are CLOSED
- Then the Electrician RACKS IN and CLOSES Reactor Trip Bypass Breaker B (52/BYB)
- Breakers 52/RTB and 52/BYA OPEN

Which of the following describes the response to this condition?

The reactor is...

- A. NOT tripped, and the NCO should manually trip the reactor.
- B. NOT tripped as this is the expected response when 52/BYB was closed.
- C. tripped and the NCO should direct the NAO to locally open both 52/RTB and 52/BYB.
- D. tripped and the NCO should manually trip the reactor as directed by E-0 "Reactor Trip Or Safety Injection".

QUESTION

Which ONE (1) of the following is the expected plant response to a failure of Instrument Bus I, BRA-113, if the reactor is operating at 10E3 cps?

- A. Immediate automatic reactor trip.
- B. NO immediate concern, dispatch electrician to investigate.
- C. A rod stop would occur and by-passing the affected NI channel would be required.
- D. Manual control of affected equipment would be required to prevent a reactor trip.

QUESTION

The following Plant conditions exist:

- Plant Startup is in progress.
- Intermediate Range N-35 is OUT-OF-SERVICE.
- Reactor power is at 4%.
- The power supply for the N-36 detector failure occurs reducing detector voltage by 50%.

What Operator action shall be taken?

- A. Maintain present Plant conditions until one of the Intermediate Range Instruments is returned to service.
- B. Shutdown the Reactor per OP N-CRD-49C, "Reactor Shutdown", and maintain HOT SHUTDOWN conditions.
- C. Trip the Reactor and perform IPEOP E-0, "Reactor Trip or Safety Injection".
- D. Continue the Plant Startup and bypass N-36.

QUESTION

During which ONE (1) of the following conditions is ES-0.0, "Rediagnosis," approved for use based on operator judgment?

- A. After transition to E-3, "Steam Generator Tube Rupture."
- B. During the performance of ES-0.2, "Natural Recirculation Cooldown," due to loss of offsite power when a twenty (20) gpm Steam Generator tube leak is detected.
- C. During the performance of E-1, "Loss of Reactor or Secondary Coolant," when a RED path is detected in Heat Sink.
- D. After transition to ES-0.1, "Reactor Trip Recovery," following an inadvertent reactor trip.

**RO Exam Number**  
86

**Record Number**  
087

QUESTION

Why is SI-5A/MV-32107, SI Pump A Suction Isolation valve, closed prior to opening RHR-299A/MV-32134, Residual Heat Exchanger Outlet to Safety Injection Pump A valve, during the recirculation phase of a LOCA?

- A. Reduces system pressure to the SI Pump suction header resulting in increased SI flow due to decreased RHR Pump NPSH requirement.
- B. Prevents tripping of the SI pumps on high discharge flow rate resulting from increased SI Pump recirculation flow.
- C. Protects the SI Pump discharge header from overpressurization if the RHR pump was aligned to the RCS hot leg.
- D. Prevents the RHR Pump from recirculating contaminated Sump water directly to the RWST.

**Record Number**

**RO Exam Number**  
87

**088**

QUESTION

The plant is at 100% power with following equipment out of service:

- Turbine Drive AFW pump
- Safety Injection pump "A"

A small break LOCA occurs resulting in a reactor trip and safety injection. The crew is using E-0, Reactor Trip or Safety Injection, and the following conditions are noted.

- A bus lockout occurred on bus 6
- Flow from AFW pump "A" is 100 gpm and CANNOT be increased
- S/G NR Level is reading 0% on both S/G
- CNTMT pressure is 8 psig
- CETs are reading 690°F

To which ONE (1) of the following procedures should the crew transition when leaving E-0?

- A. E-1, Loss of Reactor or Secondary Coolant, to mitigate the LOCA.
- B. FR-H.1, Response to Loss of Secondary Heat Sink, to restore the heat sink.
- C. FR-C.2, Response to Degraded Core Cooling, to reestablish core cooling.
- D. ECA-0.0, Loss of All AC Power, to restore power to bus 6.

QUESTION

Following a LOCA the crew is using ECA-1.1, Loss of Emergency Coolant Recirculation, because both trains of recirculation have become unavailable. Safety Injection Pump B was stopped as required by the procedure. The crew is now evaluating the plant conditions to determine if SI flow can be terminated.

- The requirement to terminate SI is 80°F subcooling.
- The current subcooling is 68°F.

What action, if any, should be taken in response to this information?

- A. NO action should be taken until subcooling increases to 80°F at which point Safety Injection Pump A should be stopped.
- B. Locally throttle SI-7A, SI Pump Discharge Isolation Valve, to the flow rate determined to be adequate by using the table ECA-1.1-1, Required SI Flow Rate vs. Time After Trip.
- C. Manually shut SI-9A, SI to RCS Cold Legs until subcooling drops to 30°F then reopen SI-9A.
- D. Manually restart Safety Injection Pump B.

QUESTION

The following Plant conditions exist:

A LOCA has occurred

- The crew is performing cooldown as directed by ES-1.2 " Post LOCA Cooldown And Depressurization"
- ECCS Pumps are still operating in injection phase
- The ICS system has been stopped
- TWO Containment Cooling Fan Coil Units are running
- Containment pressure is stable at 2.2 psig
- The CRS transitions to FR-Z.3 "Response to High Containment Radiation Level" in response to a YELLOW path condition

What action does the CRS direct in FR-Z.3 in order to reduce Containment radiation levels?

- A. The idle Containment Cooling Fan Coil Units are started.
- B. A RHR Pump is started and aligned to supply the associated ICS header.
- C. An ICS Pump is started and its associated discharge isolation valves are opened.
- D. ONE train of venting and filtering Containment atmosphere through Shield Building Vent is initiated.

QUESTION

The Unit is at 100% with all systems in a normal at power lineup when IA-101, Instrument Air to Containment Isolation, is inadvertently CLOSED and NOT RE-OPENED. A small air leak exists in the air header. If air pressure is NOT restored to Containment, which of the following will cause a Reactor Trip? (Assume NO Operator Action)

- A. High pressurizer level caused by Letdown isolation
- B. Low S/G level caused by S/G Main Feed Reg. Valves closure
- C. Low Pressurizer pressure caused by PRZR PORVs opening
- D. Main Steam Isolation Valves coming off the open seat ( $>4^\circ$  .)

QUESTION

While executing bleed and feed steps of FR-H.1, the following plant conditions exist:

- S/G A is faulted with NO indicated level on Wide Range Yarway
- S/G B is intact and its Wide Range Yarway reads 7%
- RCS hot leg temperatures are currently 563°F in both loops and decreasing
- Turbine Driven AFW pump was just made available

Which ONE (1) of the following would be the correct actions to take to establish a secondary heat sink?

- A. Feed S/G A at less than 100 gpm concurrent with feed and bleed until RCS hot leg temperatures are less than 550°F, and then establish feed to S/G B at less than 100 gpm.
- B. Stop the bleed and feed, feed S/G B at less than 100 gpm until RCS hot leg temperatures are less than 550°F and then feed S/G B at maximum rate.
- C. Maintain bleed and feed until RCS hot leg temperatures are less than 550°F and then feed S/G B at maximum rate.
- D. Maintain bleed and feed and establish Feedwater flow to S/G B, then stop bleed and feed when S/G B narrow range level is greater than 4%.

**RO Exam Number**  
92

**Record Number**  
093

QUESTION

Which of the following would require the operator to MANUALLY initiate Containment Evacuation Alarm?

- A. N-31 counts increasing by one decade during core alterations.
- B. R-30, Rx Cavity C, in alarm.
- C. R-21, Containment Vent, failing HIGH.
- D. Loss of Refueling Cavity level control.

**RO Exam Number**  
93

**Record Number**  
101

QUESTION

You are currently in ECA-0.0 "Loss of All AC Power".

The battery would be considered completely discharged when it reaches which ONE (1) on the following?

- A. Battery bus voltage of 90 volts DC.
- B. Battery bus voltage of 100 volts DC.
- C. Battery bus voltage of 105 volts DC.
- D. Battery bus voltage of 110 volts DC.

QUESTION

There has been a major Service Water break in the Containment which has been secured but left two (2) feet of water as indicated by the Containment Wide Range Level Indicators on the Containment floor. Why would this existing water level be a concern?

- A. In the event of a steam line break and a LOCA in the Containment the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design flood level of the Containment thus possibly causing the loss of equipment needed during the accident.
- B. In the event of a Feedwater Line Break in the Containment the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design flood level of the Containment thus causing a higher than design peak Containment pressure during an accident.
- C. In the event of a steam line break in the Containment and associated Steam Generator tube rupture the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design level of the Containment thus causing a higher than design peak Containment pressure during an accident.
- D. The additional water is of NO concern because the water in Containment Sump B can be pumped out with the RHR Pumps.

QUESTION

Which ONE (1) of the following correctly identifies the MCCs that supply power to the heaters in Boric Acid Storage Tanks (BAST) A and B?

- A. MCC 52A supplies the heaters in BAST A, MCC 62D supplies the heaters in BAST B.
- B. MCC 52B supplies the heaters in BAST A, MCC 62E supplies the heaters in BAST B.
- C. Both MCCs 52A and 62D supply heaters in BAST A and in BAST B.
- D. Both MCCs 52B and 62E supply heaters in BAST A and in BAST B.

**RO Exam Number**  
96

**Record Number**  
104

QUESTION

The plant is operating at 100% power with all systems in their normal lineup. A fire occurs in the vicinity of the BA Evaporator Control panel, which results in a loss of MCC 52E. The fire is quickly extinguished.

Which ONE (1) of the following explains an operational impact of this information?

- A. If Emergency Boration was required, the Immediate Actions could NOT be accomplished.
- B. If Main Feedwater Isolation was required, it would NOT occur automatically.
- C. PR-1A Pressurizer PORV Block valve could NOT be used to isolate a leaking PORV.
- D. If an SI occurs, the suction from the RWST to Safety Injection Pump A would be lost.

**RO Exam Number**  
97

**Record Number**  
105

QUESTION

The plant is operating at 100% power with all systems in their normal lineup. Which ONE (1) of the following could cause a reactor trip and Safety Injection actuation? Assume NO operator action.

- A. TE-401, Reactor Coolant Tave (Red Channel), fails LOW.
- B. PT-431, Pressurizer Pressure (Blue Channel), fails HIGH.
- C. TRIP of both Main Feed Pumps.
- D. Main Generator TRIP.

QUESTION

The reactor has been recently started up following a refueling outage. Which ONE (1) of the following power range indications should be expected during the power escalation?

- A. Indicated power will be higher than actual power if fouling on Main Turbine blades had been reduced during the outage.
- B. Actual power will be higher than indicated power because of the gain adjustments that would have been made prior to the refueling outage.
- C. Indicated power will be higher than actual power because of the closer coupling between the core and the power range detectors following the refueling outage.
- D. Actual power will be higher than indicated power because of the boron depletion that will have occurred during the refueling outage.

QUESTION

Which ONE (1) of the following radiation monitoring functions would be lost if R-40 and R-41 were out of service when a Loss of Reactor Coolant occurred in Containment?

- A. It would NOT be possible to use radiation monitors to detect fuel damage.
- B. It would NOT be possible to use radiation monitors to determine whether the RCS is intact inside Containment.
- C. RCS leak rate could NOT be calculated using the radiation monitoring method prescribed in Technical Specifications.
- D. It would NOT be possible to determine if the RCS pressure instruments had been adversely affected by Containment radiation.

QUESTION

Inoperability of which ONE (1) of the following instruments would require the reactor to be shut down based on NOT having adequate Accident Monitoring Instrumentation available?

- A. SG PORV valve position
- B. SI flow meter
- C. Source Range N-31 Indication
- D. Containment Hydrogen Monitor

### Kewaunee May 2001 RO Written Examination

Record	Exam	K/A #	Reference	Answer
001	1	001A2.07	OP E-CRD-49C	B
002	2	001K5.85	Rx Data Manual 9.1.2, 9.2, 5.1.1.1	B
003	3	013K6.01	A-MI-87, XK100-150	A
004	4	015A1.03	RE-11, SP87-125	D
005	5	017K4.02	A-CRD-49B, Rx Data Man. RD-14.1	C
006	6	017K5.03	KNPP IPEOP Background Documents Vol. 1 E-1	D
007	7	022K3.01	USAR 6.3, System Description 18, M602	D
009	8	059A4.12	E-1625	A
010	9	059A4.08	System Description 05A, XK100-554	B
011	10	056K1.03	System Description 05A, Dwg. E-1624	C
012	11	061K4.06	E1602	D
013	12	061K6.02	M-205, SYS DESC CHAP 05B	A
014	13	068 2.4.50	A-RM-45	D
015	14	010K5.02	Steam tables	C
016	15	010K1.05	System Description 36	D
017	16	071A3.02	SYS DESC CHAP 32B, N-GWP-32B,	A
018	17	071K1.06	SYS DESC CHAP 32B, N-GWP-32B,	B
019	18	072K3.02	N-FH-53-CLD,	B
020	19	002K5.09	STEAM TABLES	C
021	20	011A4.01	1) XK100-155, XK100-154	B
022	21	012A2.05	TS Section 2.3	A
023	22	012K2.01	USAR 7.2	C
024	23	014A1.04	ARP 47042-Q; Kewaunee Core Control Theory	B
025	24	055 2.1.27	System Description 09	C
026	25	063K4.01	E3626	C
027	26	062A3.04	System Description 38, E233, 47102-D	C
028	27	075A2.03	System Description 04. E-AR-09, E-CW-04	C
029	28	079K1.01	E2097	A
030	29	086K6.04	System Description 08, E1619	C

### Kewaunee May 2001 RO Written Examination

Record	Exam	K/A #	Reference	Answer
031	30	086A1.01	E1619	C
032	31	005K2.03	E417, E2890, XK100-18	B
033	32	005A1.02	E2036, XK100-18	B
034	33	026K2.01	E240, T.S. 3.3.c.1.A.1	D
035	34	029K3.01	E1609, M602	D
036	35	062A1.01	N-DGM-10A	C
037	36	073K3.01	A-RM-45, N-RBV-18B	A
038	37	073K4.01	A-RM-45	D
039	38	063A3.01	A-EDC-38, N-EDC-38, SysDes 38	C
040	39	007K3.01	E-3 Bckgrnd Doc Step 20, Caution 1,	C
041	40	034A4.02	E-2051-2, SP 48-287A-1	A
042	41	041K1.06	System Description 06	A
043	42	041K5.01	Steam Table, System Description 06	A
044	43	045K4.13	E2059, XK101-24,	A
045	44	076A2.01	E-SW-02	B
046	45	2.2.30	N-FH-53E, Technical Specifications 3.8.3	D
047	46	2.3.4	EP-AD-11	C
048	47	2.3.11	SP 32A-136, Offsite Dose Calculation Manual 3-2,	D
049	48	2.1.18	NAD 3.6	D
050	49	2.1.20	GNP 3.2.1	B
051	50	2.1.29	NAD 3.9	C
052	51	2.2.25	Tech. Spec. Figure 2.1-1	C
053	52	2.2.27	Tech. Spec. 3.8	A
054	53	2.3.9	ODCM 2.1, A-RM-45, N-RBV-18B	A
055	54	2.3.10	HP-4.01	B
056	55	2.4.27	E-FP-08	B
057	56	2.4.32	A-SER-52B	B
058	57	003A3.05	E2037	B

**Kewaunee May 2001 RO Written Examination**

<b>Record Exam</b>	<b>K/A #</b>	<b>Reference</b>	<b>Answer</b>
059	58	003 2.2.22 N-RC-36A	B
060	59	005AK1.01 Tech Spec 3.10-C.4, Rx Data Man. RD-14.1	C
061	60	015AK3.07 ES-0.2 Background Document	B
062	61	024AK1.01 RD 2.2.9	A
063	62	027AK3.03 E-0, E-0 Background Document	C
064	63	068AK2.01 E3175	B
065	64	069AK3.01 E-0	C
066	65	068AA1.27 E-0-06	A
067	66	074EK3.04 FR-C.1 Background Document	D
068	67	E06 2.4.48 FR-C.2 Background Document	D
069	68	E07EK1.2 ECA-3.1 Background Document, step 14	C
070	69	E08EK2.2 E1627	C
071	70	E10EA2.2 ES-0.2, ES-0.2 Background Document	D
072	71	E10EA1.1 E2039, ES-0.3 Background Document	C
073	72	E12EA1.3 ECA 2.1Background Document, M203, ECA-2.1	C
074	73	E12EK2.1 ECA 2.1, ECA 2.1 Background Document	A
075	74	003AK2.05 E-CRD-49C, System Description 049	D
076	75	003AK3.07 TS-2.1 Basis	A
077	76	008AA1.07 A-RC-36D	D
078	77	009EA1.10 Mitigating Reactor Core Damage Page 6-1	A
079	78	011EK1.01 FR-H.1Background Document, E-1Background	B
080	79	011EK2.02 USAR 6.2.2, 14.3.2, 14.3.4	D
081	80	025AK1.01 A-RHR-34	A
082	81	029EK1.03 FR-S.1 Background Document	C
083	82	029EK2.06 System Description 47, XK100-144	A
084	83	032AK1.01 System Description 48, page 3	A
085	84	033AK1.01 A-NI-48, System Description 48	B
086	85	E01 2.1.23 ES-0.0	A
087	86	E03EK2.1 System Description 33, E2032	D

### Kewaunee May 2001 RO Written Examination

Record Exam	K/A #	Reference	Answer	
088	87	E05EA2.1	E-0, E-0 QRF	B
089	88	E11EK2.2	ECA-1.1	B
090	89	E16EK3.3	FR-Z.3, FR-Z.3 Background Document	A
091	90	065AK3.03	XK100-10	A
092	91	E05EA1.1	FR-H.1 Background Document	D
093	92	036AK3.01	E-FH-53B	D
101	93	055EA1.05	USAR 8.2-6	C
102	94	E15EK2.2	FR-Z.2 Background Documents	A
103	95	004K2.04	System Description 35	D
104	96	004K2.05	E-CVC-35, E418	A
105	97	013A2.03	XK-100-154	B
106	98	015A1.06	Kewaunee Core Control Theory, System Desc	B
107	99	072 2.1.32	EPIP-AD-02, E2021	D
108	100	2.4.3	TS Table 3.5-6	D

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

**Applicant Information**

Name: MASTER EXAMINATION	Region: III
Date: MAY 16, 2001	Facility/Unit: Kewaunee
License Level: SRO	Reactor Type: W
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 five 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	100	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

QUESTION

The following Plant conditions exist:

- Reactor is critical at 10E-3% power.
- RCS Tave: 547°F and steady.
- PZR pressure: 2235 psig and steady.
- Control Bank D rods position: 100 steps.

Control Rods G-11 and G-3 (both in Bank D) drop. Which of the following will be the expected response?

Initially

- A. Tave will decrease and Steam pressure will remain the same and the operator should recover the dropped control rods per E-CRD-49C, Dropped Rod.
- B. Tave and Steam Pressure will both remain the same and the operator should trip the reactor based on TWO (2) dropped control rods per E-CRD-49C, Dropped Rod.
- C. Tave will decrease and Steam pressure will remain the same and the operator should trip the reactor based on low Tave per N-CRD-49B, Reactor Startup.
- D. Tave and Steam Pressure will both remain the same and the operator should shutdown the reactor for the TWO (2) dropped control rods as required by N-CRD-49B, Reactor Startup.

QUESTION

The following Plant conditions exist:

- Burnup is 6000 MWD/MTU.
- The Reactor Tripped from 80% power after two (2) weeks of steady state operation.
  - An ECP is calculated for 7 hours after the Trip.
  - Critical Rod position is 100 steps on Control Bank D.
  - Boron is to remain constant for the Startup.

The Startup is delayed for 2 hours. How many steps will the Control Rods be from the calculated ECP?

- A. 0-4 steps withdrawn
- B. 8-12 steps inserted
- C. 8-12 steps withdrawn
- D. 14-18 step inserted

QUESTION

Containment pressure instrument PT-945, Containment Pressure (Channel I), has failed downscale. All appropriate actions of A-MI-87, Bistable Tripping For Failed Reactor Protection or Safeguards Instrument Procedure, have been completed.

Subsequently PT-949, Containment Pressure (Channel II), fails upscale.

What is the expected response of the plant?

- A. Safety Injection will occur.
- B. Main Steam Isolation Train A will occur.
- C. Safety Injection and Main Steam Isolation Train A will occur.
- D. Safety Injection, Containment Spray, and Main Steam Isolation will occur.

QUESTION

While at 100% power, a manual calorimetric is being performed. During the calorimetric, the feedwater temperature is mistakenly recorded 100 degrees lower than the actual temperature. The gain pot on the power range nuclear instruments are adjusted based on this manual calorimetric.

SELECT the statement that describes HOW indicated power compares to actual power and if it is more or less conservative with respect to a trip setpoint.

- A. Actual power is HIGHER than indicated; LESS conservative.
- B. Actual power is LOWER than indicated; LESS conservative.
- C. Actual power is HIGHER than indicated; MORE conservative.
- D. Actual power is LOWER than indicated; MORE conservative.

QUESTION

The following Plant conditions exist:

- Reactor Trip/Safety Injection has occurred.
- Main Steam Line break in Containment.
- Containment pressure is 4.5 psig.
- Containment humidity is 100%.
- Both RXCPs are running.

Which ONE (1) of the following is the concern if the Containment Fan Coil Units Emergency Discharge Dampers RBV-150 A and B both failed to OPEN and remained in the CLOSED position?

- A. RXCP B overheating.
- B. Loss of cooling to Shroud Coolers if Natural Circulation Cooldown is required.
- C. Reverse airflow through the Containment Fan Coil Unit causing damage to the Containment Fan Coils Unit motors.
- D. Damage to the ductwork could reduce Containment cooling due to the lack of air mixing in Containment.

QUESTION

The following Plant conditions exist:

- A LOCA with the loss of off-site power has occurred.
- Pressurizer Level is 20% and slowly increasing with 150 gpm injection flow.
- The Operators are performing a cooldown and depressurization of the RCS per ES-1.2, Post LOCA Cooldown and Depressurization.

After TWO (2) minutes the following annunciator activate:

- 47023B, RWST LEVEL LOW
- 47032C, PRESSURIZER HIGH LEVEL REACTOR TRIP
- 47041E, PRESSURIZER LEVEL HIGH
- 47042E, PRESSURIZER LEVEL >55%

At this time the STA identifies an ORANGE path on INTEGRITY. Which of the following has the highest priority to implement?

- A. FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.
- B. ES-1.3, Transfer to Containment Sump Recirculation.
- C. ECA1.1, Loss of Emergency Coolant Recirculation.
- D. Continue in ES-1.2, Post LOCA Cooldown and Depressurization.

**QUESTION**

The plant is operating at 100% power. Turbine Impulse Pressure channel P-485 fails low. Which ONE (1) of the following describes how the feedwater system is affected by this failure?

- A. FW-7A/7B, Main FW Control Valves, continue to control S/G level at 44%.
- B. FW-7A/7B, Main FW Control Valves, position to control S/G level at 33% and manual action is required to restore S/G level to 44%.
- C. FW-7A/7B, Main FW Control Valves, position to control S/G level at 33% and S/G level returns to 44% after signal times out.
- D. FW-7A/7B, Main FW Control Valves, position to control S/G level at 44% and manual action is required to restore S/G level to 33%.

**QUESTION**

KNPP is at 70% power with both Main Feed Pumps and both Condensate Pumps running. If Condensate Pump B trips, which ONE (1) of the following actions will occur?

- A. MFW Pump A trips and Turbine runback occurs
- B. MFW Pump B trips and Turbine runback occurs
- C. MFW Pump A trips and NO Turbine runback occurs
- D. MFW Pump B trips and NO Turbine runback occurs

QUESTION

During the performance of SP-05B-104 Task 2, Motor Driven Auxiliary FW Pump and Valve Test-IST, the AFW Pump A has just been stopped at the DSP.

The plant IMMEDIATELY experiences a Loss of Off-Site Power.

How is the starting of AFW Pump A affected?

- A. AFW Pump A will start on Blackout sequence.
- B. AFW Pump A will start on Steam Generator low level only.
- C. AFW Pump A will NOT start due a load shed signal.
- D. AFW Pump A will NOT start due to the local/remote switch position.

QUESTION

The following Plant conditions exist:

- The Plant has tripped from 100% power due to an inadvertent SI.
- IPEOP E-0, "Reactor Trip or Safety Injection", has been completed.
- The current procedure in effect is IPEOP ES-1.1, "SI Termination."
- The level in both Steam Generators is 3%.

At this time AFW Pump A trips on overcurrent. The CRS chooses to continue feeding both Steam generators. What Operator actions, if any, are necessary to provide both Steam Generators with Feedwater? (Assume NO procedure steps other than IPEOP steps have been performed.)

- A. NO action is required, both Steam Generators will continue to be fed from the AFW Pump B since the AFW cross-connect valves, AFW-10A and AFW-10B, are normally open.
- B. Both of the AFW cross-connect valves, AFW-10A and AFW-10B, must be opened since they will have been shut when the Turbine Driven AFW pump was stopped.
- C. The Turbine Driven AFW Pump must be started and the AFW cross-connect valve, AFW-10A, must be opened.
- D. The Turbine Driven AFW Pump must be started and the AFW cross-connect valve, AFW-10A, must be opened and the AFW cross-connect valve, AFW-10B, must be closed.

QUESTION

A normal plant startup is in progress with the following conditions:

- Pressurizer Pressure is at 1585 psig and slowly decreasing
- Pressurizer Level is at 30% and slowly decreasing
- PRT Pressure is 5 psig

Assume pressurizer steam quality is 100%

Which ONE (1) of the following is the CURRENT expected PORV tailpipe temperature if a Pressurizer PORV is leaking by?

- A. 605°F
- B. 547°F
- C. 245°F
- D. 228°F

QUESTION

The following Plant conditions exist:

- Reactor is at 100% power
- Annunciator 47043B, PRESSURIZER RELIEF TANK ABNORMAL, is actuated due to low PRT Level.
- PRT level indication is 69% and slowly decreasing.
- PRT temperature is 124 degrees Fahrenheit.

How will PRT pressure be affected if a PRZR PORV fails OPEN?

- A. PRT pressure will be lower due to the lowering liquid volume in the PRT.
- B. PRT pressure will only increase slightly due to compression of the gas volume.
- C. PRT pressure will remain constant due to the remaining water absorbing the steam.
- D. PRT pressure will increase to over-pressurization due to an insufficient water volume to cool the

steam

QUESTION

Degassing of the reactor coolant system is in progress. Gas Decay Tank A is on FILL and at 98 psig. Gas Decay Tank A is increasing at about 4 psig/hour. Gas Decay Tank B is selected for STANDBY. Four hours later, you note the following valve alignment:

- Gas Decay Tank A inlet valve WG-10A, Waste Gas to Gas Decay Tank A, is CLOSED
- Gas Decay Tank B inlet valve WG-10B, Waste Gas to Gas Decay Tank B, is OPEN
- Gas Decay Tank C inlet valve WG-10C, Waste Gas to Gas Decay Tank 1C, is CLOSED
- Gas Decay Tank D inlet valve WG-10D, Waste Gas to Gas Decay Tank 1D, is CLOSED

What caused the current valve alignment?

- A. Gas Decay Tank A pressure increased to 110 psig.
- B. Actuation of Zone Special Ventilation (Zone SV)
- C. The operating Waste Gas Compressor moisture separator pressure reached 110 psig.
- D. The gas analyzer detected > 2% oxygen in Gas Decay Tank A being filled.

QUESTION

R-14, Aux Bldg Vent Exhaust Radiation Monitor, fails HIGH.

What effect does this failure have on the Waste Gas system?

- A. All Waste Gas Tank Outlet Valves to the cover gas header CLOSE if open and nitrogen becomes the cover gas supply.
- B. WG-36 is tripped CLOSED if a Gas Decay Tank discharge is in progress.
- C. Gas Decay Tank Gas Analyzer Supply Valves WG-200A, B, C, D CLOSE
- D. All Waste Gas Tank Valves (fill and cover gas supply) CLOSE, the Waste Gas compressors trip and Nitrogen becomes the Cover Gas supply.

**SRO Exam Number**  
**15**

**Record Number**  
**019**

QUESTION

Inoperability of which ONE (1) of the area radiation monitors would prohibit refueling operations from occurring?

- A. R-1, Control Room Area Monitor.
- B. R-5, Fuel Handling Area Monitor.
- C. R-7, Incore Seal Table Area Monitor.
- D. R-10, New Fuel Pit Area Monitor.

**SRO Exam Number**  
**16**

**Record Number**  
**020**

QUESTION

The following Plant conditions exist:

- A small break LOCA has occurred.
- NO RxCPs are running.

The following RCS indications are available:

- Average of the 10 highest core exit thermocouples = 568°F
- Loop Temperatures: TH = 560°F (both loops)
- TC = 522°F (both loops)
- Tave = 541°F (both loops)
- Pressurizer Pressure instruments PT-429, PT-430, PT-431, and PT-449 indicate 1700 psig
- RCS wide-range pressure instruments PT-419 and PT-420 indicate 1231 psig

Operators are directed to determine the RCS subcooling margin due to unavailability of subcooling indication due to failed instruments. Based on these indications, the RCS is:

- A. Superheated by greater than 10°F.
- B. Superheated by less than 10°F.
- C. Subcooled by less than 10°F.
- D. Subcooled by greater than 10°F.

QUESTION

The following Plant conditions exist:

Unit is at 90% power.

Pressurizer level control is in the normal at power lineup (position 2-3).

Pressurizer level transmitter LT-427 (Channel II) output signal fails off-scale low.

Which of the following describes the short-term plant response to this event?

- A. Charging pump speed increases, letdown isolates, and PZR heaters are tripped.
- B. Charging pump speed is NOT affected, letdown isolates, and PZR heaters are tripped.
- C. Charging pump speed increases, letdown is NOT affected, and PZR heaters are tripped.
- D. Charging pump speed increases, letdown isolates, and PZR heaters are NOT affected.

QUESTION

Which ONE (1) of the below events has the potential to generate an OT delta T runback?

- A. The controlling pressurizer pressure channel fails high.
- B. An RCS boron addition which changes temperature.
- C. Delta Flux increases from -2 to +6 as a result of a xenon transient.
- D. A group of pressurizer backup heaters is energized.

QUESTION

The plant is operating at 60% power with N-36 Out of Service. A loss of power occurs on Instrument Bus II (White Channel). Considering only the impact of the IR NIs, what impact this will have on the Reactor?

- A. It will NOT trip the Reactor because the affected NI channel is N-36 and it is in bypass.
- B. It will trip the Reactor because both control power and instrument power will be lost on the affected channel.
- C. It will NOT trip the Reactor regardless of which IR channel is affected because the IR trip was blocked above P-10.
- D. It will trip the Reactor because the affected channel is N-35 and it becomes deenergized.

QUESTION

The plant is operating at 100% power. All systems are in their normal alignment and in automatic rod control.

One of the RCS Hot Leg RTDs fails high causing the rods to drive in.

When the RO stops rod motion, the CONTROL BANK LOW LIMIT alarm is in.

If NO other action is taken, what happens to the radial and axial flux?

- A. The radial flux profile near the top of the core remains the same; the axial flux is forced toward the bottom of the core.
- B. The radial flux profile near the top of the core changes; the axial flux is forced toward the bottom of the core.
- C. The radial flux profile near the top of the core remains the same; the axial flux is forced toward the top of the core.
- D. The radial flux profile near the top of the core changes; the axial flux is forced toward the top of the core.

**SRO Exam Number**  
21

**Record Number**  
026

QUESTION

Which ONE (1) of the following lists the power supplies to 118 vac Bus Inverter BRD-109 in the preferred sequence of connection if needed to supply the Inverter?

- A. Normal - MCC 46B, then BRC 102, then BRB 127
- B. Normal - MCC 62C, then BRD-104, then BRB-105
- C. Normal - MCC 62C, then BRD-103, then BRB-127
- D. Normal - MCC 52C, then BRA-104, then BRA-105

**SRO Exam Number**  
22

**Record Number**  
027

QUESTION

The "Instrument Bus Inverter Trouble" alarms in the control room with the SER point indication BRA-111 as the cause. The Equipment Operator reports that on BRA-111 the "Alternate Source Supplying Load" light is lit. What is the condition of BRA-113 Instrument Bus?

- A. BRA-113 is without 120VAC power.
- B. BRA-113 is now supplied with 120VDC power.
- C. Power source is 120VAC via BRA-105.
- D. Power source is 125VDC cabinet BRA-104 via BRA-111.

QUESTION

The following Plant conditions exist:

- Turbine load 200 MWe
- Plant control systems all in automatic
- Circulating Water (CW) Forebay level 50% and decreasing rapidly due to outsurge caused by seiche in progress
- Turbine back pressure 5.0" Hg Absolute and increasing rapidly.

The correct action(s) that the operators should take is/are ... (choose one)

- A. reduce Turbine load to 30% (165 Mwe) power and isolate one pair of Main Condenser Water Boxes in order to reduce CW flow requirements.
- B. stop ONE CW pump within 10 minutes in order to regain CW Forebay level.
- C. trip the Reactor/Turbine and enter E-0, "Reactor Trip or Safety Injection."
- D. ramp power down at a rate NOT to exceed 5% per minute and trip the Reactor at 15% power.

QUESTION

SA-60/CV 31648, Station Air Crossover Pressure Control Valve, controls air to the Instrument Air System at \_\_\_\_\_ from the Station Air Header.

- A. 110 psi
- B. 100 psi
- C. 95 psi
- D. 90 psi

QUESTION

A failure of which of the following detectors will result in an IMMEDIATE (i.e. NO time delay) discharge of its associated fire protection medium (i.e. water, halon, CO2)?

- A. ONE temperature switch/thermostat in Zone 103, Diesel Generator Room A.
- B. TWO ionization (smoke) detectors in Zone 602, the Aux. Bldg. Record Storage Room.
- C. ONE temperature rise (thermal pneumatic) detector in Zone 1203, Materials Work Storage.
- D. ONE photo-electric detector AND ONE ionization (smoke) detector in Zone 1103, QA/QC Vault.

QUESTION

Maintenance opens a hose station valve to flush the Fire Header.

The Fire Protection System pressure dropped to 107 psig and repressurizes to 170 psig. What is the status of the fire protection system at this time? (Assume that the fire protection system was in a normal lineup prior to opening the hose station valve.)

	<u>Jockey Pump</u>	<u>A Fire Pump</u>	<u>B Fire Pump</u>
A.	Running	Stopped	Running
B.	Running	Running	Stopped
C.	Stopped	Running	Stopped
D.	Stopped	Stopped	Running

QUESTION

The following Plant conditions exist:

- Plant cooldown to COLD SHUTDOWN is in progress.
- RHR aligned for cooldown.
- RCS pressure is 400 psig.
- RCS Wide Range temperature, Hot Leg, is 350°F
- Flow Controller RHR-101 is in AUTOMATIC - 10% open.
- Local RHR Heat Exchanger outlet temperature is 300°F

The RHR return header flow transmitter (FT-626) fails low. What is the Plant response to this event?

- A. RHR Heat Exchanger Bypass Valve (RHR-101) position will change to full close to maintain RHR desired system flow rate and RCS cooldown rate will increase.
- B. RHR Heat Exchanger Bypass Valve (RHR-101) will position to full open to maintain RHR desired system flow rate and RCS cooldown rate will decrease.
- C. RHR Heat Exchanger Flow Control Valves (RHR-8A/8B) will automatically close to prevent exceeding RCS cooldown rate of 100°F per hour.
- D. RHR Return Header Isolation Valve (RHR-11) will automatically open to maintain RHR Pump discharge pressure and flow constant to the Reactor Vessel.

QUESTION

The following plant conditions exist:

- Shield Building Annulus To Containment DP Switch (16427) fails in the >0.3 PSID direction.
- Containment pressure is 1 psig.

What effect would these conditions have on the Containment Vent and Purge system?

VB-10A, Power Operated Contmt Vacuum Breaker A, would OPEN and the operator would ...

- A. manually close VB-10A.
- B. manually close VB-10A only after Containment Pressure has equalized with the Annulus
- C. NOT be able to CLOSE VB-10A and Containment Pressure would equalize with the Annulus
- D. NOT be able to CLOSE VB-10A and Containment Pressure would NOT equalize with the Annulus

QUESTION

The DG A is running following a recovery for a loss of all AC power. The NCO reports current DG A load is 3100 KW.

What is the MINIMUM amount of load that would have to be shed from the DG A to be below the 7 day/year limit for operation?

- A. 500 KW
- B. 240 KW
- C. 150 KW
- D. 50 KW

QUESTION

The plant is at 100% power performing a 2" vent of Containment using Train B when R-21 FAILS HIGH. How is the 2" vent of Containment affected? How is the 2" vent of Containment affected?

- A. LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B and LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner to Contmt go CLOSED.
- B. Only LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B goes CLOSED.
- C. Only LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner to Contmt goes CLOSED
- D. 2" vent of Containment continues until MANUAL Action is taken.

QUESTION

Which of the following is a complete list of the radiation monitors that detect and mitigate, on High alarm, a radioactive release from the Aux building by stopping the Aux Building Supply and Exhaust fans and starting a Zone SV (Special Vent) exhaust fan?

- A. R-13 & R-14 Aux Bldg. Vent Monitors, R-35 Aux Bldg. Vent Low range and R-36 Aux Bldg. Vent High Range.
- B. R-13 & R-14 Aux Bldg. Vent Monitors, R-35 Aux Bldg. Vent Low range, R-36 Aux Bldg. Vent High Range and R-22 RHR Pit Exhaust Air Monitoring subsystem.
- C. R-13 & R-14 Aux Bldg. Vent Monitors and R-22 RHR Pit Exhaust Air Monitoring subsystem.
- D. R-13 & R-14 Aux Bldg. Vent Monitors.

QUESTION

The following Plant conditions exist:

- The DC Supply and Distribution System is configured for normal operation and is operating properly.
- Annunciator BRB-102 FEEDER BKR UNDERVOLTAGE (47102-B) alarms.

Assuming the system performed as designed, which ONE (1) of the following describes the actions the local operator is directed to perform to allow future faulted circuits on BRB-102 FEEDER BKR UNDERVOLTAGE (47102-B) to annunciate?

- Identifies the tripped circuit by the red circuit status light being ON while the toggle switch is in OFF position and places the toggle switch to the ON position.
- Identifies the tripped circuit by the red circuit status light being OFF with the toggle switch in the OFF position and places the toggle switch to the ON position.
- Identifies the tripped circuit breaker by breaker position and by the red circuit status light being OFF with the toggle switch in ON position and places the toggle switch to the OFF position.
- Identifies the tripped circuit breaker by breaker position and by the red circuit status light being OFF with the toggle switch in ON position places the toggle switch first to OFF position and back to ON.

QUESTION

In which ONE (1) of the following sets of conditions can a Condenser Cooldown Dump Valve be opened after the Main Steam Dump Interlock Selector Switches have been placed in BYPASS INTLK and returned to the Mid-position?

- A. Condenser pressure is 4.5" HgA  
Tave is 530°F  
1 Circ Water Pump is running
- B. Condenser pressure is 13.5" HgA  
Tave is 550°F  
NO Circ Water Pumps are running
- C. Condenser pressure is 22.5" HgA  
Tave is 550°F  
1 Circ Water Pump is running
- D. Condenser pressure is 8.0" HgA  
Tave is 550°F  
NO Circ Water Pumps are running

QUESTION

The following plant conditions exist:

- The plant is at 30% power during a post refueling startup.
- SP 54-063, "Turbine Trip Mechanism Test," is in progress.

With the Overspeed Mechanism Test lever at the Governor End Pedestal being held in the "TEST" position, which ONE (1) of the following would still result in a Turbine trip?

- A. MSIV A closing
- B. Mechanical Overspeed.
- C. Low bearing oil pressure.
- D. Low vacuum.

QUESTION

The following Plant conditions exist:

- Discharge is in progress from Waste Condensate Tanks.
- R-18, Waste Discharge Liquid radiation monitor, fails off-scale high.

Which of the following actions is NOT required prior to reinitiating the release?

Technically qualified members of the Facility Staff must...

- A. complete TWO independent verifications of the discharge line valving.
- B. perform TWO independent verifications of the release rate calculations.
- C. analyze TWO independent samples from the tanks for gamma and tritium.
- D. establish TWO independent locations for taking grab samples during the release.

QUESTION

Which of the following is ONE (1) of the requirements for maintaining the Reactor and Control Room Log?

- A. The Shift Manager shall initial all late entries.
- B. At the end of each shift the Control Room Supervisor shall review and sign the Reactor and Control Room Log.
- C. The initial entry shall include the time in core life, i.e. MWD/MTU.
- D. All entries shall be in non-smearable black ink.

QUESTION

The following Plant conditions exist:

Reactor power is 1320 MWt.  
RCS pressure is in the normal operating band.

Which ONE (1) of the following RCS average temperatures would FIRST result in exceeding a safety limit?

- A. 594°F
- B. 616°F
- C. 627°F
- D. 636°F

QUESTION

Which of the following conditions would require the suspension of all core alterations per Technical Specifications during refueling operations?

- A. The primary coolant system boron had an inadvertent dilution to 1900 ppm.
- B. One of the personnel airlock doors is broken and CANNOT be closed.
- C. The Shift Manager leaving the Control Room for the Morning Meeting.
- D. A review of the RO log indicates that RHR Pumps have been secured for 30 minutes.

QUESTION

The following Plant conditions exist:

- Plant is in Cold Shutdown with RCS temperature at 140 degrees F
- RHR is in service
- Refueling preparations are in progress
- Containment integrity is NOT required
- Containment purge is in progress using the 36" RBV valves.
- R-11 is out of service for filter drive motor replacement
- R-12 has just failed low

Which ONE (1) of the following describes the plant/operator response to this failure?

- A. NO effect, remove R-12 from service, and continue purge.
- B. NO effect, remove R-12 from service, and stop purge until R-12 returned to service.
- C. Containment Vent Isolation occurs stopping the purge, Shift R-21 to vent stack, and restart purge.
- D. Containment Vent Isolation occurs stopping the purge, purge can be restarted when R-11 or R-12 is returned to service.

**SRO Exam Number**  
40

**Record Number**  
057

QUESTION

How would the NCO determine that annunciator power was lost due to a problem with the power supply?

- A. Check the operating status of the Plant Computer.
- B. The Annunciators fail to light when TEST pushbutton is depressed
- C. Receive report that 125V DC Bus voltage is 115 volts.
- D. LOSS OF ANNUNCIATOR POWER annunciator is in alarm.

**SRO Exam Number**  
41

**Record Number**  
060

QUESTION

The following Plant conditions exist:

- Control Rod G11 indication is at 195 step with the remainder of Bank D at 205 steps.
- Bank D Group step counter is at 205 steps
- I&C reports a 2.966 volt DC reading for Rod G11 Conditioning Module voltage.
- UPPER QUADRANT POWER TILT RATIO HIGH" is in alarm
- The Plant is operating at 87%

If the indicated quadrant tilt is determined to be 1.10, what actions are required?

- A. Eliminate the tilt OR restrict maximum power level to 2% for every percent of indicated power tilt ratio greater than 1.0.
- B. Eliminate the tilt within 24 hours or reduce power to 50% or lower.
- C. The Reactor shall immediately be brought to less than or equal to 5% power.
- D. Within 30 minutes correct the tilt or reduce the reactor power to less than or equal to 50%.

QUESTION

The basis for maintaining S/G levels at 33% during a Natural Circulation Cooldown is to:

- A. Prevent thermal shock to the S/G tube bundle
- B. Provide a stable heat sink for decay heat removal
- C. Conserve inventory in the condensate storage tanks during the cooldown
- D. Maintain the cooldown rate in the RCS cold legs to less than 25 degrees per hour

QUESTION

The following Plant conditions exist:

- Plant is operating at 35% power.
- Ramping up to 100%.
- PS-1A/CV-31112, Loop A PRZR Spray Valve, is stuck OPEN.
- PRZR pressure is decreasing.
- PRZR Heaters are verified as energized.

An Operator takes manual control of valve PS-1A/CV-3112, Loop A PRZR Spray Valve, and is unable to close it.

What action(s) shall be taken to terminate the pressure reduction caused by the spray valve failure?

- A. Trip the Reactor, trip Reactor Coolant Pump A and Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- B. Initiate Safety Injection, trip Reactor Coolant Pump A and Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- C. Trip the Reactor, trip Reactor Coolant Pump A and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- D. Trip the Reactor, trip Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".

QUESTION

The following Plant conditions exist:

- Reactor Trip and Safety Injection actuates.

The Operators determine that window box "SEAL WATER LEAKOFF CVC-211" is NOT LIT. All other required lights are LIT. What Operator action, if any, shall be taken to close the CVC-211, RXCP Seal Return Isolation valve?

- Manually depress the Safety Injection Initiation Push Buttons for both trains.
- Manually depress the Containment Isolation Push Buttons for both trains.
- Manually close CVC-211, RXCP Seal Return Isolation Valve.
- NO action required if CVC-212, RXCP Seal Return Isolation Valve, is closed.

QUESTION

An Alternate Shutdown is in progress due to a fire in the Cable Spreading Room. An immediate Control Room evacuation was required and entry into E-0-06, "Fire in Alternate Fire Zone". During the performance of E-0-06, the performance of which of the following would stop the Feedwater and Condensate pumps?

- De-energizing buses 1 and 2 by the Control Operator B; Buses 3 and 4 by the CRS.
- Manually tripping Main FW and Condensate pumps prior to evacuating the Control Room.
- Energizing the 4160v and 480v Dedicated Shutdown Electrical system causing a load shed.
- NO Action is taken for Non-Vital electrical power because the loss of off-site power is assumed.

QUESTION

The following Plant conditions exist:

- The plant was operating at 100% power.
- A small break LOCA occurred.
- FR-C.1, "Response to Inadequate Core Cooling", is in progress.
- The crew was unable to start any SI pump.
- RHR pump A is NOT running.
- RHR pump B is running with zero flow.
- PRZR level is off-scale low.
- RVLIS is indicating 0%.
- RXCP "A" is running.
- SI Accumulators have been isolated.

The crew is preparing to depressurize the SGs to atmospheric pressure. Select the statement that explains what should be done concerning RXCP "A" at this point in the procedure.

- A. Leave the RXCP running regardless of plant conditions.
- B. Leave the RXCP running until the SGs have been depressurized to atmospheric.
- C. Trip the RXCP only if a high temperature alarm occurs on the pump.
- D. Trip the RXCP due to the anticipated loss of #1 seal requirements.

QUESTION

Given that a loss of reactor coolant has occurred. What advantage is there to performing a saturated recovery as opposed to performing a subcooled recovery?

- A. It is easier to monitor RCS inventory with a saturated recovery.
- B. Pressure control is easier with a saturated recovery.
- C. RCS leakage is reduced with a saturated recovery.
- D. A saturated recovery provides greater margin to core uncover than a subcooled recovery does.

QUESTION

The following Plant conditions exist:

- A natural circulation cooldown is in progress per ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel
- A steam bubble exists in the head region.
- Prior to the event the plant was in a normal at power lineup.
- LT-427, PRZR Level (Channel II), failed low TWO (2) minutes ago.

PRZR level would ...

- A. increase due to the loss of PRZR Heaters and Letdown.
- B. remain the same due to the continued Charging flow and loss of Letdown.
- C. decrease due to the collapsing steam bubble.
- D. remain the same due to LT-428 being the controlling channel.

QUESTION

The following Plant conditions exist:

- The Plant was operating at 100% power.
- An earthquake resulted in a rupture of the Main Steam Header A.
- The operating crew was unable to close either MSIV and transitioned to ECA-2.1, "UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS".
- The Auxiliary Operator reports MS-1A was closed locally.
- The RO observes S/G A and S/G B pressures are NOT increasing.

Based on the above information, the operating crew should:

- A. Transition to E-2, "FAULTED STEAM GENERATOR ISOLATION".
- B. Transition to E-3, "STEAM GENERATOR TUBE RUPTURE".
- C. Remain in ECA-2.1, "UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS".
- D. Transition to ES-1.1, "SI TERMINATION".



QUESTION

The following Plant conditions exist:

- Operators are performing ECA 2.1, "Uncontrolled Depressurization of All Steam Generators."
- Cooldown rate is 125 degrees per hour.
- Narrow range Steam Generator levels are off scale LOW.
- AFW flow on A and B Steam Generators indicates 100 gpm each.

Which of the following is the appropriate action to take?

- A. Adjust AFW flow to 60 gpm on each Steam Generator.
- B. Adjust AFW flow to 0 gpm on each Steam Generator.
- C. Do NOT adjust AFW flow to insure that heat sink criteria are maintained.
- D. Transition to E-2, "FAULTED STEAM GENERATOR ISOLATION".

QUESTION

One (1) Shutdown Bank A rod has fallen into the core. A Dropped Rod Recovery is in progress per E-CRD-49C, "Dropped Rod". Rod recovery has commenced and an "Rod Control Urgent Failure" alarm is present.

Which of the following explains why the urgent failure alarm is received?

- A. There is NO master cyclor input for Shutdown Bank A.
- B. Shutdown Rods receive NO input from the bank overlap unit.
- C. Shutdown Rods have NO multiplexing thyristors.
- D. There are two groups of rods in Shutdown Bank A.

QUESTION

The plant is at 100% power when Rod K-9 drops into the core without generating a Negative Rate Trip.

Consider the changes in the following parameters:

	<u>Before</u>	<u>After</u>
N-41	100%	101%
N-42	100%	101%
N-43	100%	103%
N-44	100%	95%
Tave	559°F	559°F
RCS Pressure	2235 psig	2230 psig

What is the concern with these parameters?

- A. Due to the constant Tave, Hot Channel Factor in a channel may exceed Tech. Spec. Limits
- B. Due to the difference in power readings, the NIs will need to be adjusted.
- C. The shadow effect of K-9 may effect the Reactor Protection capabilities.
- D. These are expected parameters for a dropped rod and only the dropped rod is of concern.

QUESTION

The following Plant conditions exist:

Pressurizer PORVs have OPENED and the accelerometers indicate PR-3A, Pressurizer Safety, has also OPENED due to a pressure transient.

- A Reactor TRIP has occurred.
- PRESSURIZER PORV DISCHARGE TEMP HIGH is in alarm
- PRESSURIZER SAFETY DISH TEMP HIGH is in alarm

Pressurizer level and pressure have been recovered.

Which of the below indications are used to determine that the Pressurizer Safeties and PORVs have CLOSED and are NOT leaking?

- A. The Red light closed indications on the PORVs are ON and accelerometers for PR-3A have cleared.
- B. The Green light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared and PORV Outlet TI-438 is holding stable at 300°F and Safety A Outlet TI-436 is stable at 289°F
- C. The Red light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared and PORV Outlet TI-438 is at 250°F, and Safety A Outlet TI-436 is at 253°F
- D. The Green light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared, PORV Outlet TI-438 is less than 200 degrees, and Safety A Outlet TI-436 is less than 200°F.

QUESTION

The following Plant conditions exist:

- The plant was tripped from 100% power
- A small break LOCA has occurred after the trip
- One train of Safety Injection is available and has started

How would voiding in the core affect the SUBCRITICALLY Critical Safety Function indicator on the SAS Unit?

- A. Intermittently flash ORANGE
- B. Indicate solid YELLOW
- C. Intermittently flash RED
- D. Indicate solid ORANGE

QUESTION

Which ONE (1) of the following statements explains the importance of a secondary heat sink as it relates to a Loss of Coolant Accident?

- A. In response to a small break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase but it is NOT important during the reflux boiling phase.
- B. In response to a small break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase and during the reflux boiling phase.
- C. In response to a large break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase but it is NOT important during the reflux boiling phase.
- D. In response to a large break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase and during the reflux boiling phase.

QUESTION

A Large Break LOCA (DBA) has occurred approximately 2 minutes ago, which ONE (1) of the following describes the expected conditions of the pumps?

- A. SI and RHR pumps running and injecting into the RCS, ICS pumps OFF
- B. SI pumps running and injecting into the RCS, RHR pumps running, ICS pumps OFF
- C. SI pumps running and injecting into the RCS, RHR and ICS pumps running
- D. SI and RHR pumps running and injecting into the RCS, ICS pumps running

QUESTION

The following Plant conditions exist:

- The plant is in cold shutdown (Shutdown for 3 days) with RHR cooling in progress.
- Pressurizer level is 30% with the RCS intact.
- Both S/G WR levels are 65%.
- The RCS is depressurized.
- Buses 1 and 2 are deenergized for maintenance.

RHR flow is lost and CANNOT be restored. Which ONE (1) of the following methods of cooling will be utilized to remove the core decay heat?

- A. Feed S/Gs with AFW and open SG PORV(s) to remove decay heat.
- B. Start a RXCP and open S/G PORV(s) to remove decay heat.
- C. Maximize charging flow to the RCS and use letdown to remove decay heat.
- D. Align an SI pump to inject into the vessel and open a PZR PORV for heat removal.

QUESTION

The following Plant conditions exist:

- The crew is initiating Emergency Boration in response to an ATWS.
- RCS pressure is 2335 psig.
- CVC-11, Charging Line Isolation, has failed CLOSED.

Which of the following actions would maximize negative reactivity and minimize the addition of positive reactivity being added to the RCS?

- A. Place Steam Dump Controller to Manual and open the steam dumps.
- B. Raise AFW flow to 500 gpm and fill all Steam Generators to 5% narrow range level.
- C. Verify Pressurizer PORV Block valve OPEN and VERIFY/OPEN a Pressurizer PORV.
- D. LOWER Charging flows to 40 gpm and RAISE Letdown flow to 80 gpm by placing TWO (2) Letdown Orifices in service.

QUESTION

The following Plant conditions exist:

- Reactor power is 100%
- Reactor Trip Breaker testing is being performed with Reactor Trip Bypass Breaker A (52/BYA) RACKED IN and CLOSED
- BOTH Reactor Trip Breakers (52/RTA and 52/RTB) are CLOSED

Then the Electrician RACKS IN and CLOSES Reactor Trip Bypass Breaker B (52/BYB)  
Breakers 52/RTB and 52/BYA OPEN

Which of the following describes the response to this condition?

The reactor is...

- A. NOT tripped, and the NCO should manually trip the reactor.
- B. NOT tripped as this is the expected response when 52/BYB was closed.
- C. tripped and the NCO should direct the NAO to locally open both 52/RTB and 52/BYB.
- D. tripped and the NCO should manually trip the reactor as directed by E-0 "Reactor Trip Or Safety Injection".

QUESTION

Which ONE (1) of the following is the expected plant response to a failure of Instrument Bus I, BRA-113, if the reactor is operating at 10E3 cps?

- A.. Immediate automatic reactor trip.
- E. NO immediate concern, dispatch electrician to investigate.
- F. A rod stop would occur and by-passing the affected NI channel would be required.
- G. Manual control of affected equipment would be required to prevent a reactor trip.

**SRO Exam Number**  
61

**Record Number**  
085

QUESTION

The following Plant conditions exist:

Plant Startup is in progress.  
Intermediate Range N-35 is OUT-OF-SERVICE.  
Reactor power is at 4%.  
The power supply for the N-36 detector failure occurs reducing detector voltage by 50%.

What Operator action shall be taken?

- A. Maintain present Plant conditions until one of the Intermediate Range Instruments is returned to service.
- B. Shutdown the Reactor per OP N-CRD-49C, "Reactor Shutdown", and maintain HOT SHUTDOWN conditions.
- C. Trip the Reactor and perform IPEOP E-0, "Reactor Trip or Safety Injection".
- D. Continue the Plant Startup and bypass N-36.

**SRO Exam Number**  
62

**Record Number**  
087

QUESTION

Why is SI-5A/MV-32107, SI Pump A Suction Isolation valve, closed prior to opening RHR-299A/MV-32134, Residual Heat Exchanger Outlet to Safety Injection Pump A valve, during the recirculation phase of a LOCA?

- A. Reduces system pressure to the SI Pump suction header resulting in increased SI flow due to decreased RHR Pump NPSH requirement.
- B. Prevents tripping of the SI pumps on high discharge flow rate resulting from increased SI Pump recirculation flow.
- C. Protects the SI Pump discharge header from overpressurization if the RHR pump was aligned to the RCS hot leg.
- D. Prevents the RHR Pump from recirculating contaminated Sump water directly to the RWST.

QUESTION

Following a LOCA the crew is using ECA-1.1, Loss of Emergency Coolant Recirculation, because both trains of recirculation have become unavailable.

- Safety Injection Pump B was stopped as required by the procedure.
- The crew is now evaluating the plant conditions to determine if SI flow can be terminated.
- The requirement to terminate SI is 80°F subcooling. The current subcooling is 68°F.

What action, if any, should be taken in response to this information?

- A. NO action should be taken until subcooling increases to 80°F at which point Safety Injection Pump A should be stopped.
- B. Locally throttle SI-7A, SI Pump Discharge Isolation Valve, to the flow rate determined to be adequate by using the table ECA-1.1-1, Required SI Flow Rate vs. Time After Trip.
- C. Manually shut SI-9A, SI to RCS Cold Legs until subcooling drops to 30°F then reopen SI-9A.
- D. Manually restart Safety Injection Pump B.

QUESTION

The following Plant conditions exist:

- A LOCA has occurred
- The crew is performing cooldown as directed by ES-1.2 " Post LOCA Cooldown And Depressurization"
- ECCS Pumps are still operating in injection phase
- The ICS system has been stopped
- TWO Containment Cooling Fan Coil Units are running
- Containment pressure is stable at 2.2 psig
- The CRS transitions to FR-Z.3 "Response to High Containment Radiation Level" in response to a YELLOW path condition

What action does the CRS direct in FR-Z.3 in order to reduce Containment radiation levels?

- A. The idle Containment Cooling Fan Coil Units are started.
- B. A RHR Pump is started and aligned to supply the associated ICS header.
- C. An ICS Pump is started and its associated discharge isolation valves are opened.
- D. ONE train of venting and filtering Containment atmosphere through Shield Building Vent is initiated.

QUESTION

The Unit is at 100% with all systems in a normal at power lineup when IA-101, Instrument Air to Containment Isolation, is inadvertently CLOSED and NOT RE-OPENED. A small air leak exists in the air header. If air pressure is NOT restored to Containment, which of the following will cause a Reactor Trip? (Assume NO Operator Action)

- A. High pressurizer level caused by Letdown isolation
- B. Low S/G level caused by S/G Main Feed Reg. Valves closure
- C. Low Pressurizer pressure caused by PRZR PORVs opening
- D. Main Steam Isolation Valves coming off the open seat ( $>4^\circ$ )

QUESTION

While executing bleed and feed steps of FR-H.1, the following plant conditions exist:

- S/G A is faulted with NO indicated level on Wide Range Yarway
- S/G B is intact and its Wide Range Yarway reads 7%
- RCS hot leg temperatures are currently 563°F in both loops and decreasing
- Turbine Driven AFW pump was just made available

Which ONE (1) of the following would be the correct actions to take to establish a secondary heat sink?

- A.. Feed S/G A at less than 100 gpm concurrent with feed and bleed until RCS hot leg temperatures are less than 550° F, and then establish feed to S/G B at less than 100 gpm.
- B. Stop the bleed and feed, feed S/G B at less than 100 gpm until RCS hot leg temperatures are less than 550°F and then feed S/G B at maximum rate.
- C. Maintain bleed and feed until RCS hot leg temperatures are less than 550°F and then feed S/G B at maximum rate.
- D. Maintain bleed and feed and establish Feedwater flow to S/G B, then stop bleed and feed when S/G B narrow range level is greater than 4%.

QUESTION

The following Plant conditions exist:

- The plant is at HOT SHUTDOWN
- A cooldown to COLD SHUTDOWN has been initiated.

What is the difference in staffing requirements for the minimum on-duty shift complement per NAD 3.17, "Shift Operation and Turnover," when COLD SHUTDOWN is achieved?

- A. Only ONE Nuclear Control Operator is required and the STA is NOT required.
- B. The Control Room Supervisor and the STA are NOT required.
- C. The fire response team can be reduced to FOUR persons.
- D. Only ONE Nuclear Auxiliary Operator is required.

**SRO Exam Number**  
**68**

**Record Number**  
**095**

QUESTION

With the plant operating at full power, an AO reports an inoperable fire detector. At which ONE (1) of the following locations would it necessitate a fire watch patrol within ONE (1) hour?

- A. Safety Injection Pump B
- B. RHR Pump A Pit
- C. Component Cooling Pump B
- D. Control Room

**SRO Exam Number**  
**69**

**Record Number**  
**096**

QUESTION

The following Plant conditions exist:

- A high radiation alarm has been received on R-9.
- Health Physics has verified the alarm.
- Chemistry has taken RCS samples and has informed the Shift Manager that RCS activity has exceeded 91/E  $\mu\text{Ci/cc}$ .
- A mixed bed demineralizer is in service.
- One 40 gpm orifice is in service.
- Charging Pump C is running in auto and Charging Pump B is in manual.

What action should the Operators take to help reduce the RCS activity?

- A. Perform a hydrogen peroxide addition prior to tripping the Reactor.
- B. Place the 80 gpm orifice in service and start Charging Pump A to match the letdown flow rate.
- C. Place the second 40 gpm orifice in service and raise charging pump speed to match the letdown flow rate.
- D. Isolate letdown; run one Charging Pump at minimum speed charging only to the RxCP seals; initiate excess letdown.

QUESTION

The following Plant conditions exist:

- The plant was at 100% power prior to a LOCA
- Safety Injection occurred with loss offsite power

Which of the following conditions would be entry conditions for FR-C.2, Response to Degraded Core Cooling?

- A. Core Exit Thermocouples reading  $>1200^{\circ}\text{F}$
- B. Core Exit Thermocouples reading  $>1200^{\circ}\text{F}$  and Subcooling  $<30^{\circ}\text{F}$
- C. Subcooling  $<30^{\circ}\text{F}$  and RLVIS void fraction decreasing.
- D. Subcooling  $<30^{\circ}\text{F}$  and Core Exit Thermocouples reading  $>700^{\circ}\text{F}$

QUESTION

The following Plant conditions exist:

- Nuclear Control Operators are responding to a LOCA.
- FR-C.2 , Response to Degraded Core Cooling, has been entered.

After entering the appropriate function restoration procedure and attempting to establish SI, what further action should be taken to reduce CET Temperatures?

- A. Stop all running RXCPs.
- B. Perform a rapid cooldown ( $>100^{\circ}\text{F/hr.}$ ) to depressurize the RCS.
- C. Open PRZR PORVs to depressurize and inject the SI Accumulators.
- D. Perform a controlled cooldown ( $<100^{\circ}\text{F/hr.}$ ) to depressurize the RCS.

**SRO Exam Number**  
72

**Record Number**  
099

QUESTION

During cooldown and depressurization of the RCS in ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel, the Reactor Operator identifies a yellow path on Inventory. Why should the IPEOP Coordinator remain in ES-0.3 instead of transitioning to FR-I.3, Response to Voids in the Reactor Vessel?

- A. Once the ES-0.3 is started, ES-0.3 has precedence over FRGs
- B. ES-0.3 allows for a void in the reactor vessel under controlled conditions.
- C. If FR-I.3 is performed, it would increase the steam void as pressure is decreased
- D. Yellow path FRGs should be performed only after the Procedure in effect is completed.

**SRO Exam Number**  
73

**Record Number**  
100

QUESTION

You have entered FR-S.1, Response to Nuclear Power Generation/ATWS, from ES-0.1, Reactor Trip Response, due to an Orange path. CVC-440, Emergency Boration Valve, will NOT open from the Control Room.

How are the contingency steps different in FR-S.1 from E-CVC-35, Emergency Boration?

- A. Both FR-S.1 and E-CVC-35 are the same.
- B. FR-S.1 directs the IMMEDIATE manual actuation of Safety Injection, E-CVC-35 does NOT.
- C. E-CVC-35 has a manual start of the SI pumps, FR-S.1 has manual actuation of Safety Injection
- D. E-CVC-35 allows flow from the Blender and from the RWST to the Charging Pumps, FR-S.1 does NOT.

**SRO Exam Number**  
74

**Record Number**  
101

QUESTION

You are currently in ECA-0.0 "Loss of All AC Power".

The battery would be considered completely discharged when it reaches which ONE (1) on the following?

- A. Battery bus voltage of 90 volts DC.
- B. Battery bus voltage of 100 volts DC.
- C. Battery bus voltage of 105 volts DC.
- D. Battery bus voltage of 110 volts DC.

**SRO Exam Number**  
75

**Record Number**  
102

QUESTION

There has been a major Service Water break in the Containment which has been secured but left two (2) feet of water as indicated by the Containment Wide Range Level Indicators on the Containment floor. Why would this existing water level be a concern?

- A. In the event of a steam line break and a LOCA in the Containment the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design flood level of the Containment thus possibly causing the loss of equipment needed during the accident.
- B. In the event of a Feedwater Line Break in the Containment the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design flood level of the Containment thus causing a higher than design peak Containment pressure during an accident.
- C. In the event of a steam line break in the Containment and associated Steam Generator tube rupture the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design level of the Containment thus causing a higher than design peak Containment pressure during an accident.
- D. The additional water is of NO concern because the water in Containment Sump B can be pump out with the RHR Pumps.

**SRO Exam Number**  
76

**Record Number**  
103

QUESTION

Which ONE (1) of the following correctly identifies the MCCs that supply power to the heaters in Boric Acid Storage Tanks (BAST) A and B?

- A. MCC 52A supplies the heaters in BAST A, MCC 62D supplies the heaters in BAST B.
- B. MCC 52B supplies the heaters in BAST A, MCC 62E supplies the heaters in BAST B.
- C. Both MCCs 52A and 62D supply heaters in BAST A and in BAST B.
- D. Both MCCs 52B and 62E supply heaters in BAST A and in BAST B.

**SRO Exam Number**  
77

**Record Number**  
105

QUESTION

The plant is operating at 100% power with all systems in their normal lineup. Which ONE (1) of the following could cause a reactor trip and Safety Injection actuation? Assume NO operator action.

- A. TE-401, Reactor Coolant Tave (Red Channel), fails LOW.
- B. PT-431, Pressurizer Pressure (Blue Channel), fails HIGH.
- C. TRIP of both Main Feed Pumps.
- D. Main Generator TRIP.

**SRO Exam Number**  
78

**Record Number**  
108

QUESTION

Inoperability of which ONE (1) of the following instruments would require the reactor to be shut down based on NOT having adequate Accident Monitoring Instrumentation available?

- A. SG PORV valve position
- B. SI flow meter
- C. Source Range N-31 Indication
- D. Containment Hydrogen Monitor

**SRO Exam Number**  
79

**Record Number**  
109

QUESTION

The plant is operating at full power when the RXCP A OIL LEVEL HIGH/LOW alarm is received. All the temperatures associated with the RXCP are at their normal values and stable.

Which of the following should be contacted for the given reason in response to the alarm?

- A. The STA should be contacted to perform an Operability Determination.
- B. An electrician should be directed to add oil to the RXCP if the level is low.
- C. A HazMat team should be directed to enter the Containment and clean up any oil spill.
- D. The Plant Manager should be notified of the impending reactor trip.

QUESTION

Select the statement that explains the basis for the minimum required RWST boron concentration.

- A. It ensures that the pH of the Containment sump will be sufficiently alkaline to enhance removal of iodine fission products from the Containment atmosphere.
- B. It ensures that sufficient negative reactivity is available to ensure that the reactor will be shut down following an Anticipated Transient Without Scram (ATWS).
- C. It ensures that sufficient negative reactivity is available to shut down the reactor following a Main Steam Line Break with a return to power.
- D. It ensures that sufficient negative reactivity is available to shut down the reactor if an RCCA is ejected from the core at 100% power.

QUESTION

The reactor is operating at full power. The chemist informs the control room that Dose Equivalent I-131 is 1  $\mu\text{Ci}/\text{gram}$ . Assuming that this value does NOT change, ALL of the following actions must be performed EXCEPT:

- A. Sample the RCS once every four hours.
- B. If the activity has NOT changed in 48 hours, shut down the Reactor and cool the RCS to  $< 500^\circ\text{F}$  within 6 hours.
- C. If the activity has NOT changed in 48 hours, declare an Unusual Event and notify the State and Counties within 15 minutes and the NRC within one hour of the declaration.
- D. If the reactor is shutdown because of the high RCS activity, the NRC must approve any restart.

QUESTION

The Unit has experienced a loss of coolant accident and has transitioned from E-1, "LOSS OF REACTOR OR SECONDARY COOLANT" to ECA-1.2, "LOCA OUTSIDE CONTAINMENT" due to high radiation levels in the auxiliary building. The leak is now isolated.

Which ONE (1) of the following is the correct action to take?

- A. Remain in ECA-1.2, "LOCA OUTSIDE CONTAINMENT".
- B. Transition to ECA-1.1, "LOSS OF EMERGENCY COOLANT RECIRCULATION".
- C. Transition to E-1, "LOSS OF REACTOR OR SECONDARY COOLANT".
- D. Transition to E-0, "REACTOR TRIP OR SAFETY INJECTION"

QUESTION

The plant is operating at full power. R-4 goes into alarm followed shortly by R-13 and R-14 alarming.

This would be indicative of which ONE (1) of the following?

- A. Charging pump relief valve lifting.
- B. Steam Generator Blowdown tank leak.
- C. Waste Gas Decay tank leak.
- D. Boric Acid Transfer Pump leak.

QUESTION

The following Plant conditions exist:

- A refueling outage is in progress.
- The Aux. Operator is unavailable while undergoing decontamination
- An Operator is stationed in Containment
- The Equipment Operator has NOT completed his Aux. Operator Qualifications
- A large air leak develops in Containment and ALL air headers are less than 60 psig.

To isolate the leak, you should direct:

- A. The Control Room Operator to close IA-101, Instrument Air to Containment Isolation, and the Containment Operator to close SA-472, SA to Contmt Isolation.
- B. The Equipment Operator to close SA-471, Station Air to Containment Isolation, and the Control Room Operator to close IA-101, Instrument Air to Containment Isolation.
- C. The Containment Operator to close SA-472, SA to Contmt Isolation, and IA-104, IA to Reactor Bldg. Header Isolation.
- D. The Equipment Operator to close SA-471, Station Air to Containment Isolation, and locally close IA-101, Instrument Air to Containment Isolation.

QUESTION

The plant has just tripped from 100% power.

- The following conditions exist:
- RCS pressure is 1400 psig and decreasing slowly
- Subcooling is 5°F
- Pressurizer level indicators 426 and 427 are off-scale low
- Pressurizer level indicators 428 and 433 are off-scale high
- NO RXCPs are running
- CNTMT pressure is 16 psig and decreasing slowly

All ESF equipment has functioned properly. The crew is responding to the reactor trip using IPEOPs and they are currently in ES-1.2.

Based on this information, what is the minimum E-Plan classification for this event?

- A. Unusual Event
- B. Alert
- C. Site Emergency
- D. General Emergency

QUESTION

The Plant is operating at 100% power with the following equipment out of service:

- Turbine Driven AFW Pump
- RHR Pump A
- Diesel Generator B Abnormal Alarm comes in. The Equipment Operator reports that lube oil pressure is 2 psig.

Assume a Small (2") LOCA occurs in conjunction with a loss of offsite power. How will these conditions affect the plant response using the IPEOPs?

- A. ECA-0.0 will have to be used to supply adequate power.
- B. FR-H.1 will have to be used because there is NO heat sink available.
- C. FR-C.1 will have to be used to maintain adequate core cooling.
- D. ECA-1.1 will have to be used because sump recirculation will NOT be possible.

QUESTION

The plant was operating at full power when the RO reports that there is indication of an RCS leak. The calculation determines the leak rate to be 14 gpm.

Assuming the leak rate does NOT change, what action is required as a result of this information?

- A. If the source of the leakage is NOT discovered and corrected within 48 hours, the reactor must be shutdown. Within four hour of the start of the shutdown a NON-EMERGENCY report must be submitted to the NRC.
- B. If the source of the leakage is NOT discovered and corrected within 12 hours, the reactor must be shutdown. Within four hour of the start of the shutdown a NON-EMERGENCY report must be submitted to the NRC.
- C. The reactor must be shutdown within 12 hours. As soon as the shutdown starts, an Unusual Event must be declared with the associated notification requirements of the Emergency Plan.
- D. The reactor must be shutdown within 12 hours. As soon as the shutdown starts, an Alert must be declared with the associated notification requirements of the Emergency Plan.

QUESTION

The following Plant conditions exist:

- The plant is at 100% power.
- R-9, RCS Letdown Radiation Monitor, is reading 6 R/hr and has been confirmed by chemical analysis.

You have just declared an Unusual Event due to the high RCS activity. If conditions continue to deteriorate, which of the following condition(s) would require you to take action to reclassify the event?

- A. 9 going off-scale high
- B. R-13 going off-scale high
- C. R-15 reading  $1.5E+5$  cpm
- D. R-4 reading  $5.0E+3$  mR/hr

QUESTION

Containment pressure has increased to 2 psig due to an air leak in Containment. Why is it important to vent Containment as soon as possible?

- A. Containment Vent and Purge System is designed only to work at less than 2.5 psig.
- B. Radiation Monitor system filter assemblies could be damaged at this pressure.
- C. To ensure ability to handle a pressure increase from a Design Basis Accident.
- D. To prevent entry into adverse Containment conditions if IPEOPs are entered.

**SRO Exam Number**  
**90**

**Record Number**  
**120**

QUESTION

As the Refueling SRO, you are informed of a frayed cable on the Manipulator Crane, which would have caused it to fail the visual inspection. What is the appropriate action to take?

- A. Continue refueling operation since it was found after the start of refueling operations for the day.
- B. Continue refueling operation until end of the current shift and have the cable repaired prior fuel movement on the next shift.
- C. Stop refueling operations requiring the Manipulator Crane and continue refueling operations with the Fuel Handling Crane.
- D. Stop all refueling operations until the Manipulator Crane cable is repaired.

**SRO Exam Number**  
**91**

**Record Number**  
**121**

QUESTION

In response to a HIGH turbine vibration condition the reactor and turbine have been tripped. Vacuum has been broken and the all the conditions are now stable and within limits. Who or what procedure would provide guidance to the Shift Manager or Shift

Technical Advisor concerning short term follow-up activities now that the plant is stable?

- A. The on call duty NRC officer would provide short term follow-up requirements.
- B. The Operations Manager would decide based on what caused the trip who to notify for support.
- C. GNP 2.2.1, "Guidelines for Post Trip Activities", would be used by the Operations Manager or Tech Spec alternate to direct notifications for support.
- D. GNP 2.2.1, "Guidelines for Post Trip Activities", would be used by the Shift Manager or STA to direct notifications for support and follow-up activities.

QUESTION

The following Plant conditions exist:

- The plant is at 8% power
- SP 54-063, Turbine Trip Mechanism Tests, is in progress.
- The Reactor Operator reports RCS temperature dipped but has returned to 549° F.
- The Balance of Plant reports the Turbine Speed increased to 2000 rpm then returned to 1800 rpm.
- Energy Supply and Control requests power as soon as possible.
- The lead I&C person reports the ROST is out of service due to a broken lead.

The correct course of action is to:

- A. Pick up 40 Megawatts (MW) of power as soon as possible.
- B. Remain off line until ROST is repaired.
- C. Direct a Reactor and Turbine Trip.
- D. Direct a Turbine Trip only.

QUESTION

Which of the following are the MINIMUM conditions which would allow the lifting of the Reactor Vessel Head?

- |    | <u>RCS Temp</u> | <u>RCS Boron</u> |
|----|-----------------|------------------|
| A. | 135° F          | 1862 ppm         |
| B. | 135° F          | 2253 ppm         |
| C. | 145° F          | 1944 ppm         |
| D. | 145° F          | 2275 ppm         |

QUESTION

The following Plant conditions exist

- The plant is at 100% power.
- Diesel Generator B is out of service for governor repair.

An I&C technician request permission to remove from service and test SW-1211A/SV-33303, Service Water to RHR Pump A Fan Coil Unit. What would be the consequences of removing from service and testing SW-1211A at this time?

- A. A LCO is exceeded.
- B. 24 hour LCO entered.
- C. 48 hour LCO entered.
- D. 72 hour LCO entered.

QUESTION

The following Plant conditions exist:

- The plant is at 55% power following an outage.
- The following equipment is out of service: RAT, Battery B, and SI Pump B

The Maintenance Supervisor informs you, the Shift Manager, that the troubleshooting and repair of the out of service components will take twenty (20) hours each to complete. He also informs you that he only has personnel to work on one job at a time and requests you set the priority to complete the work. Which is the proper prioritization for completion of the tasks?

- A. Battery B, RAT, SI Pump B
- B. Battery B, SI Pump B, RAT
- C. SI Pump B, RAT, Battery B
- D. SI Pump B, Battery B, RAT

**SRO Exam Number**  
96

**Record Number**  
126

QUESTION

During fuel movement per Fuel Assembly Movement Sequence, which ONE (1) of the following is acceptable for alternative position(s) when placing the Fuel Assembly?

- A. Only when used for "boxing" another Fuel Assembly.
- B. Only for temporary storage along the Baffle plate.
- C. For temporary storage along the Baffle plate and Dead Cell Load Testing.
- D. When used for "boxing" another Fuel Assembly and temporary storage along the Baffle plate.

**SRO Exam Number**  
97

**Record Number**  
127

QUESTION

Your shift Aux. Operator informs you that he is currently at 1.45 REM for the year and would receive approximately 30 mR by the end of the year as an Aux. Operator. As the Aux. Operator's supervisor, what action is required by you to allow the Aux. Operator to continue as an Aux. Operator?

Initiate a Form HPF-120 and have it signed by ...

- A. the Aux. Operator, and yourself.
- B. the Aux. Operator, yourself, and Rad Prot. Department Supervisor.
- C. the Aux. Operator, yourself, Rad Prot. Department Supervisor, and Plant Manager
- D. the Aux. Operator, yourself, and Rad Prot. Department Supervisor, Plant Manager, and VP-Nuclear.

QUESTION

The following Plant conditions exist:

- The Plant is at 100% power.
- A Containment entry is required to inspect four (4) valves in Containment
- The valve are in the following radiation fields

Valve #1 – 800 mR/hr

Valve #2 – 400 mR/hr

Valve #3 – 1 R/hr

Valve #4 – 1.5 R/hr

Each valve will require approximately twelve (12) minutes to inspect.

You have three (3) NAO to use for the inspection with the following exposure record:

NAO#1 – 200 mR

NAO#2 – 100 mR

NAO#3 – 140 mR

As the CRS and using all three (3) NAOs, which of the following assignments would you use to meet the ALARA requirements?

- Assign NAO#1 to Valve #4; NAO#2 to Valve #3; and NAO#3 to Valves #1 and #2
- Assign NAO#1 to Valve #3; NAO#2 to Valve #4; and NAO#3 to Valves #1 and #2
- Assign NAO#1 to Valve #1 and #2; NAO#2 to Valve #4; and NAO#3 to Valves #3
- Assign NAO#1 to Valve #3; NAO#2 to Valves #1 and #2; and NAO#3 to Valve #4

**SRO Exam Number**  
**99**

**Record Number**  
**129**

QUESTION

Which of the following procedures have direct entry?

E-0, Reactor Trip and Safety Injection, ...

- A. FR-S.1, Response to Nuclear Power Generation/ATWS, and ECA-0.0, Loss of All AC.
- B. ECA-0.0, Loss of All AC, and FR-H.1, Response to Loss of Secondary Heat Sink.
- C. FR-S.1, Response to Nuclear Power Generation/ATWS.
- D. ECA-0.0, Loss of All AC.

**SRO Exam Number**  
**100**

**Record Number**  
**130**

QUESTION

The plant is in a Site Emergency, during accountability it is discovered that a worker is missing. Who and at which facility would be contacted to start and coordinate a search?

- A. The Site Protection Director at the Security Building.
- B. The Support Activities Director at the OSF.
- C. The Radiological Protection Director at the RAF.
- D. The Event Operations Director at the TSC.

### Kewaunee May 2001 SRO Written Examination

Record Exam	K/A #	Answer	Reference
001	1	001A2.07	B OP E-CRD-49C
002	2	001K5.85	B Rx Data Manual 9.1.2, 9.2, 5.1.1.1
003	3	013K6.01	A A-MI-87, XK100-150
004	4	015A1.03	D RE-11, SP87-125
007	5	022K3.01	D USAR 6.3, System Description 18, M602
008	6	009 2.4.45	B ES-1.3
010	7	059A4.08	B System Description 05A, XK100-554
011	8	056K1.03	C System Description 05A, Dwg. E-1624
012	9	061K4.06	D E1602
013	10	061K6.02	A M-205, SYS DESC CHAP 05B
015	11	010K5.02	C Steam tables
016	12	010K1.05	D System Description 36
017	13	071A3.02	A SYS DESC CHAP 32B, N-GWP-32B,
018	14	071K1.06	B SYS DESC CHAP 32B, N-GWP-32B,
019	15	072K3.02	B N-FH-53-CLD,
020	16	002K5.09	C STEAM TABLES
021	17	011A4.01	B 1) XK100-155, XK100-154
022	18	012A2.05	A TS Section 2.3
023	19	012K2.01	C USAR 7.2
024	20	014A1.04	B ARP 47042-Q; Kewaunee Core Control Theory
026	21	063K4.01	C E3626
027	22	062A3.04	C System Description 38, E233, 47102-D
028	23	075A2.03	C System Description 04. E-AR-09, E-CW-04
029	24	079K1.01	A E2097
030	25	086K6.04	C System Description 08, E1619
031	26	086A1.01	C E1619
033	27	005A1.02	B E2036, XK100-18
035	28	029K3.01	D E1609, M602
036	29	062A1.01	C N-DGM-10A

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037	30	073K3.01	A	A-RM-45, N-RBV-18B
038	31	073K4.01	D	A-RM-45
039	32	063A3.01	C	A-EDC-38, N-EDC-38, System Description 38
042	33	041K1.06	A	System Description 06
044	34	045K4.13	A	E2059, XK101-24,
048	35	2.3.11	D	SP 32A-136, Offsite Dose Calculation Manual 3-2,
049	36	2.1.18	D	NAD 3.6
052	37	2.2.25	C	Tech. Spec. Figure 2.1-1
053	38	2.2.27	A	Tech. Spec. 3.8
054	39	2.3.9	A	ODCM 2.1, A-RM-45, N-RBV-18B
057	40	2.4.32	B	A-SER-52B
060	41	005AK1.01	C	Tech Spec 3.10-C.4, Rx Data Man. RD-14.1
061	42	015AK3.07	B	ES-0.2 Background Document
063	43	027AK3.03	C	E-0, E-0 Background Document
065	44	069AK3.01	C	E-0
066	45	068AA1.27	A	E-0-06
067	46	074EK3.04	D	FR-C.1 Background Document
069	47	E07EK1.2	C	ECA-3.1 Background Document, step 14
072	48	E10EA1.1	C	E2039, ES-0.3 Background Document
073	49	E12EA1.3	C	ECA 2.1 Background Document, M203, ECA-2.1
074	50	E12EK2.1	A	ECA 2.1, ECA 2.1 Background Document
075	51	003AK2.05	D	E-CRD-49C, System Description 049
076	52	003AK3.07	A	TS-2.1 Basis
077	53	008AA1.07	D	A-RC-36D
078	54	009EA1.10	A	Mitigating Reactor Core Damage Page 6-1
079	55	011EK1.01	B	FR-H.1 Background Document, E-1 Background
080	56	011EK2.02	D	USAR 6.2.2, 14.3.2, 14.3.4
081	57	025AK1.01	A	A-RHR-34

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082 58	029EK1.03	C	FR-S.1 Background Document

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083	59	029EK2.06	A	System Description 47, XK100-144
084	60	032AK1.01	A	System Description 48, page 3
085	61	033AK1.01	B	A-NI-48, System Description 48
087	62	E03EK2.1	D	System Description 33, E2032
089	63	E11EK2.2	B	ECA-1.1
090	64	E16EK3.3	A	FR-Z.3, FR-Z.3 Background Document
091	65	065AK3.03	A	XK100-10
092	66	E05EA1.1	D	FR-H.1 Background Document
094	67	2.1.4	B	NAD 3.17
095	68	067AA2.09	C	Fire Protection Program Plan Appendix B
096	69	076AA2.05	C	A-RC-36A; N-CVC-35B
097	70	E06 2.4.1	D	F-0.2, FR-C.2
098	71	E06EA2.2	D	FR-C.2 background document
099	72	E10EA2.1	B	FR-I.3 Background Document, ES-0.3 Background
100	73	007EA2.04	D	FR-S.1, FR-S.1 Background Document, E-CVC-35
101	74	055EA1.05	C	USAR 8.2-6
102	75	E15EK2.2	A	FR-Z.2 Background Documents
103	76	004K2.04	D	System Description 35
105	77	013A2.03	B	XK-100-154
108	78	2.4.3	D	TS Table 3.5-6
109	79	015 2.1.14	B	A-RC-36C
110	80	040 2.2.25	C	USAR 14.2.5
111	81	076 2.4.30	D	A-RC-36A; EPIP-AD-02
112	82	022 2.4.8	C	E-1, ECA-1.2
113	83	060AK2.01	C	XK-100-36, A204, A206
114	84	065AA2.03	C	N-AS-01-CL, M213-8, M213-6, E1603, GNP 3.3.1,
115	85	028 2.4.49	C	EPIP-AD-02
116	86	056AA2.22	D	E-1
117	87	004 2.4.30	C	TS 3.1.d; EPIP-AD-02 Chart C

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118 88	072 2.4.46	A	EPIP-AD-02

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119	89	029 2.2.25	C	Tech. Spec 3.6
120	90	034 2.2.22	D	Tech Spec 3.8
121	91	045 2.1.14	D	GNP2.2.1
122	92	2.1.7	D	System Description 54, XK101-24, E-0 Background
123	93	2.1.22	B	Tech. Spec. 3.8, Tech. Spec. 1.0.J
124	94	2.2.9	A	Tech. Spec. 3.3.b, N-ACA-17, E240
125	95	2.2.20	B	Tech. Spec. (section 3.3) (section 3.7)
126	96	2.2.31	D	RF-03.01
127	97	2.3.1	B	HP-01.003
128	98	2.3.2	B	NAD 1.23, HP-4.01
129	99	2.4.1	D	ECA-0.0
130	100	2.4.42	B	EPIP-AD-04