

Reactor Operator Examination

RO #	1
------	---

Given the following conditions on Unit 1:

- At 2230 on 7/20/01, the operators recorded the incorrect number for the Boric Acid Tank placed on recirculation during that shift.
- At 2300 on 7/21/01, the operators realize that they had made the error concerning the Boric Acid Tank.

How do the operators make the required corrections?

- a. The correct number is inserted directly into the log for the previous night shift AND automatically prints the corrected legal copy of the log.
- b. The correct number is inserted directly into the log for the previous night shift, BUT the legal copy of the log for that day will NOT reflect the change.
- c. A corrected entry is made in the current shift log referring to the date and time of the incorrect log entry AND is printed out on the next legal copy of the log.
- d. A corrected entry is made in the current shift log that refers to the date and time of the incorrect log entry AND a handwritten change is made to the incorrect entry on the printed legal copy of the log.

Reactor Operator Examination

RO #	2
------	---

Why are the Containment Spray Pumps stopped in E1, "LOSS OF REACTOR OR SECONDARY COOLANT" when Containment pressure is less than 20 psig?

- a. To conserve RWST water.
- b. To reduce Diesel Generator loading.
- c. To prepare for placing the Containment Spray pumps on recirculation flow.
- d. To stop hydrogen production due to the NaOH reaction with metals in Containment.

Reactor Operator Examination

RO #	3
------	---

(see reference)

Given the following conditions on Unit 1:

- A SG tube rupture has been diagnosed on 12 SG
- Buses 11 and 12 have failed to transfer to 1R transformer following the trip
- 1E3 "Steam Generator Tube Rupture" has been completed up to the steps initiating RCS depressurization (Steps 19 and 20 provided)
- Both Pressurizer PORVs will NOT open
- The charging line to Pressurizer ΔT is 500°F

What is the correct action to be taken based on the above information?

- Start** 11 RCP in order to establish normal Pressurizer spray.
- Establish** normal letdown to reduce the spray line ΔT to less than 320°F.
- Establish** auxiliary spray flow until the condition is met to stop depressurization.
- Perform** the actions of 1ECA-3.3 "SGTR Without Pressurizer Pressure Control" since adequate Pressurizer pressure control CANNOT be established.

Reactor Operator Examination

RO #	4
------	---

Which of the following will automatically CLOSE **CV-31414**, 11 Steam Generator Blowdown (SGB) Control Valve?

- a. LOW level in the SGB Flash Tank.
- b. HIGH failure of Radiation Monitor 1R-19.
- c. HIGH temperature on the outlet of the SGB Flash Tank.
- d. TRIP of either the 11 MD or the 12 TD Auxiliary Feedwater pump.

Reactor Operator Examination

RO #	5
------	---

Given the following conditions on Unit 1:

- A LOCA has occurred
- The actions of 1E-0 "Reactor Trip Or Safety Injection" have been completed
- Entry in 1E-1 "Loss Of Reactor OR Secondary Coolant" was made
- 1FR-Z.1 "Response To High Containment Pressure" has been entered due to an ORANGE condition for the CONTAINMENT Critical Safety Function (CSF)
- Following completion of the actions of 1FR-Z.1, the ORANGE condition still exists
- NO other RED or ORANGE CSF conditions exist

What is the action that should be taken?

- a. **Repeat** the sequence of steps of 1FR-Z.1 ONCE, THEN **return** to 1E-1.
- b. **Return** to 1E-1 at the step in effect, AND 1FR-Z.1 does NOT need to be repeated again.
- c. **Return** to 1E-1 at the step in effect AND repeat actions of FR-Z.1 in 10 minutes.
- d. **Repeat** actions in 1FR-Z.1 UNTIL the ORANGE condition clears, OR a higher ORANGE or RED condition occurs.

Reactor Operator Examination

RO #	6
------	---

Given the following conditions on Unit 1:

- A LOCA has occurred with degradation of core cooling
- Core cooling has been restored
- Actions of ES-1.1 "Post LOCA Cooldown And Depressurization" are in progress
- Containment pressure is 4.6 psig after peaking at 28 psig
- Containment hydrogen is reading 6.2%

Which action concerning the containment hydrogen recombiners is appropriate?

The hydrogen recombiners should...

- NOT be started since the hydrogen level is in EXCESS of the detonation limit.
- NOT be started until plant-engineering staff concurs since the hydrogen flammability limit is EXCEEDED.
- be STARTED immediately since the hydrogen level is LESS THAN the detonation limit for adverse containment conditions.
- be STARTED immediately since the hydrogen level is LESS THAN the flammability limit for normal containment conditions.

Reactor Operator Examination

RO #	7
------	---

The following conditions exist on unit 1:

- Reactor Protection Logic Testing is being performed causing numerous repetitive alarms

What is the correct response concerning the alarms?

- a. The operator may use a pre-job brief in place of individual alarm notifications after the first notification.
- b. The operator shall reference the alarm response procedures for ALL alarms received.
- c. The operator may prioritize alarms NOT associated with the logic testing AND announce these alarms only if operationally significant.
- d. The operator does NOT need to treat the alarms as valid until proven valid.

Reactor Operator Examination

RO #	8
------	---

Given the following initial conditions on Unit 1:

- Reactor power is 100%
- 11 CFCU is aligned to the gap
- 12 CFCU is aligned to the dome
- 13 CFCU is aligned to the gap
- 14 CFCU is out of service

Then the following conditions are noted:

- Annunciator **47019-0406**, 13 CONTAINMENT FAN COIL UNIT MOTOR STATOR HI TEMP, actuates
- Damper **CD-34076**, 13 FCU DISCH TO DOME, indicates closed
- Damper **CD-34077**, 13 FCU DISCH TO GAP, indicates closed
- White light **ML-44002-0201**, 13 CNTMT FCU DISCH DMPRS IMPROPER, is lit

What is the consequence of this failure AND what actions should be taken by the operator?

- Cooling has been lost to the Regenerative HX Area
 - **Verify** 11 CFCU running in SLOW SPEED
 - **Initiate** a Unit shutdown within EIGHT hours
- Cooling has been lost to 11 SG Vault
 - **Take** 13 CFCU to STOP
 - **Verify** 12 CFCU running in FAST SPEED
 - **Open** damper **CD-34075**, 12 CFU DISCH TO GAP
- Cooling has been lost to the Pressurizer Vault
 - **Verify** 13 CFCU running in FAST SPEED
 - **Open** Damper **CD-34076**, 13 FCU DISCH TO DOME
 - **Take** 13 CFCU control to SLOW SPEED
- Cooling has been lost to 12 RCP Stator
 - **Take** 13 CFCU control to SLOW SPEED
 - **Open** Damper **CD-34077**, 13 FCU DISCH TO GAP
 - **Return** 13 CFCU to FAST SPEED

Reactor Operator Examination

RO #	9
------	---

Which of the following is correct concerning an Orange Path (Containment Sump "B" level greater than 8ft) in the Containment Critical Safety Function Status Tree?

- a. Continued Core cooling CANNOT be assured since the entire contents of the RWST has been injected into Containment.
- b. Critical plant components needed for plant recovery could be damaged and rendered inoperable due to flooding in Containment.
- c. Auxiliary Feedwater to a SG faulted in Containment must remain isolated even if required for cooldown of the RCS.
- d. Cooling Water to CFCUs must NOT be isolated since CFCUs are required to maintain Containment pressure less than 46 psig.

Reactor Operator Examination

RO #	10
------	----

Given the following conditions on Unit 1:

- The Unit is at 15% power
- The following annunciators are in alarm:
 - **47015-0206** 11 RCP LABYRINTH SEAL LO DP
 - **47015-0207** 12 RCP LABYRINTH SEAL LO DP
 - **47015-0208** 11 RCP NO. 1 SEAL INLT OR OUTL HI TEMP
 - **47015-0209** 12 RCP NO. 1 SEAL INLT OR OUTL HI TEMP
 - **47015-0409** SEAL WATER INJECTION FILTER HI DP
- Seal injection flows to each RCP indicate LESS THAN 1 gpm
- **CV-31245**, 11 RC Pump Thermal Barrier Clnt Outl valve has failed CLOSED
- RCP lower bearing water temperatures indicate:
 - 211°F AND increasing for 11 RCP
 - 181°F AND increasing for 12 RCP

Per C3 AOP2, "Loss of Reactor Coolant Pump Seal Cooling", which of the following actions are required at this time?

- a. **Trip** the reactor AND **stop** both RCPs.
- b. **Trip** the reactor, **stop** 11 RCP only AND **monitor** 12 RCP bearing water temperature.
- c. **Shutdown** the reactor within ONE hour AND then **stop** both RCPs.
- d. **Stop** 11 RCP only, **shutdown** the reactor within ONE hour AND **monitor** 12 RCP bearing water temperature.

Reactor Operator Examination

RO #	11
------	----

Given the following conditions:

- An electrical fire has occurred in MCC 2TA1 requiring deenergization of MCC 2TA1.
- The Fuel Oil Transfer Pump Selector Switch on the D5 Benchboard is in the 21-pump position.
- The fuel oil outlet line has developed a leak at the bottom of the D5 fuel oil Day Tank.

Which of the following will occur in regard to the D5 fuel oil system?

- a. LOW level in the D5 fuel oil Day Tank will start ONLY 21 D5 Fuel Oil Pump in attempt to refill the Day Tank.
- b. LOW-LOW level in the D5 fuel oil Day Tank will start ONLY 23 D5 Fuel Oil Pump in attempt to refill the Day Tank.
- c. LOW-LOW level in the D5 fuel oil Day Tank will start BOTH 21 and 23 D5 Fuel Oil Pumps in attempt to refill the Day Tank.
- d. NEITHER 21 NOR 23 D5 Fuel Oil Pumps will start AND the D5 fuel oil Day Tank will continue to drain.

Reactor Operator Examination

RO #

12

Given the following conditions for both Units:

- Unit 1 is at 5% power
- Unit 2 is at 100% power
- 12 MD AFW Pump has indications of steam binding AND is isolated
- 11 TD AFW Pump failed its surveillance AND was declared inoperable
- 21 MD AFW discharge was cross-connected to Unit 1
- Following the cross-tie, 21 SG level falls to 10% Narrow Range due to a feedwater valve problem

What is the response of the AFW System?

(assume NO operator action)

AFW flow is automatically initiated to Unit 2 SGs from...

- a. 22 AFW Pump only AND will indicate greater than 100 gpm to each Unit 2 SG.
- b. 22 AFW Pump only AND will indicate less than 100 gpm to each Unit 2 SG.
- c. BOTH 21 and 22 AFW Pumps AND will indicate greater than 100 gpm to each Unit 2 SG.
- d. BOTH 21 and 22 AFW Pumps AND will indicate less than 100 gpm to each Unit 2 SG.

Reactor Operator Examination

RO #	13
------	----

Given the following conditions on Unit 2:

- Reactor power is 30%
- Pressurizer pressure Yellow Channel (PT-449) has FAILED LOW AND was removed from service in accordance with 2C51 "Instrument Failure Guide - Unit 2"

Which of the following additional bistable actuations in this condition would result in a reactor trip?

- White Channel Overtemperature Delta-T **2TC-405-C**, OVER TEMP TRIP
- Blue Channel Turbine Impulse Pressure **2PC-486-A**, TURBINE PRESS P13
- Blue Channel Overpower Delta-T **2TC-407-A**, OVER POWER TRIP
- Yellow Channel Nuclear Power Range Instrument Drawer **N44A**, OVERPOWER TRIP HIGH RANGE

Reactor Operator Examination

RO #	14
------	----

Given the following conditions on Unit 1:

- The Unit is at 80% power
- The operators have entered 1C5 AOP5 "MISALIGNED ROD, STUCK ROD, AND/OR RPI FAILURE OR DRIFT"
- The operator is reviewing the symptoms that indicate a possibly misaligned RCCA.

Which indication would NOT be present if the problem is a stuck RCCA?

- a. RPI AND Group Step Counter in disagreement.
- b. Abnormal flux tilt indicated on Power Range NIS.
- c. Movement shown on the suspect rod RPI as the IN-HOLD-OUT switch is operated.
- d. Movement shown on the suspect rod Group Step Counter as the IN-HOLD-OUT switch is operated.

Reactor Operator Examination

RO #	15
------	----

Given the following conditions on Unit 1:

- Cooldown is in progress for refueling
- RCS hot legs are at 180°F
- RCS pressure is 290 psig
- 12 RHR pump is in service
- Both RCPs are secured
- **CV-31236**, 12 RHR HX RC OUTLET FLOW, FAILS OPEN, resulting in an overcurrent trip of 12 RHR pump

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

- a. **Establish** RCP support conditions AND **start** a RCP.
- b. **Close** and partially open **MV-32066**, RHR TO RC LOOP B COLD LEG, **start** 11 RHR pump AND locally **throttle MV-32066**.
- c. **Close RHR-2-5**, RHR HX Outlet Crossover valve, AND **start** 11 RHR Pump.
- d. **Fully close CV-31237** (HC-626A), 11/12 RHR HX Bypass Flow valve, THEN **reset** AND **restart** 12 RHR Pump.

Reactor Operator Examination

RO #	16
------	----

Which of the following radiation monitors could STOP a RADIOACTIVE waste discharge if a HIGH alarm condition exists?

- a. **R-21**, Circulating Water Discharge Monitor
- b. **1R-15**, Unit Condenser Air Ejector Gas Monitor
- c. **2R-19**, Unit 2 Steam Generator Blowdown Monitor
- d. **R-16** Containment Fan Coils Cooling Water Discharge Monitor

Reactor Operator Examination

RO #	17
------	----

In accordance with the ALARA Program, which of the following describes an action taken at Prairie Island used to minimize the annual integrated dose for all workers?

- a. All Hot Spots are shielded with Portable shielding.
- b. Dissolved hydrogen is maintained in the RCS during power operations.
- c. The CVCS letdown flow rate is maintained at its MINIMUM value during plant outages.
- d. Power changes are performed at the MAXIMUM permissible rate as allowed by procedure.

Reactor Operator Examination

RO #	18
------	----

Which of the following is NOT a basis for maintaining control rods above the Rod insertion limits.

- a. Assures negative reactivity is inserted within 1.8 sec from a reactor trip.
- b. Assures adequate trip reactivity.
- c. Assures meeting power distribution limits.
- d. Limits the consequences of a hypothetical rod ejection accident.

Reactor Operator Examination

RO #

19

Given the following plant conditions exist:

- Fire Detection Zone 4, (695' unit 1 Turb Bldg, Water Treatment Area, and Gas House), is in alarm.

When is the Screenwash Pump required to be placed in service to the Fire Protection header?

- IMMEDIATELY upon receipt of the fire alarm.
- IMMEDIATELY upon report of an actual fire.
- ONLY if necessary to maintain fire header pressure.
- ONLY if 121 motor Driven Fire Pump is out of service.

Reactor Operator Examination

RO #	20
------	----

Given the following conditions:

- Unit 2 is at 50% power
- A load decrease is in progress per 2C1.4 "Unit 2 Power Operation"
- A lift coil fuse blows for a Control Bank "D", Group 1 rod

Which of the following describes the response of the rod control system to the next "outward" control rod demand signal?

- The affected rod will DROP while the rest of Control bank "D" will MOVE OUT.
- The affected rod will MOVE IN while the rest of Control bank "D" will MOVE OUT.
- The affected rod will NOT MOVE while the rest of Control bank "D" will MOVE OUT.
- ALL of Control Bank "D" rods will NOT MOVE AND an "urgent failure" alarm will come in.

Reactor Operator Examination

RO #	21
------	----

Given the following conditions on Unit 1:

- The reactor tripped from 100% power
- One Code Safety Valve on 11 SG OPENED AND failed to reclose
- SI was manually actuated
- 12 AFW pump could NOT be started
- 12 SG experienced a pipe shear inside containment
- The crew is performing the actions of 1ECA-2.1 "Uncontrolled Depressurization of Both Steam Generators"
- SG pressures are currently: 600 psig for 11 SG and 450 psig for 12 SG

What action should be taken concerning feed to the SGs?

- a. **Isolate** all feed and steam paths to Both SGs THEN **Align** the Unit 1 Condensate system to provide feed to the SGs.
- b. **Isolate** all feed and steam paths to Both SGs THEN **enter** FR-H.1 "RESPONSE TO LOSS OF SECONDARY HEAT SINK".
- c. **Maintain** the steam supply to 11 AFW Pump from 11 SG OPEN AND **feed** SGs using 11 AFW pump until a different source of feedwater can be aligned.
- d. **Open** both Pressurizer PORVs to provide a feed and bleed path THEN **isolate** all feed and steam paths to BOTH SGs.

Reactor Operator Examination

RO #	22
------	----

The following conditions exist on Unit 1:

- Reactor power is 100%.
- All control systems are in automatic
- Red Pressurizer Pressure Channel (PT-429) was declared inoperable and taken out of service with the appropriate bistables placed in the tripped condition.
- Controlling Pressurizer Pressure Channel (PT-431) fails HIGH.

What is the expected plant Response to the channel failure? (**assume NO operator action**)

- BOTH PORVs AND BOTH spray valves OPEN resulting in a reactor trip from low Pressurizer pressure followed by SI actuation.
- The reactor will TRIP on high pressure, AND SI will ACTUATE on low pressure due to spray valve operation.
- Pressurizer proportional heaters will de-energize AND spray valves will OPEN resulting in an OTΔT runback to 90% power prior to the reactor tripping, AND SI will ACTUATE due to low Pressurizer pressure.
- BOTH PORVs AND BOTH spray valves remain CLOSED while Pressurizer heaters de-energize.

Reactor Operator Examination

RO #	23
------	----

Given the following conditions:

- ONE thermal detector associated with Fire Protection Zone 12 (Relay Room) has failed
- This failure has resulted in an ALARM condition for Zone 12

As a result of this failure, when is carbon dioxide released to the Relay Room?

- a. Following a 60-second time delay from a SECOND detector going into an alarm condition.
- b. Immediately IF a SECOND detector goes into an alarm condition.
- c. Following a 60-second time delay from the alarm actuation.
- d. Immediately upon the alarm actuation.

Reactor Operator Examination

RO #	24
------	----

Given the following conditions on Unit 2:

- The Unit is at 100% power
- Pressurizer pressure is 2235 psig
- One backup heater group ON, variable heater group ON
- Pressurizer Pressure Control Selector switch is in the 2-1 position
- Pressurizer Pressure Control in AUTO

What would be the response of Pressurizer pressure control to a single Pressurizer Spray Valve controller FAILURE to 100% output?

- Pressurizer pressure does NOT decrease because the spray valves do NOT open below 2260 psig.
- Pressurizer pressure decreases to 2215 psig where the variable heater stabilizes pressure.
- Pressurizer pressure decreases to 2210 psig, where all backup heaters turn on and stabilize pressure.
- Pressurizer pressure decreases to 1900 psig where an automatic reactor trip occurs.

Reactor Operator Examination

RO #	25
------	----

Given the following conditions:

- The plant is at 70% power
- Failure of automatic control results in one Main Feedwater valve going closed.
- The operator takes manual control and rapidly opens the valve to near its previous position.

Which of the following is the INITIAL response to re-opening the valve?

- Turbine power output INCREASES due to increase in steam temperature.
- Pressurizer level INCREASES due to increase in RCS Tavg.
- S/G level SWELLS due to the rapid addition of feedwater.
- Rods STEP IN due to the increase in reactor power.

Reactor Operator Examination

RO #	26
------	----

Given the following conditions on Unit 2:

-Inadequate Core Cooling Monitor (ICCM) Train A is OOS

The following events then occur:

- Loss of offsite power with reactor trip
- Loss of power to 2EMB
- Natural Circulation conditions are being verified in 2ES-0.1, "Reactor Trip Recovery".

How will the operators determine Subcooling and Core Exit Thermocouple Temperatures under these conditions?

- a. Subcooling from ERCS, CETC temperatures from Train A on ERCS.
- b. Subcooling from the Train A Subcooling monitor, CETC temperatures by local readings on the junction boxes.
- c. Subcooling by comparing HIGHEST hot leg temperature to RCS wide range pressure, CETC temperatures by Upper Head Thermocouple readings.
- d. Subcooling by comparing HIGHEST hot leg temperature to RCS wide range pressure, CETC temperatures by local readings on the junction boxes.

Reactor Operator Examination

RO #	27
------	----

(See Reference)

Which of the following conditions requires entry into C12.5 AOP1, "EMERGENCY BORATION OF THE REACTOR COOLANT SYSTEM"?

- a.
 - The Unit is at 50% power
 - Instrument Air is lost to the CVCS makeup valves
 - Annunciator **47013-0207** CONTROL BANKS LO-LO LIMIT is in alarm

- b.
 - The Unit is at 20% power
 - A loss power to Bus 15 has occurred
 - Annunciator **47013-0107** BANK D ROD WITHDRAWAL HI LIMIT is in alarm

- c.
 - The Unit is in MODE 3 at normal operating temperature and pressure
 - Core exposure is 12 GWD/MTU
 - A loss of Train A DC power has occurred
 - RCS boron concentration is reported at 1220 ppm

- d.
 - The Unit is in MODE 5
 - Core exposure is 12 GWD/MTU
 - Two charging pumps are operating
 - Instrument Air is lost to the CVCS charging pumps
 - RCS boron concentration is reported at 1800 ppm

Reactor Operator Examination

RO #

28

Given the following conditions on Unit 1:

- The operators are performing FR-H.1, "Response to Loss of Secondary Heat Sink"
- RCS Tavg is 530°F
- Pressurizer pressure is 1900 psig
- SI has been reset and the initiating condition cleared
- Reactor trip breakers are open

Which of the following describes ALL the actions, in CORRECT ORDER, required to feed the SGs using the Feedwater Bypass valves?

- a.
 - **Start** ONE main FW pump
 - **Depress** BOTH sets of FW BYPASS RESET pushbuttons
 - **Throttle** OPEN the FW Bypass valves in MAN
- b.
 - **Reset** Containment Isolation
 - **Open** FW containment isolation valves
 - **Start** ONE main FW pump
 - **Throttle** OPEN the FW Bypass valves in MAN
- c.
 - **Reset** Containment Isolation
 - **Open** FW containment isolation valves
 - **Depress** BOTH sets of FW BYPASS RESET pushbuttons
 - **Start** ONE main FW pump
 - **Throttle** OPEN the FW Bypass valves in MAN
- d.
 - **Cycle** the reactor trip breakers
 - **Open** FW containment isolation valves
 - **Start** ONE main FW pump
 - **Depress** BOTH sets of FW BYPASS RESET pushbuttons
 - **Throttle** OPEN the FW Bypass valves in MAN

Reactor Operator Examination

RO #	29
------	----

Which of the following pairs of annunciators would be indicative of a #2 ONLY seal failure of 11 RCP?

- a. - **47015-0206**, 11 RCP LABYRINTH SEAL LO DP
- **47015-0306**, 11 RCP SEAL LEAKOFF HI FLOW
- b. - **47012-0301**, 11 RCP STANDPIPE HI LVL
- **47015-0208**, 11 RCP NO. 1 SEAL INLT OR OUTL HI TEMP
- c. - **47015-0206**, 11 RCP LABYRINTH SEAL LO DP
- **47018-0605**, REACTOR COOLANT DRAIN TANK TEMP/PRESS/LVL
- d. - **47012-0301**, 11 RCP STANDPIPE HI LVL
- **47018-0605**, REACTOR COOLANT DRAIN TANK TEMP/PRESS/LVL

Reactor Operator Examination

RO #	30
------	----

The following conditions exist on each Unit:

- The control room has been evacuated due to a hostile environment
- Unit 1 was at 50% power and Unit 2 was in COLD SHUTDOWN when the control room was evacuated
- Unit 1 operators were able to perform all the listed control room operations of 1C1.3 AOP1 "SHUTDOWN FROM OUTSIDE THE CONTROL ROOM - UNIT 1" prior to exiting
- S/G levels are currently at 12% and 16% narrow range for 11 and 12 S/Gs, respectively
- The operators are taking the actions to control S/G levels per 1C1.3 AOP1

Which of the following describe the local actions the operators will take to control the AFW Pumps?

- a. **Place ONLY 11 TD AFW control to LOCAL, AND check** the TD AFW pump continues to run.
- b. **Place ONLY 12 MD AFW control to LOCAL, AND press** the local start pushbutton to restart the MD AFW pump.
- c. **Place BOTH 11 TD AFW and 12 MD AFW Pump controls to LOCAL, AND check** both pumps continue to run.
- d. **Place BOTH 11 TD AFW and 12 MD AFW Pump controls to LOCAL, check** the TD AFW pump continues to run AND **press** the local start pushbutton to restart the MD AFW pump.

Reactor Operator Examination

RO #	31
------	----

(see reference)

Given the following conditions on Unit 1:

- A LOCA has occurred from 100 % power
- The crew has completed the actions of 1E-0 "Reactor Trip or Safety Injection" AND has entered 1E-1 "Loss of Reactor or Secondary Coolant"
- The following parameters are noted
 - Power Range NIS indicate 1% power
 - Intermediate Range SUR indicate + 0.1 dpm
 - RCS pressure is 1200 psig
 - RCS cold leg temperature 200°F
 - SG levels: 40% WR (11) and 48% WR (12)
 - Feed flow: 0 gpm (11) and 50 gpm (12)

Which of the following statements describes the proper procedure flow path the operator should take?

- a. **Remain** in 1E-1 "Loss of Reactor or Secondary Coolant".
- b. **Transition** immediately to 1FR-S.1 "Response to Nuclear Generation/ATWS".
- c. **Transition** immediately to 1FR-H.1 "Response to Loss of Secondary Heat Sink".
- d. **Transition** immediately to 1FR-P.1 "Response to Imminent Pressurized Thermal Shock Condition".

Reactor Operator Examination

RO #	32
------	----

Given the following conditions on Unit 1:

- The reactor has been shutdown from 100% power
- Steam Dumps have been placed in the "STEAM PRESSURE" mode
- The Shift Supervisor has directed that RCS Tavg be controlled 4°F above the LO-LO TAVG STEAM DUMP INTERLOCK setpoint prior to initiating a cooldown

What value would be required to be set on the MAIN STM HDR PRESS controller in auto to maintain Tavg?

- a. 71.8%
- b. 70.0%
- c. 67.7%
- d. 65.4%

Reactor Operator Examination

RO #	33
------	----

Given the following conditions on Unit 1:

- The plant is at 100% power
- Control Bank D rods are at 210 steps withdrawn
- An electrical failure DE-ENERGIZES Panel 113 Instrument Bus III (Blue)

If the operator attempts to withdraw rods, which of the following prevents rod motion?

- a. Overpower Delta-T Rod Stop.
- b. Overtemperature Delta-T Rod Stop.
- c. Power Range Overpower Rod Stop.
- d. Intermediate Range High Flux Rod Stop.

Reactor Operator Examination

RO #	34
------	----

The following conditions exist on unit 1:

- A steam line rupture UPSTREAM of 11 Main Steam Line Flow Nozzle has occurred
- Containment Pressure has increased to 10 psig
- Tavg has decreased to 535° F

Based on the above conditions, what prevents an uncontrolled depressurization of both SGs?

(assume no operator action)

- 11 SG non-return valve.
- Automatic MSIV isolation based on Containment pressure.
- Automatic MSIV isolation based on a SI with high steam flow and low-low Tavg.
- 12 SG non-return valve.

Reactor Operator Examination

RO #	35
------	----

Given the following conditions on Unit 1:

- The Unit is at 100% power
- Component Cooling (CC) to 11 SI Pump has been isolated to stop a CC system leak
- A LOCA then occurred on Unit 1 reducing RCS pressure to 1400 psig
- 11 SI pump auto started on the SI signal
- All Safeguards Equipment responded as expected to the SI actuation signal

What is the preferred action regarding 11 SI Pump?

- a. **Allow** 11 SI pump to run as long as the Unit Coolers for the SI Pumps are operating.
- b. **Allow** 11 SI pump to run for up to three hours without CC flow.
- c. **Stop** 11 SI pump since the pump can NOT be operated without CC flow.
- d. **Stop** 11 SI pump since 12 SI Pump is operating properly.

Reactor Operator Examination

RO #	36
------	----

Given the following conditions for Unit 2:

- The unit was at 100% power when a reactor trip occurred
- The operator is performing the immediate action steps of 2E-0 "Reactor Trip Or Safety Injection"
- Pressurizer pressure is 2200 psig
- Containment pressure is 0.5 psig
- Steamline pressure is 950 psig with both MSIVs open
- Pressurizer level is 20%
- Subcooling is 100° F
- The operator reports safeguards bus 25 ONLY is deenergized

What is the proper action to take?

- a. **Initiate** action to restore power to Bus 25 per 2C20.5 AOP1, "REENERGIZING 4.16 KV BUS 25".
- b. **Continue** immediate actions of 2E-0 for SI Actuation AND manually **actuate** SI.
- c. **Transition** to 2ECA-0.0 "Loss Of All Safeguards AC Power".
- d. **Place** the feed breaker controls in MANUAL AND **place** the affected components controls in PULL OUT.

Reactor Operator Examination

RO #	37
------	----

Given the following conditions on Unit 1:

- Reactor power is 100%
- Red channel Thot RTD detector developed an open circuit
- Operator action has stabilized the plant

What function is DISABLED when the Red Channel is selected on the Tavg Defeat Switch AND taken to Pull Out?

- a. The continuous auto rod withdrawal signal.
- b. The high Pressurizer level control signal.
- c. The OP Δ T rod stop channel alert.
- d. The Tavg deviation alarm.

Reactor Operator Examination

RO #

38

As pressure in the Low Level Waste Gas common vent header INCREASES, which of the following auto actions occur to prevent excess pressure?

- a. The hydrogen recombiner inlet CLOSES at 2.7 psig.
- b. The backup waste gas compressor STOPS at 2.3 psig.
- c. The Low Level GDT to CVCS HUT pressure control valve **CV-31272** OPENS fully at 2.5 psig.
- d. The waste gas compressor discharge is directed to the standby gas decay tank at 3.0 psig.

Reactor Operator Examination

RO #	39
------	----

(see reference)

The following conditions exist on unit 1:

- 121 & 122 air compressors are running in preferred
- 123 air compressor is in first standby
- 124 air compressor is running in preferred
- 125 air compressor is in standby
- Air systems are in their normal valve lineups

A break in a unit 1 instrument air line occurs which causes the pressure to rapidly decrease to less than 75 psig.

Which of the following correctly describes the automatic signals that are generated due to this failure?

- a.
 - 123 air compressor START signal
 - **MV-32314**, U1 Instrument air header isolation, CLOSE signal
 - **MV-32318**, Service air header isolation, CLOSE signal
 - **MV-32362**, 121 Air Dryer bypass, OPEN signal

- b.
 - 125 air compressor START signal
 - **MV-32318**, Service air header isolation, OPEN signal
 - **MV-32362**, 121 Air Dryer bypass, OPEN signal

- c.
 - 123 air compressor START signal
 - **CV-39301** and **CV-39302**, Station air receiver to instrument air supply header isolation, OPEN signal
 - **MV-32362**, 121 Air Dryer bypass, OPEN signal

- d.
 - 125 air compressor START signal
 - **CV-31740** and **CV-31741**, Instrument air to unit 1 Containment, CLOSE signal
 - **MV-32314**, U1 Instrument air header isolation, CLOSE signal
 - **MV-32362**, 121 Air Dryer bypass, OPENS signal

Reactor Operator Examination

RO #	40
------	----

Given the following conditions on Unit 1:

- A loss of all feedwater has occurred
- RCS temperature is 570°F and stable
- RCS pressure is 2290 psig
- 11 SG wide range level is 6%
- Condensate flow has just been established

Which of the following statements describes the possible result of initiating full feed flow to the 11 SG?

- a. Steam Generator tube failure could occur due to caustic stress corrosion.
- b. An overcooling event could occur due to excessive steaming.
- c. The RCS could be subjected to a Pressurized Thermal Shock (PTS) event.
- d. Steam Generator component degradation could occur due to significant thermal stresses.

Reactor Operator Examination

RO #	41
------	----

(see reference)

Using the attached diagram of the Dual Channel Drawer for 1R7, which lights are lit when the Operation Selector Switch is placed in the CHECK SOURCE position?

- a. Orange, Blue, AND BOTH Red lights
- b. Orange AND Blue lights ONLY
- c. Orange AND BOTH Red lights ONLY
- d. Orange, Blue, AND High Alarm Red lights ONLY

Correct - Only orange (power) and blue (channel check) lights would be lit. The red (high alarm) light would not be lit since the source check does not result in the monitor exceeding its high radiation setpoint.
--

Reactor Operator Examination

RO #	42
------	----

Under which of the following conditions would physical Independent Verification of a SI pump discharge valve NOT be required?

- a. The valve is being CLOSED per an isolation step of a work order that places safety tags on the suction and recirc valves during POWER OPERATION.
- b. The valve is being RESTORED during an outage AND the SI system checklist is to be performed prior to leaving COLD SHUTDOWN.
- c. The SI system checklist is being performed prior to leaving COLD SHUTDOWN AND the first checker finds the valve in the REQUIRED position.
- d. The valve is being OPENED per an I&R during HOT SHUTDOWN AND entry into the SI Pump Area requires double Anti-C's and respirator use due to contamination levels.

Reactor Operator Examination

RO #	43
------	----

Given the following conditions for Unit 1:

- Reactor power is 100%
- Bus 15 is being supplied by D1 Diesel Generator
- 11 CC Pump is running

If a SI signal occurs, what would be the status of the CC Pumps?

- a. 11 CC Pump trips THEN BOTH 11 and 12 CC Pumps start when the load restoration permissives are met.
- b. 11 CC Pump trips THEN 11 CC Pump restarts when the load restoration permissive is met. 12 CC Pump starts ONLY if CC pump discharge pressure remains below 65 psig.
- c. 11 CC Pump continues to run. 12 CC Pump starts when the load restoration permissive is met.
- d. 11 CC Pump continues to run. 12 CC Pump starts immediately upon SI actuation.

Reactor Operator Examination

RO #	44
------	----

Given the following conditions on Unit 1:

- A LOCA has occurred
- The feeder breaker to 480V Bus 121 tripped open upon the LOCA
- Containment Pressure is 25 psig

What is the status of the Containment Spray system? (**Assume NO operator actions taken**)

- a. 12 CS pump is running normally, 11 CS Pump is running at shutoff head.
- b. 11 CS pump is running normally, 12 CS Pump is running at shutoff head.
- c. 11 CS pump is running normally, 12 CS Pump is NOT running.
- d. 12 CS pump is running normally, 11 CS Pump is NOT running.

Reactor Operator Examination

RO #	45
------	----

Given the following conditions on Unit 1:

- The Unit has tripped
- The CONTROLLING Pressurizer level channel has failed LOW
- RCS Tavg 540°F
- RCS pressure 2000 psig
- Actual Pressurizer level is 50%
- Pressurizer liquid temperature 620°F
- Pressurizer vapor temperature 634°F
- The alternate Pressurizer level control channel has been selected AND all Pressurizer heaters have been turned on

Which one of the following describes the present state of the Pressurizer?

- a. Superheat conditions exist in the pressurizer, BUT heaters and sprays will maintain pressure.
- b. The pressurizer is at equilibrium saturation conditions AND normal pressure control is available with heater and sprays.
- c. The pressurizer liquid is subcooled with pressurizer heaters maintaining pressure.
- d. The pressurizer liquid is subcooled AND pressure is being maintained by charging flow compressing the vapor space.

Reactor Operator Examination

RO #	46
------	----

Given the following conditions on Unit 1:

- A plant heatup is in progress following a refueling outage
- RCS temperature is 230°F
- Both RCPs are running
- 11 RHR pump is in service with RCS heatup being controlled using 11 RHR heat exchanger
- 11 CC surge tank level is +8 inches and rising
- 1R-39, CC SYSTEM LIQUID MONITOR, is indicating normally

Which of the following actions should be taken to correct this condition?

- a. **Verify MV-32088**, 11 CC SURGE TANK VENT, is CLOSED.
- b. **Close CV-31245 AND CV-31246**, RCP THERM BARRIER CLNT OUTL.
- c. **Verify** both CC pumps are operating **AND initiate** CC flow through 12 RHR heat exchanger.
- d. **Open 1HC-624**, 11 RHR HX RC OUTLET FCV, to limit heatup rate.

Reactor Operator Examination

RO #	47
------	----

Given the following conditions on Unit 1:

- The Unit is at 10E-8 Amps in the Intermediate range during a startup
- Intermediate Range (IR) N35 FAILS HIGH

What action is required to be taken AND what is the basis for this action?

- a. N35 Level Trip bypass switch is **placed** in BYPASS AND power escalation can then continue above 10% power since the Intermediate range NIs are not required above 10% power.
- b. The reactor must be **placed** in HOT SHUTDOWN within one hour since BOTH Intermediate range NIs are required for start up.
- c. The reactor trips and BOTH Source Range channels immediately reenergize. The SR High Voltage must be removed by **holding** the SR Block/Reset switches to BLOCK to prevent burning out the SR detectors.
- d. The reactor trips AND the Source Range channels must be manually **reenergized** because the required coincidence to reenergize the SR detectors is NOT met.

Reactor Operator Examination

RO #

48

The plant was in the "normal electrical configuration" when it experienced an unplanned loss of 10 Bank and 1R Transformer. Assuming that all other conditions are normal, which transformer is now supplying each of the 4.16 KV safeguards buses?

- a. Bus 15 from CT12
Bus 16 from CT12
Bus 25 from 2R
Bus 26 from 2R
- b. Bus 15 from 2R
Bus 16 from CT11
Bus 25 from 2R
Bus 26 from CT11
- c. Bus 15 from CT11
Bus 16 from CT11
Bus 25 from 2R
Bus 26 from CT12
- d. Bus 15 from CT11
Bus 16 from CT11
Bus 25 from 2R
Bus 26 from 2R

Reactor Operator Examination

RO #	49
------	----

Which of the following events results in a LOCA in the Auxiliary Building if it occurs AFTER SI actuation with NO operator action taken?

- a. **MV-32202**, SI Test Line to RWST FAILS to CLOSE during recirculation following a LOCA, AND a RUPTURE of the 11 RWST.
- b. 11 RCP Thermal Barrier Heat Exchanger tube RUPTURE coincident with a LOSS of instrument air to Unit 1 Containment AND a PIPING BREAK at the CCW Surge Tank outlet.
- c. A steam generator TUBE RUPTURE in 12 SG coincident with a LOCKOUT of Bus 16 AND a RUPTURE of 11SGB Flash Tank.
- d. FAILURE of "Train A" Containment Isolation during a small-break LOCA with Excess Letdown in service, AND a PIPING BREAK at the Seal Water Heat Exchanger outlet.

Reactor Operator Examination

RO #	50
------	----

Given the following conditions:

- Both units are at 100% power
- RCS activity is elevated in unit 2 due to a pin-hole fuel leak
- The following activities are occurring in the Aux Building:
 - Fuel handling in the Spent Fuel Pool for top nozzle inspections
 - Replacement of 22 Seal Water Return filter.
 - TN-40 Cask decon and drying activities in the Cask Decon area
 - Transfer of water from the ADT Collection Tanks to the ADT Condensate Receiver Tanks
- An automatic actuation of 122 Aux Building Special Ventilation has occurred

Which of the following events has caused the actuation of 122 Aux Building Special Exhaust?

- a. DAMAGE to a spent fuel assembly due to failure of the handling tool.
- b. FILLING and VENTING of 22 Seal Water Return Filter.
- c. FAILURE of the TN-40 Cask Vacuum Drying System vacuum hose.
- d. FAILURE of the ADT Collection Tank Pump seal.

Reactor Operator Examination

RO #	51
------	----

Given the following conditions on Unit 1:

- Reactor power is 7%
- Steam dump to the condenser is OPEN maintaining Steam Header Pressure
- Turbine is latched and rolling at 1800 RPM
- 11 Main Feedwater Pump is running
- All Condensate Pumps have just TRIPPED due to low water level in the hotwell

What will occur in the SG feed systems?

- a. 11 Main Feedwater Pump **trips** IMMEDIATELY; the AFW pumps **start** WHEN the Main Feedwater pump trips.
- b. 11 Main Feedwater Pump **trips** IMMEDIATELY; the AFW pumps **start** WHEN SG level reaches the Lo-Lo setpoint.
- c. 11 Main Feedwater Pump **trips** after a 15-second time delay; the AFW pumps **start** WHEN the Main Feedwater pump trips.
- d. 11 Main Feedwater Pump **trips** after a 15-second time delay; the AFW pumps **start** WHEN SG level reaches the Lo-Lo setpoint.

Reactor Operator Examination

RO #

52

Given the following conditions on Unit 1:

- A reactor trip and safety injection have occurred due to a small RCS leak
- The operators are performing action of 1ES-0.1 "SI Termination" directing reset of SI
- Reactor trip breaker RTA is CLOSED AND reactor trip breaker RTB is OPEN
- RCS Tcold is 510°F AND decreasing
- RCS wide range pressure is 1750 psig AND steady
- Containment pressure is 3.6 psig AND slowly increasing

When the SI RESET buttons are depressed AND released, which of the following occurs?

- a. The Train "A" SI actuation signal RESETS, THEN ACTUATES when the buttons are released.
- b. The Train "A" SI actuation signal RESETS THEN ACTUATES when containment pressure exceeds 4 psig.
- c. The Train "A" SI actuation signal will NOT RESET until reactor trip breaker RTA open signal is generated.
- d. The Train "A" SI actuation signal will NOT RESET unless the Train "A" SI BLOCK switch is taken to BLOCK.

Reactor Operator Examination

RO #	53
------	----

Given the following conditions on Unit 1:

- The Unit is at 80% power
- RCS boron concentration is 450 ppm
- CVCS Makeup control is in AUTO and set for makeup at 440 ppm
- All other control systems are in AUTO
- Rods begin to step in
- As rod motion stops, RCS Tavg is noted to continue to rise

What was the event that initiated this transient? (**Assume no operator action was taken**).

- a. Power Range Channel N41 FAILED HIGH.
- b. VCT level transmitter LT-141 FAILED LOW.
- c. Controlling Pressurizer level channel LT-428A FAILED LOW.
- d. Main turbine impulse pressure controller PM-485A FAILED HIGH.

Reactor Operator Examination

RO #	54
------	----

Which of the following would PREVENT Containment In-Service Purge from being placed in operation on Unit 1?

- a. Containment Pressure gauge **4127901** is reading 0.47 psig.
- b. Annunciator **47021-0301**, CVI TRAIN A DC FAILURE, is lit.
- c. The **1R11/12** Sample Selector Switch is in the "VENT" position.
- d. The **1R-22** setpoint is below the calculated setpoint listed in the Containment Pre-release Authorization.

Reactor Operator Examination

RO #	55
------	----

(see reference)

Using the reference provided, identify the radiation monitor first affected if the inservice Gas Decay Tank (127) relief valve lifts?

- a. **R-35**, Rad Waste Building monitor
- b. **R-41**, Waste Gas High Level monitor
- c. **2R-22**, Shield Building vent stack monitor
- d. **1R37**, Aux Bldg vent stack train A monitor

Reactor Operator Examination

RO #	56
------	----

Given the following conditions on Unit 1:

- Reactor power is 90%
- ALL Heater Drain Pump Motors have uncoupled due to a fault in the HD Pump Control Cabinet.
- The following annunciators are in alarm:
 - 47003-0403**, CONDENSATE BYPASS TO HEATER DRAIN PUMP OPEN
 - 47010-0602**, COND B-P FEEDWATER PUMP OPEN
- Feedwater pumps suction pressure has stabilized at 250 psig

What Operator action should be taken?

- a. **Verify** THREE Condensate Pumps are running.
- b. **Open CV-31122**, CONDENSATE RECIRCULATION SPRAY VALVE.
- c. **Verify CV-31040**, 11 Heater Drain Tank Bypass to 1A Condenser, is CLOSED.
- d. **Reduce** turbine load to less than 60% AND **stop** ONE Feedwater Pump.

Reactor Operator Examination

RO #	57
------	----

Given the following conditions on Unit 1:

- A natural circulation cooldown is in progress per 1ES-0.3A "Natural Circulation Cooldown With CRDM Fans"
- Pressurizer pressure is being reduced by cycling **CV-31329**, AUX PRZR SPRAY FROM REGEN HX
- Charging and letdown were in manual and balanced during the cooldown
- Pressurizer level fell from 19% to 14% during the cooldown
- As pressure is being lowered through 1300 psig, a rapid increase is noted in Pressurizer level to 32%

What action should be taken by the operator?

- a. **Close** BOTH SG PORVs.
- b. **Energize AND close** BOTH SI Accumulator Isolation valves.
- c. **Place** EACH Pressurizer Heater Group control switch to **OFF AND THEN to ON.**
- d. **Place** EACH Pressurizer Heater Group control switch to **OFF AND open CV-31329**, AUX PRZR SPRAY FROM REGEN HX.

Reactor Operator Examination

RO #

58

Given the following conditions on Unit 1:

- Reactor power is 100%
- Reactor Protection Logic testing is being performed with Reactor Trip Bypass Breaker B (BYB) racked in AND CLOSED
- Both Reactor Trip Breakers (RTA and RTB) are CLOSED
- An electrician inadvertently OPENS DC panel breaker 16-2 "B Train DC To Reactor Switchgear Cabinet".

What is the expected reactor response AND the required operator action for the above conditions?

- a. The reactor will automatically trip. The Control Room Operators will enter E-0, "Reactor Trip or Safety Injection", to establish stable plant conditions.
- b. The reactor must be manually tripped from the Control Room if a trip signal comes in. The Control Room Operators will enter E-0 to establish stable plant conditions.
- c. The reactor must be manually tripped locally by opening Reactor Trip Bypass Breaker B (BYB) if a trip signal comes in. The Control Room Operators will enter FR-S.1, "Response To Nuclear Power Generation/ATWS", to establish stable plant conditions.
- d. The reactor will trip automatically if a train "A" trip signal comes in BUT may remain in operation for up to 4 hours with BYB closed provided stable plant conditions exist.

Reactor Operator Examination

RO #	59
------	----

During a Control Room evacuation, what are the designated Sound Power Communications channels used by plant personnel as directed in 1C1.3 AOP1 "SHUTDOWN FROM OUTSIDE THE CONTROL ROOM - UNIT 1" and 2C1.3 AOP1 "SHUTDOWN FROM OUTSIDE THE CONTROL ROOM - UNIT 2"?

- a. Unit 1 uses Channel 1 preferred and Channel 2 alternate while Unit 2 uses Channel 3 preferred and Channel 4 alternate.
- b. Unit 1 uses Channel 1 preferred and Channel 3 alternate while Unit 2 uses Channel 2 preferred and Channel 4 alternate.
- c. Unit 1 and Unit 2 use Channel 1 preferred while Unit 1 Uses Channel 2 alternate and Unit 2 uses Channel 3 alternate.
- d. Unit 1 and Unit 2 use Channel 1 preferred and Channel 2 alternate.

Reactor Operator Examination

RO #

60

Given the following conditions on Unit 1:

- The Unit is at 88% power AND holding for a calorimetric during a power ascension to 100% power
- Control rods were in auto when a single RCCA in Bank D began stepping out at maximum speed
- The operators have initiated actions of 1C5 AOP1"UNCONTROLLED WITHDRAWAL OF AN RCCA"
- Control rod motion stopped when the Rod Bank Selector was taken to MAN
- The following readings were taken from the Power Range NIS cabinets:

	<u>N41</u>	<u>N42</u>	<u>N43</u>	<u>N44</u>	
Det. A (upper)	375.0	360.0	365.0	360.0	(microamperes)
Det. B (lower)	350.0	345.0	370.0	340.0	(microamperes)

- A full power current on all detectors is known to be 400.0 microamperes.

Which detector has the highest quadrant power tilt ratio (QPTR)?

- N41 upper
- N42 upper
- N43 lower
- N44 lower

Reactor Operator Examination

RO #	61
------	----

Given the following conditions on Unit 1:

- The operators are evaluating the Critical Safety Function Tree F-0.2, "Core Cooling"
- One RCP is currently running
- The operators are evaluating RVLIS Dynamic Head reading against the Table listing of 32%

What is the basis for verifying the value of the RVLIS Dynamic Head Indication?

- a. A RVLIS reading GREATER THAN 32% means RVLIS Upper Head Range will be on scale if the RCP is stopped.
- b. A RVLIS reading GREATER THAN 32% means core inventory has recovered to the point that SI accumulators may be isolated.
- c. A RVLIS reading LESS THAN 32% means actual RCS voiding is greater than 50% and if the RCP is stopped, the core may not remain covered or adequately cooled.
- d. A RVLIS reading LESS THAN 32% means RCS voiding will cause RCP cavitation, requiring stopping of the RCP in FR-C.2, "Response to Degraded Core Cooling".

Reactor Operator Examination

RO #	62
------	----

Given the following conditions on Unit 1:

- Reactor power is 100%
- All CFCUs are in operation supplied by chilled water
- 11 and 21 Aux. Bldg. and Cont. Chillers and pumps are running split
- An inadvertent Train B (only) Safety Injection (SI) signal is generated

What is the expected status of cooling supplied to the CFCUs? (**Assume NO operator action is taken**)

- 21 Chilled Water Pump is supplying 12 and 14 CFCUs, AND 121 and 11 Cooling Water Pumps are supplying 11 and 13 CFCUs.
- 11 Chilled Water Pump is supplying 11 and 13 CFCUs, AND 21 and 22 Cooling Water Pumps are supplying 12 and 14 CFCUs.
- 21 Chilled Water Pump is supplying 11 and 13 CFCUs, AND 121, 11 and 22 Cooling Water Pumps are supplying 12 and 14 CFCUs.
- 11 Chilled Water Pump is supplying 12 and 14 CFCUs, AND 21 and 22 Cooling Water Pumps are supplying 11 and 13 CFCUs.

Reactor Operator Examination

RO #

63

The following is a timeline of activities associated with the 121 ADT Monitor Tank:

- 1000 - 121 ADT Monitor Tank is placed on recirc
- 1200 - 121 ADT Monitor Tank is sampled
- 1230 - Gen. Supt. Radiation Protection & Chemistry authorizes the release.
- 1315 - Shift Supervisor approves Discharge Permit
- 1700 - Shift turnover
- 1910 - Commenced release of 121 ADT Monitor Tank to the river

What is the problem associated with these actions AND what action should be taken once the problem is identified?

- a. The current Shift Supervisor did NOT approve the release. **Stop** the release until the current Shift Supervisor has signed the Discharge Permit.
- b. The Chemistry sample was NOT representative of the Tank contents. **Stop** the release AND **place** 121 ADT Monitor Tank on recirc.
- c. Too much time has elapsed between approval of the Permit and initiation of the discharge. **Stop** the release AND **reprocess** 121 ADT Monitor Tank.
- d. Discharging directly from 121 ADT Monitor Tank is NOT allowed. **Stop** the release AND **transfer** the contents of the tank to 121 CVCS Monitor Tank for release.

Reactor Operator Examination

RO #

64

Given the following conditions on Unit 1:

- A reactor trip and Safety Injection has occurred
- The operators have completed the actions of 1E-0 "Reactor Trip Or Safety Injection" and transitioned to 1E-3 "Steam Generator Tube Rupture" based on radiation indications for 11 SG
- SI has been reset
- RCS pressure is 1500 psig
- RCS core exit temperature is 535°F
- 11 SG pressure is 1050 psig
- 12 SG pressure is 875 psig
- RCS cooldown has been initiated to 505°F as directed by 1E-3 using 12 SG and condenser steam dump

If a loss of offsite power occurs to Bus 15 at this time, what would the RHR Pump control switch indications be following sequencing of loads?

	<u>11 RHR Pump</u>	<u>12 RHR Pump</u>
a.	RED light lit	RED light lit
b.	RED light lit	GREEN light lit
c.	GREEN light lit	RED light lit
d.	GREEN light lit	GREEN light lit

Reactor Operator Examination

RO #	65
------	----

Given the following conditions on Unit 1:

- A steam space LOCA has occurred on the pressurizer
- Operators have just stopped RHR and SI pumps in 1ES-0.2 "SI Termination"
- Subcooling on ERCS now indicates 5° superheat
- Pressurizer level indicates 98%

What action is required?

- a. **Increase** RCS pressure using pressurizer heaters AND stay in 1ES-0.2 "SI Termination".
- b. **Actuate** Safety Injection AND return to step 1 of 1ES-0.2 "SI Termination".
- c. **Dump** steam using steam dumps AND transition to 1ES-0.0 "Rediagnosis".
- d. **Start** SI pumps as necessary AND go to 1E-1 "Loss Of Reactor Or Secondary Coolant".

Reactor Operator Examination

RO #	66
------	----

Given the following conditions on Unit 1:

- Safety Injection has actuated
- A LOCA has been identified at the flange for flow transmitter 1FE-626 (inputs control for positioning RHR Heat Exchanger Bypass valve) on the RHR return line to loop B RCS

Which of the following must be performed to ISOLATE the leak, while MINIMIZING the affect on the ECCS system operation?

- a.
 - **Stop** 11 RHR Pump
 - **Close** valve **MV-32065**, RHR TO RX VSL
 - **Close** **CV-31235**, 11RHR HX RC OUTLET FLOW
- b.
 - **Stop** 12 RHR Pump
 - **Verify** **MV-32066**, RHR TO RC LOOP B COLD LEG is closed
 - **Close** **MV-32065**, RHR TO RX VSL
 - **Close** **CV-31236**, 12 RHR HX RC OUTLET FLOW
- c.
 - **Stop** BOTH of the RHR Pumps
 - **Verify** **MV-32066**, RHR TO RC LOOP B COLD LEG is closed
 - **Close** **MV-32065**, RHR TO RX VSL.
- d.
 - **Verify** valve **MV-32066**, RHR TO RC LOOP B COLD LEG is closed
 - **Open** **RH-2-5** AND **RH-2-6**, 11/12 RHR HX CROSSOVER, OUTLET valves.

Reactor Operator Examination

RO #	67
------	----

Given the following conditions on unit 2:

- 21 and 24 Containment Fan Coil Units are running in fast to the gap
- 22 Containment Fan Coil Unit is running in slow to the dome
- 23 Containment Fan Coil Unit is tagged out-of-service
- A loss of offsite power then occurs causing the safeguards busses to transfer to the diesel generators
- When power is restored the ONLY Containment Fan Coil Unit to restart is 21

Based on this information, which 480-volt bus FAILED to regain power?

- Bus 211
- Bus 212
- Bus 221
- Bus 222

Reactor Operator Examination

RO #

68

Given the following conditions on Unit 1 AND Unit 2

- A Total Loss of All AC Power Event has occurred

How is operation of the valves associated with the RCS affected when the Instrument Air header depressurizes?

- Reactor Head Vent valves CANNOT be OPENED.
- Pressurizer PORV's will NOT OPEN on demand.
- RCP No. 1 Seal Leakoff valves CANNOT be RE-OPENED.
- Normal Pressurizer Spray valves will NOT OPEN on demand.

Reactor Operator Examination

RO #	69
------	----

(see reference)

Given the following conditions for BOTH Units:

- RWST Water Cleanup is in progress for 21 RWST
- An operator is currently performing the operations to transfer SFP cooling from 121 SFP heat exchanger (HX) to 122 SFP heat exchanger (HX)
- 121 SFP HX has been isolated and 122 SFP HX placed in service
- The operator then begins to throttle open **SF-14-17**, SFP DEMIN OUT to 121 FLTR

What is the effect of this action on SFP level?

- a. SFP level quickly rises as the content of the 21 RWST is dumped to the SFP.
- b. SFP level slowly rises as the water from the 21 RWST is transferred to the SFP.
- c. SFP level slowly decreases as the water from the SFP is transferred to the 21 RWST.
- d. SFP level remains constant since the SFP Cooling remains isolated from the purification loop.

Reactor Operator Examination

RO #	70
------	----

Given the following conditions on Unit 1:

- RCS Tavg is 150°F
- RCS pressure is 280 psig
- Testing is in progress on Pressurizer pressure channel 1PT-449A with the channel bistables tripped
- OPPS is in ENABLE

If 1PT-419, wide range loop pressure transmitter, FAILS HIGH, how do the pressurizer PORVs respond and what is the reason for this response?

- a. Neither PORV opens because the coincidence is 2/2.
- b. Only 1PCV-430 (PORV "A") opens because the failed transmitter is in its train.
- c. Only 1PCV-431C (PORV "B") opens because the bistable to the PORV interlock is tripped.
- d. Both PORVs open because the coincidence is 1/2.

Reactor Operator Examination

RO #	71
------	----

Given the following conditions on Unit 1:

- The Unit was taken to 33% power during a startup when a failure required the unit to be shutdown
- Current reactor power and main generator output is 18%

In this condition, the Steam Generator Level Control System is in MANUAL when the operator...

- takes** the Main Feedwater Valve controllers from AUTOMATIC to MANUAL.
- takes** the Bypass Feedwater Valve controllers from AUTOMATIC to MANUAL.
- takes** BOTH the Main Feedwater Valve controllers AND the Bypass Feedwater Valve controllers from AUTOMATIC to MANUAL.
- selects** Low Power Mode control, **matches** Bypass Feedwater Valve controller DEMAND and POSITION, AND then **takes** the Bypass Feedwater Valve controllers from AUTOMATIC to MANUAL.

Reactor Operator Examination

RO #	72
------	----

Given the following conditions on Unit 1:

- The Unit is in MODE 2 with reactor startup in progress
- Reactor power has been stabilized at 1×10^{-8} amps and critical data has been recorded
- I & C is troubleshooting the erratic indication that has developed on Intermediate Range channel N-35
- At the NIS rack, the Level Trip switch for N-35 has been placed in BYPASS

What occurs if the technician then pulls one of the Control Power fuses for N-35?

- a. The reactor trips on Intermediate Range High Flux Level.
- b. The power increase is limited to 2% power until N-35 is restored.
- c. BOTH Source Range NIS channels unblock resulting in a reactor trip.
- d. Control Rod withdrawal is blocked but the rods may be inserted in manual.

Reactor Operator Examination

RO #	73
------	----

Given the following conditions:

- Unit 1 is at 100% power
- 11 Component Cooling (CC) Pump is in service
- Unit 2 is in INTERMEDIATE SHUTDOWN with a cooldown in progress
- 21 and 22 Component Cooling (CC) pumps are in service

What occurs related to the Component Cooling Water Heat Exchangers cooling if a SI actuates on Unit 1?

- **MV-32146**, Cooling Water Inlet to 12 CC Heat Exchanger, OPENS directly on the SI signal
 - Cooling Water flow to 11, 21 and 22 CC Heat Exchangers REMAINS THE SAME
- **MV-32146**, Cooling Water Inlet to 12 CC Heat Exchanger, OPENS directly when 12 CC Pump starts
 - Cooling Water flow to 11, 21 and 22 CC Heat Exchangers REMAINS THE SAME
- **MV-32146**, Cooling Water Inlet to 12 CC Heat Exchanger, OPENS directly on the SI signal
 - Cooling Water flow to 11 CC Heat Exchanger REMAINS THE SAME
 - **MV-32160** and **MV-32161**, Cooling Water Inlet to 21 and 22 CC Heat Exchangers, respectively, CLOSE and must be manually reopened to reestablish flow
- **MV-32146**, Cooling Water Inlet to 12 CC Heat Exchanger, OPENS directly when 12 CC Pump starts
 - Cooling Water flow to 11 CC Heat Exchanger REMAINS THE SAME
 - **MV-32160** and **MV-32161**, Cooling Water Inlet to 21 and 22 CC Heat Exchangers, respectively, CLOSE and must be manually reopened to reestablish flow

Reactor Operator Examination

RO #	74
------	----

(see reference)

D1 diesel generator is loaded onto its respective bus for testing following an overhaul. The following conditions were just established.

- Generator power is 3100 KW
- Reactive load is 1400 KVAR delivered

Which of the following is the LONGEST amount of time the generator can remain at the above conditions without exceeding the machine ratings?

- 0.25 hours
- 0.75 hours
- 900 hours
- 1100 hours

Reactor Operator Examination

RO #	75
------	----

A 21 year old male licensed operator with a June birthday has the following exposure history:

- A Committed Effective Dose Equivalent (CEDE) of 0 mRem
- A Current YEARLY whole body Deep Dose Equivalent (DDE) of 625 mRem
- A LIFETIME Total Effective Dose Equivalent (TEDE) of 5 Rem

Assuming his exposure is properly documented, what is the maximum ADDITIONAL whole body exposure this operator can receive this Year and still comply with the Prairie Island administrative limit?

- 375 mRem
- 1375 mRem
- 2375 mRem
- 4375 mRem

Reactor Operator Examination

RO #	76
------	----

(see reference)

Given the following conditions on Unit 1:

- A LOCA has occurred
- 1FR-C.1 was entered due to an inadequate core cooling condition.
- Containment pressure is 8 psig
- Containment temperature prior to the LOCA was 90 degrees F.
- Containment hydrogen concentration is 0.45%

Based on these indications, using the references provided, what is the required power setting for placing 12 hydrogen recombiner in service?

- 52.0
- 53.2
- 57.8
- 59.1

Reactor Operator Examination

RO #	77
------	----

A LOCA in Containment is in progress and the Reactor operator has recorded Containment parameters as follows:

<u>Time</u>	<u>Cont. Radiation</u>	<u>Cont. Pressure</u>
0812	8.1E3 R/hr	3.8 psig
0815	1.2E4 R/hr	4.5 psig
0831	1.4E5 R/hr	4.9 psig
0838	5.0E5 R/hr	5.8 psig

When was the first time Adverse Containment parameters were required to be used, and for how long will use of the Adverse Containment numbers be in effect?

- Adverse Containment was first entered at 0815, AND is in effect for the entire time the crew is in the EOPs.
- Adverse Containment was first entered at 0815, AND is in effect until containment parameters drop below the Adverse Containment setpoints.
- Adverse Containment was first entered at 0838, AND is in effect for the entire time the crew is in the EOPs.
- Adverse Containment was first entered at 0838, AND is in effect until containment parameters drop below the Adverse Containment setpoints.

Reactor Operator Examination

RO #	78
------	----

Given the following conditions on Unit 1:

- Reactor power is stable at 30%
- RCS Tavg is 551°F
- Pressurizer pressure is 2230 psig
- Pressurizer level is 25%
- Pressurizer Level Control Transfer Switch is in the NORMAL 2-3 position
- Charging Pump Speed Controller (**1LC-428F**) output FAILS LOW

What automatic action(s) will occur over time as a result of this failure assuming NO operator action is taken?

- a. Pressurizer level will rise to 50% AND stabilize.
- b. Pressurizer level will drop to 21% AND stabilize.
- c. Letdown will isolate AND the reactor will trip on high Pressurizer level.
- d. Backup heaters will energize AND the reactor will trip on high Pressurizer pressure.

Reactor Operator Examination

RO #	79
------	----

Given the following conditions on Unit 2:

- A plant calorimetric has been performed to indicate the Unit is at 15.2% power
- Power range N-41 indicates 15.1%
- Power range N-42 indicates 15.4%
- Power range N-43 indicates 15.2%
- Power range N-44 indicates 15.3%
- Intermediate range N-35 indicates 7E -5 amps
- Intermediate range N-36 indicates 7E -6 amps

Which of the following conditions is indicated by these readings?

- a. N-35 compensation voltage is too HIGH.
- b. N-36 detector voltage is too LOW.
- c. N-43 detector voltage is too LOW.
- d. N-42 channel was incorrectly adjusted during the last calorimetric.

Reactor Operator Examination

RO #	80
------	----

The following conditions exist on unit one:

- SG "A" steam flow → 1,000 lbm/hr
- SG "B" steam flow → 800,000 lbm/hr
- SG "A" level → 60% NR
- SG "B" level → 10% NR
- TD AFW pump → running
- MD AFW pump → running
- RCS Tavg → 520 F
- Containment Pressure → 8 psig

If NO operator action has been taken, which of the following indicates the expected status of the main steam isolation valves?

- | | <u>"A" MSIV</u> | <u>"B" MSIV</u> |
|----|-----------------|-----------------|
| a. | OPEN | OPEN |
| b. | OPEN | SHUT |
| c. | SHUT | OPEN |
| d. | SHUT | SHUT |

Reactor Operator Examination

RO #	81
------	----

The following conditions exist on Unit 1:

- Reactor power is 20% during a power increase.
- 11 CC Pump is out of service for motor repair.
- 11 RHR Heat Exchanger is isolated on RHR side to facilitate testing for a possible tube leak.
- 12 Charging Pump is out of service.

Which of the following, if found to be inoperable, would require that a plant shutdown for Unit 1 be commenced within ONE hour as directed by Technical Specifications?

- a. D1 Diesel Generator
- b. 11 Charging Pump
- c. 12 SI Pump
- d. 13 CFCU

Reactor Operator Examination

RO #	82
------	----

Given the following conditions on Unit 2:

- Pressurizer Level is 75% and increasing
- RCS pressure is 1000 psig and decreasing
- Safety Injection flow is 450 gpm
- Containment pressure is 3 psig and increasing slowly

Which of the following events could have caused these indications?

- a. BOTH Pressurizer spray valves failing OPEN.
- b. A Pressurizer Safety valve stuck partially OPEN.
- c. A LOSS of instrument air to BOTH Pressurizer PORVs.
- d. A piping RUPTURE in the Pressurizer Surge Line.

Reactor Operator Examination

RO #	83
------	----

Given the following conditions on Unit 1:

- A natural circulation cooldown is in progress per 1ES-0.4 "Natural Circulation Cooldown With Steam Void In Vessel"
- RCS pressure is 1200 psig
- RCS subcooling is 140°F
- Pressurizer level is 32%
- RVLIS Full Range reads 88%
- 12 RCP seal DP reads 325 psid
- 12 RCP #1 seal leakoff flow reads 0.8 gpm
- 12 RCP is reported to now be available for starting (power restored to bus)

Which of the following must be completed prior to attempting to start 12 RCP?

- Raise** Pressurizer level to GREATER THAN 84%.
- Raise** RCS pressure to GREATER THAN 1250 psig.
- Raise** seal injection flows to INCREASE seal DP to GREATER THAN 400 psid.
- Raise** #1 seal leakoff flow to GREATER THAN 1 gpm by **opening** the No. 1 Seal Bypass Isolation Valve.

Reactor Operator Examination

RO #	84
------	----

Given the following conditions on Unit 1:

- A LOCA has occurred
- Containment Spray has actuated
- RWST level currently reads 40%
- CA to CS **31941** and **31938** status lights are NOT lit on the SI active panel
- Caustic Addition Standpipe level currently reads 100%

What action must be taken by the operator to establish flow from the CA Standpipe to the Containment Spray System AND what is the effect if this action is NOT taken?

- a. The operator must **open** EITHER **CV-31938** OR **CV-31941**, CAUSTIC ADDITION VALVE to establish flow. If the action is not taken the concentration of radioactive iodine in containment atmosphere will be higher.
- b. The operator must **open** BOTH **CV-31938** AND **CV-31941**, CAUSTIC ADDITION VALVES, to establish flow. If the action is not taken containment pressure peaks at a higher value due to the reduced heat removal capacity of the CS spray.
- c. The operator must **start** the CARF Pump AND **open** EITHER **CV-31938** OR **CV-31941**, Caustic Addition valve, to establish flow. If the action is not taken corrosion of components in containment increases due to higher pH value of the containment sump fluid.
- d. The operator must **start** the CARF Pump AND **open** BOTH **CV-31938** AND **CV-31941**, Caustic Addition valves, to establish flow. If the action is not taken containment radiation levels are higher due to the increased radioactive noble gas production.

Reactor Operator Examination

RO #	85
------	----

Given the following conditions on Unit 1:

- Reactor power is 100%
- **CV-31202**, LTDN TEMP CONT, FAILS CLOSED due to a controller malfunction.
- After approximately 2 minutes the local operator was able to correct the problem and normal flow was restored through **CV-31202**.
- LTDN temperature rises to 160°F AND then returns to normal.

Assuming NO other operator action was taken, how is normal letdown flow restored?

- a. Manually **open CV-31203** using **1HC-135A**, LTDN PRESS CONT, UNTIL letdown pressure is approximately 275 psig, AND THEN **return 1HC-135A** to AUTO.
- b. **Position** ONE Control Switch for **CV-31325**, OR **CV-31326** OR **CV-31327**, LTDN ORIFICE ISOL, to OPEN, AND THEN **return** Control Switch to AUTO.
- c. **Position** Control Switch for **CV-31204** "LTDN DIVERT TO PURIF" valve to DIVERT, AND THEN **return** Control Switch for **CV-31204** to AUTO.
- d. **Position** Control Switch for **CV-31205**, LTDN DIVERT TO HOLDUP TNK, to the VC TANK position AND THEN **return** Control Switch for **CV-31204** to AUTO.

Reactor Operator Examination

RO #	86
------	----

The following conditions exist:

- 123 Gas Decay Tank (GDT) release is in progress
- Releases for 124 and 125 GDT have been approved and are waiting release

What action is to be taken if the Met Tower data link fails during the 123 GDT release?

- When the 123 GDT release is completed, do NOT initiate another GDT release UNTIL Met Tower data is available.
- Direct** the Auxiliary Building operator to STOP the release of 123 GDT, AND do NOT initiate another GDT release until Met Tower data is available.
- Contact** Lock and Dam #3 periodically for wind conditions while CONTINUING the release for all GDTs.
- Contact** the National Weather Service periodically for wind conditions while continuing the release for all GDTs.

Reactor Operator Examination

RO #	87
------	----

Given the following conditions on Unit 2:

- A loss of offsite power had occurred
- Bus 26 is powered from Diesel Generator D6
- The normal power source to Bus 26 is NOT available
- The alternate power source to Bus 26 has been restored
- The Shift Supervisor has directed that Bus 26 be restored to its ALTERNATE offsite power source

What position would the operator need to place Bus 26 Synch Selector switch in to allow this transfer?

- CT11**
- CT12**
- D6**
- 2RY**

Reactor Operator Examination

RO #	88
------	----

Given the following conditions on Unit 2:

- The reactor has TRIPPED from 50% power
- RCS Tavg is 550°F and stable
- RCS Press is 2235 psig and stable
- Both S/G Press are 1010 psig and stable
- 21 S/G level is 25% narrow range
- 22 S/G level is 36% narrow range

Which of the following conditions describes the expected condition of the Feedwater Regulating Valves (FRV) AND the demand position on its associated controller?

	21 FRV	21 FRV	22 FRV	22 FRV
	<u>POSITION</u>	<u>DEMAND</u>	<u>POSITION</u>	<u>DEMAND</u>
a.	OPEN	OPEN	CLOSED	CLOSED
b.	CLOSED	OPEN	CLOSED	OPEN
c.	CLOSED	OPEN	CLOSED	CLOSED
d.	CLOSED	CLOSED	CLOSED	CLOSED

Reactor Operator Examination

RO #

89

If CC flow to a RCP is lost, the RCP is tripped to prevent damage to which of the following components?

- a. RCP motor bearing
- b. RCP radial bearing
- c. Motor stator windings
- d. Thermal barrier heat exchanger

Reactor Operator Examination

RO #

90

Given the following conditions on Unit 1:

- A LOCA has occurred
- SI has actuated
- The actions of 1E-0 "Reactor Trip Or Safety Injection" are being performed
- Both SG Narrow Range levels are offscale low
- 11 SG pressure is 835 psig AND decreasing slowly
- 12 SG pressure is 885 psig AND decreasing slowly
- Containment pressure is 4 psig
- 11 RCS cold leg temperature is 521°F AND decreasing slowly
- 12 RCS cold leg temperature is 530°F AND decreasing slowly

Which of the following is correct about the SG pressures?

- a. NO SG pressure is decreasing in an uncontrolled manner.
- b. ONLY 11 SG pressure is decreasing in an uncontrolled manner.
- c. ONLY 12 SG pressure is decreasing in an uncontrolled manner.
- d. BOTH SG pressures are decreasing in an uncontrolled manner.

Reactor Operator Examination

RO #

91

The following conditions exist on Unit 1:

- The unit is in HOT SHUTDOWN during a normal cooldown
- RCS temperature is at 520°F
- Pressurizer pressure is 1700 psig
- At this point, all Unit 1 4.16KV busses lose power (Loss of all AC power)

How would emergency procedure 1ECA-0.0 "Loss of Safeguards AC Power" be used in this situation?

- a. ENTER 1ECA-0.0 immediately upon verification of loss of power to buses 15 and 16.
- b. ENTER 1ECA-0.0 ONLY if RCS temperature rises above 540°F.
- c. ENTER 1ECA-0.0 ONLY if a safety injection signal occurs also.
- d. ENTER 1ECA-0.0 ONLY if power is NOT restored to EITHER bus 15 or bus 16 when RCS temperature reaches 350°F.

Incorrect - As discussed in the WOG and prairie Island EOP Users Guides, ECA-0.0 is to be entered immediately upon identifying that the safeguards buses are deenergized. The operator need not wait until a safety injection signal is generated before entering 1ECA-0.0.

Reactor Operator Examination

RO #

92

Given the following conditions on Unit 1:

- A LOCA has occurred
- Containment pressure has risen to 28 psig
- All Containment Fan Cooler Units are operating
- Train B Containment Spray is operating
- One of the Containment Vacuum Breakers has been determined to be leaking past its seat at the rate of 0.5 psig per hour at 28 psig

What would the effect over the next 4 hours be if NO Containment Spray were available?

- a. Containment pressure would be HIGHER AND the total release from containment would be HIGHER.
- b. Containment pressure would be HIGHER AND the total release from containment would be LOWER.
- c. Containment pressure would be LOWER AND the total release from containment would be HIGHER.
- d. Containment pressure would be LOWER AND the total release from containment would be LOWER.

Reactor Operator Examination

RO #	93
------	----

Given the following conditions on Unit 1:

- Excess letdown has been placed in service
- Normal letdown has NOT been isolated yet
- A spurious Containment Isolation actuation signal has occurred

Which of the following is the effect of the Containment Isolation signal on the CVCS system?

- a. RCP seal injection flow is lost.
- b. Letdown flow is diverted to the CVCS HUT.
- c. Excess letdown flow is diverted to the RCDT.
- d. RCP No. 1 seal leakoff flow is directed to the PRT via a relief valve.

Reactor Operator Examination

RO #	94
------	----

When performing the actions of ECA-0.0 "Loss of All Safeguards AC Power" during a Total Loss of All AC Power Event, why does the procedure direct the operator to reset the SI signal?

- a. To PREVENT isolation of the RCP No. 1 seal leakoff flow path.
- b. To ALLOW for another start attempt of the Emergency Diesel Generators.
- c. To PREVENT automatic loading of the power supply once power restoration has been completed.
- d. To ALLOW the operator to transition to ECA-0.1 "Loss of All AC Power Recovery Without SI Required" REGARDLESS of RCS conditions.

Reactor Operator Examination

RO #	95
------	----

Which of the following describes the response of the Containment Cleanup fans following a loss of offsite power?

- a. The fans LOSE all sources of power on a loss of offsite power AND CANNOT be started.
- b. The fans are PROVIDED with power by diesel generators AND can be manually started.
- c. The fans are PROVIDED with power by diesel generators AND will automatically start if a SI signal is generated.
- d. The fans are PROVIDED with power by diesel generators BUT are blocked from starting by a SI signal.

Reactor Operator Examination

RO #	96
------	----

A Quarterly Surveillance test has a due date of June 15th. What is the latest date this test could be performed and still be within the required test interval time?
(June has 30 days)

- a. June 22nd
- b. July 6th
- c. July 15th
- d. July 28th

Reactor Operator Examination

RO #	97
------	----

What is the response expected for the Source Range NIS audio output during a LOCA as the reactor vessel downcomer voids?

- a. The count rate will RISE.
- b. The count rate will DROP.
- c. The count rate will REMAIN THE SAME.
- d. The count rate will Initially RISE then quickly DROPS as steam fills the downcomer.

Reactor Operator Examination

RO #	98
------	----

Given the following conditions on Unit 1:

- A steam line break has occurred on the "B" loop main steam header downstream of 12 MSIV
- A common mode failure has PREVENTED CLOSURE of both MSIVs
- RCS cooldown rate is 160°F/hr
- Both SG WR levels are less than 50%

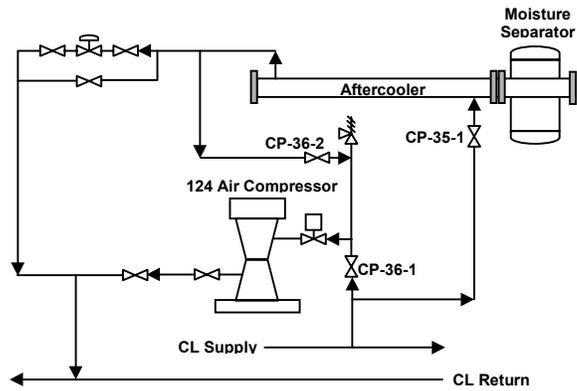
When the appropriate actions are taken, what AFW flow will be established?

- 200 gpm to each SG.
- 200 gpm to 11 SG and 0 gpm to 12 SG.
- 160 gpm to 11 SG and 40 gpm to 12 SG.
- 40 gpm to each S/G.

Reactor Operator Examination

RO # 99

Given the following drawing of 124 Station Air Compressor:



What is the required valve lineup if cooling water temperature is 48° F?

- a. **CP-35-1 → OPEN**
CP-36-1 → OPEN
CP-36-2 → CLOSED
- b. **CP-35-1 → CLOSED**
CP-36-1 → OPEN
CP-36-2 → CLOSED
- c. **CP-35-1 → OPEN**
CP-36-1 → CLOSED
CP-36-2 → CLOSED
- d. **CP-35-1 → OPEN**
CP-36-1 → CLOSED
CP-36-2 → OPEN

Reactor Operator Examination

RO #	100
------	-----

Given the following conditions on Unit 1:

- The reactor is at 75% steady state power.
- All systems are in automatic control.
- Main turbine control is in "IMP IN" with the valve position limiter set at 95%.

Under these conditions, what would be the response if the condenser steam dump **CV-31100** failed OPEN due to a valve regulator failure AND what can the operator do from the control room to stop dumping steam?

- a. Turbine load **decreases** by 5% AND reactor power remains **constant**. The operator can stop dumping steam by taking either Bypass Interlock switch to OFF/RESET.
- b. Turbine load remains **constant** AND reactor power **increases** by 5%. The operator can stop dumping steam by taking the Steam Dump Mode Selector switch to STEAM PRESSURE.
- c. Turbine load **decreases** by 7.5% AND reactor power remains **constant**. The operator can stop dumping steam by taking the Steam Dump Mode Selector switch to STEAM PRESSURE.
- d. Turbine load remains **constant** AND reactor power **increases** by 7.5%. The operator can stop dumping steam by taking either Bypass Interlock switch to OFF/RESET.

