

RO Initial Written Examination

1 1.00

Which ONE of the following correctly delineates the order of power train components to the Reactor Trip Breakers:

- A 480VAC - Motor Breakers - Motor Generators - Generator Breakers - Reactor Trip Breakers
- B 480VAC - Generator Breakers - Motor Generators - Motor Breakers - Reactor Trip Breakers
- C 480VAC - Motor Breakers - Generator Breakers - Motor Generators - Reactor Trip Breakers
- D 480VAC - Generator Breakers - Motor Breakers - Motor Generators - Reactor Trip Breakers

2 1.00

What is the reason for maintaining the control banks above the setpoint for the "Rod Bank Lo Lo Insertion Limit" alarm?

- A Ensures the maintenance of acceptable power distribution limits, maintains minimum shutdown margin, and limits the potential effects of rod misalignment on the associated accident analysis.
- B Ensures adequate shutdown margin, maintains acceptable core thermal limits and limits the potential effects of rod misalignment on power operations.
- C Ensures adequate DNBR, limit fission gas release, and maintains fuel pellet temperature and cladding mechanical properties within design criteria.
- D Ensures that additional restrictions on thermal power and increased frequency of peaking factor measurements are not required.

3 1.00

Reactor and turbine power are stable at 20% with rods in AUTO when the generator output breakers trip open. The turbine and generator remain in service to supply plant loads.

Due to the above transient, rods will automatically insert

- A throughout the transient, but automatic rod withdrawal is prevented once **reactor power** is less than 15%.
- B until the **turbine load** reaches 15%, at which time auto insertion will be inhibited, requiring the operator to place the rods in manual to insert them.
- C until the **reactor power** reaches 15%, at which time auto insertion will be inhibited, requiring the operator to place the rods in manual to insert them.
- D throughout the transient, but automatic rod withdrawal is prevented once **turbine load** is less than 15%.

4 1.00

Given the following Unit 1 plant conditions:

The Unit is in MODE 2.  
All Shutdown rods are fully withdrawn.  
Control Bank A is being withdrawn.

Which ONE of the following describes the Limiting Condition for Operation (LCO) for the reactor coolant loops?

- A At least 2 RCPs shall be OPERABLE and ONE in operation.
- B At least 2 RCPs shall be OPERABLE and in operation.
- C At least 3 RCPs shall be OPERABLE and TWO in operation.
- D All 4 RCPs shall be OPERABLE and in operation.

5 1.00

Which ONE of the following best describes the CVCS system response in the event that 1-1 RCP #1 Seal fails COMPLETELY?

- A Relief valve 8123 outside of containment will open to protect the Seal Water Heat Exchanger from overpressure.
- B VCT level will increase as seal return flow to charging pump suction increases.
- C Suction temperature of the CCP will decrease due to the increased cooling to the Seal Water Heat Exchanger.
- D Seal Injection flow will initially decrease as FCV-128 opens in response to decreasing pressurizer level.

6 1.00

A **Shutdown Bank D** rod drops at 75% power. After the appropriate lift coil disconnect switches are opened, the dropped rod is recovered.

What would be the expected status of the ROD CONTROL URGENT FAILURE ALARM during the recovery of the rod?

- A actuated by a logic error
- B actuated by a slave cyclor failure
- C not actuated
- D actuated by a regulation failure

7 1.00

During a loss of offsite power, with all Emergency Diesels (EDG) running, a fire breaks out in EDG 1-1.

What effect will this have on the Diesel Fuel Oil System?

- A The EDG air receiver melt links will vent the air and dump fuel racks to stop the affected EDG
- B The Fuel Oil Day Tank melt links will close the fill valves, preventing any addition of fuel oil to the day tank
- C Fire protection relays will secure the fuel oil transfer pumps to prevent filling the Fuel Oil Day Tank
- D Fire protection equipment is disabled during a loss of AC and will not enable until AC power is restored to the S/U transformer

8 1.00

With the plant initially at 100% power, a loss of all offsite power results in a reactor trip.

When reactor power drops to about 8-9% (due to prompt drop after the trip), adequate core cooling exists because of:

- A ECCS flow
- B Continued forced flow
- C Sufficiently low core thermal power
- D Natural circulation flow

9 1.00

A reactor trip and loss of offsite power have occurred. Natural circulation has been established.

If the rate of dumping steam INCREASED, how would natural circulation flow be affected?

- A DECREASE due to the decrease in subcooling.
- B INCREASE due to the decrease in decay heat rate.
- C INCREASE due to the increased thermal gradient.
- D DECREASE due to the increased density of the cold leg.

10 1.00

From 100% power, electrical faults have caused a reactor trip and loss of offsite power. If the Non-Vital 480V AC Buses CANNOT be re-energized, what can be done to restore power to the Pressurizer Heaters?

- A Groups 1 & 3 can be aligned to 480 V Vital Bus 1F & 1G.
- B Groups 2 & 4 can be aligned to 480V Vital Bus 1F & 1H.
- C Groups 1 & 4 can be aligned to 480V Vital Bus 1F & 1H.
- D Groups 2 & 3 can be aligned to 480V Vital Bus 1G & 1H.

11 1.00

An instrument malfunction has caused excessive CCW flow to the Letdown Heat Exchanger, significantly DECREASING the letdown fluid temperature. The mixed bed demins are in service.

What will occur as a result of this malfunction?

- A PCV-135 "Letdown Pressure Control Valve" will CLOSE momentarily interrupting letdown flow.
- B Mixed bed demins will be ineffective for removing CRUD particles.
- C Mixed bed demins will begin to remove boric acid from letdown.
- D TCV-149 "Letdown Temperature Diversion Valve" will divert all letdown flow to the VCT.

12 1.00

Given the following:

Unit 2 has just tripped.

All rod bottom lights LIT, except rods D-4, K-2, and H-5.

Rod position indicators for rods D-4 and K-2 indicate mid-scale and H-5 indicates full out.

Assume that any emergency boration initiated via the reactor makeup control always achieves exactly the minimum flow rate required.

Which ONE of the following is the minimum required emergency boration time frame for these conditions?

- A 15 minutes
- B 30 minutes
- C 60 minutes
- D 90 minutes

13 1.00

The plant is operating at 100% power when a pressurizer safety valve inadvertently lifts. With PRT pressure at 5 PSIG, what would be the approximate tail pipe temperature of the safety valve?

- A 160 °F
- B 210 °F
- C 230 °F
- D 270 °F

14 1.00

Which ONE of the following does the Post-Accident Sampling System provide post-accident sampling capability from outside containment?

- A Reactor coolant system, control room ventilation intake, gaseous waste system effluent, and spent fuel pool
- B Component cooling water, essential cooling water, steam generator blowdown, and reactor building exhaust
- C Residual heat removal system, component cooling water system, containment emergency sump, and containment atmosphere
- D Reactor coolant system, residual heat removal system, containment emergency sump, and containment atmosphere

15 1.00

The following lineup currently exists on the Reactor Makeup Control system.

FCV-110A (BA to Blender)	CLOSED
FCV-110B (Blender outlet to VCT outlet)	CLOSED
FCV-111A (PW to Blender)	THROTTLED
FCV-111B (Blender outlet to VCT inlet)	OPEN

The system is currently operating in the:

- A Alternate Dilute mode.
- B Automatic mode.
- C Dilute mode.
- D Borate mode.

16 1.00

Which ONE of the following is impacted by a MANUAL Phase A signal?

- A RHR
- B CFCU
- C CCW
- D AFW

17 1.00

While operating at 100% power, a 4 inch diameter small break LOCA occurs on the RCS HOT leg.

Comparing plant response with a 4 inch diameter LOCA in the COLD leg, more core uncover occurs in a:

- A HOT leg LOCA for a GREATER period of time.
- B COLD leg LOCA for a GREATER period of time.
- C COLD leg LOCA but for a SHORTER period of time.
- D HOT leg LOCA but the time of uncover is the same.

18 1.00

With the reactor at 100% power, vital instrument AC power from PY-11 (52-115) and PY-12 (52-1215) is lost to Train A SSPS.

What will be the plant response?

- A Should an Automatic SI occur, all ESF equipment will respond as required, but SI Reset will NOT be available.
- B All ESF actuations controlled by the Train A will occur.
- C The reactor will automatically trip. ESF actuations performed by the Train A will NOT occur.
- D A reactor trip and a Train A ESF actuation will NOT automatically occur. However, manual reactor trip is available.

19 1.00

Given the following conditions:

Pressurizer pressure controller is selected to PT-455 as the controlling channel  
PT-474 is selected as the backup channel  
PT-474 fails low.

What would be the plant response?

- A PCV-456 and PCV-474 will fail open, and PCV-455C is capable of opening on a valid high pressure condition.
- B PCV-455C is prevented from opening, and PCV-456 and PCV-474 are capable of opening on a valid high pressure condition.
- C PCV-456, PCV-474, and PCV-455C are not effected since PT-474 was selected as the backup channel.
- D PCV-456, PCV-474, and PCV-455C are prevented from opening on a valid high pressure condition.

20 1.00

Given the following:

A large break LOCA occurred.  
A steam void exists in the Reactor Vessel Head.

Which of the following instrument failures could affect Reactor Vessel Level Indication System (RVLIS) Upper Range level indication?

- A Pressurizer pressure
- B Wide range RCS T-hot
- C Core exit thermocouple
- D Wide range RCS T-cold

21 1.00

Tech Specs state that in MODE 6, with the water level greater than or equal to 23 feet above the top of the vessel flange, AT LEAST one Residual Heat Removal (RHR) train shall be operable and in operation, except that pump may be de-energized for up to one hour (per eight hour period) under certain conditions. Which ONE of the following items describes one of these conditions?

- A One RHR pump remains operable, and no operations involving core alterations are initiated.
- B No operations are permitted that would cause a dilution of the RCS boron concentration to less than 2500 ppm.
- C Core outlet temperature is maintained at least 40 deg F. below saturation temperature.
- D Core alterations are performed in the vicinity of the reactor vessel hot legs.

22 1.00

Assuming the reactor Trip Breakers have opened, an automatically initiated Safety Injection Signal (SIS) may ONLY be reset if the:

- A high containment pressure was the initiating condition.
- B SIS Time Delay relay (TD1) has timed out.
- C Reactor Trip Breakers are re-closed.
- D initiating condition has cleared.

23 1.00

Assume that a MAIN STEAM LINE BREAK has occurred inside containment. Elevated containment temperature should cause INDICATED pressurizer level for LT-459 to be:

- A LOWER than actual level, because the density of the fluid on the reference side of the transmitter has decreased.
- B HIGHER than actual level, because the density of the fluid on the reference side of the transmitter has increased.
- C LOWER than actual level, because the density of the fluid on the reference side of the transmitter has increased.
- D HIGHER than actual level, because the density of the fluid on the reference side of the transmitter has decreased.

24 1.00

A large break LOCA has occurred. Both RHR pumps have tripped due to low RWST level.

What must be done in order to restart the RHR pumps for Cold Leg Recirculation and why?

- A Close 8980, (RWST to RHR pump suction.) This bypasses the RWST Low Level trip.
- B Verify SI is Reset. This removes RWST Low Level trip.
- C Open 8982 A or B (Containment Recirc Sump suction to RHR) for the applicable pump. This disables the RWST Low Level Trip.
- D Cutout one RWST LOW LEVEL TRIP TEST SWITCH. This bypasses the RWST Low Level trip.

25 1.00

Unit I was shutdown on 11/22/90 at 1300 hours due to excessive RCS leakage.

At 1100 hours on 11/26/90 while in mode 5, a total loss of RHR cooling occurs. The following pertinent plant conditions existed prior to the loss of RHR cooling:

RCS Tavg	120 deg F
Pzr temp	140 deg F
RCS level	mid-loop
SFP level	normal

Using Appendix B to OP AP SD-5, "Loss of Residual Heat Removal", determine which ONE of the choices below correctly indicates how long it will take the RCS to reach 200 degrees.

- A 8.2 min.
- B 9.5 min.
- C 11.0 min.
- D 17.4 min.

26 1.00

If safety injection flow has been terminated in accordance with EOP E-1, "Loss of Reactor or Secondary Coolant," which of the following meet the requirements for restarting the ECCS pumps?

- A RCS subcooling less than 25 degrees F and Pressurizer pressure less than 1820 psig.
- B RCS subcooling less than 30 degrees F or Pressurizer pressure less than 1820 psig.
- C RCS subcooling less than 30 degrees F and Pressurizer level less than 8%.
- D RCS subcooling less than 20 degrees F or Pressurizer level less than 4%.

27 1.00

ECA-2.1, "Uncontrolled Depressurization of All Steam Generators", cautions that a Minimum feed flow of 25 gpm must be maintained to each S/G with a narrow range level of less than 4%. The basis for this requirement is to minimize:

- A Additional overcooling caused by feedwater addition.
- B The magnitude of SG level overshoot.
- C Thermal shock to AFW components.
- D Thermal shock to S/G components.

28 1.00

A reactor trip and Safety Injection have been initiated due to low pressurizer pressure. The reactor trip breakers did NOT open.

How does the current position of the reactor trip breakers affect the operation of Protection and Control Interlocks?

- A CVI cannot be reset.
- B Steam Dumps cannot be placed in Steam Pressure mode.
- C Phase A cannot be reset.
- D Feedwater Isolation cannot be reset.

29 1.00

During a reactor startup, Intermediate range channels are tracking reactor power at a SUR of +0.2 dpm. NI-36 indicates approximately  $5.0E-11$  amps. NI-35 has tracked with NI-36 except it reads approximately one decade higher, and presently indicates  $5.8E-11$  amps. Which of the following is the likely cause of this indication?

- A Degraded compensating voltage to the NI-35 detector.
- B Current "spike" when the P-6 bistable tripped on NI-36.
- C Normal effects of control rod withdrawal and the corresponding control rod shadowing associated with the rod pattern.
- D Increase in compensating voltage to the NI-35 detector.

30 1.00

The plant was operating at 100% power when condenser vacuum dropped below the turbine trip setpoint. All plant systems functioned properly EXCEPT PCV-23, Auto Stop Oil EH Fluid Drain Valve (Interface valve), remains closed.

The turbine will:

- A Trip due to energizing the trip block solenoid valve.
- B NOT automatically trip, but manual trip is available from the control room.
- C Automatically trip by directly dumping EH emergency trip header fluid to drain via a solenoid actuated valve.
- D NOT automatically trip, but manual trip from the manual trip lever on the front standard is available.

31 1.00

The plant is operating at 100% steady state conditions, when the following indications are noted:

VCT level is decreasing  
PZR level is slowly decreasing  
Containment structure sump levels are rising  
Regen HX letdown temperature on TI-127 is 480°F  
Regen HX charging temperature on TI-126 is 480°F

These indications are consistent with a leak at what location?

- A Charging header downstream of 8107 (normal charging isolation valve) and upstream of the Regen HX
- B Charging header downstream of the Regen HX
- C Letdown line upstream of the Regen HX
- D Letdown line downstream of the Regen HX and upstream of the letdown orifice valves

32 1.00

Which ONE of the choices below represents the correct operator response upon receipt of an alarm which indicates introduction of smoke into the control room ventilation system from outside the control room?

- A Manually shift the control room ventilation system to the Isolation Mode.
- B Ensure the control room ventilation system automatically shifts to the Isolation Mode.
- C Manually shift the control room ventilation system to the Emergency Recirculation Mode.
- D Ensure the control room ventilation system automatically shifts to the Emergency Recirculation Mode.

33 1.00

Which ONE of the following describes the operation of the Power Range Nuclear Instrumentation Channel Current Comparator Circuit?

- A Compares detector B (lower) normalized signal to detector A (upper) normalized signal and generates an alarm when greater than 4% difference.
- B Compares each lower detector to the average of the lower detectors and each upper detector to the average of the upper detectors and generates an alarm when greater than 4% difference.
- C Compares total power from each channel to average power and generates an alarm when any one (1) is greater than 4% of average.
- D Compares total power from each channel and generates an alarm at 4% difference between any two (2) channels.

34 1.00

Which ONE of the following is the reason for the order that the valve positions are checked in step 3, "CHECK RCS is isolated" of ECA-0.0, "Loss of All AC Power"?

- A They are listed considering the control board arrangement
- B Those most likely to have no RNO corrective action outside the control room are first
- C They consider capacity of outflow lines and potential for inventory loss
- D Those most likely to fail in a loss of AC are listed first

35 1.00

Unit 2 is shutdown in MODE 5 when RHR flow is lost. The following conditions exist:

- All SG manways are installed
- Reactor Vessel Head in place, detensioned
- All RCPs cleared and uncoupled
- RCS temperature is increasing
- SG tubes are voided
- Reactor Vessel level is 108'
- 2-3 Charging Pump is available

Which ONE of the following methods of Decay Heat Removal (DHR) is used in this case?

- A Feed and Bleed
- B Reflux cooling
- C Natural Circulation
- D Fill and Spill

36 1.00

You are the STA on Unit 1 and you walk by PAMS 3 and observe that the RED ALARM lights are ON and the GREEN NORMAL lights are de-energized.

Which (1) of the following will cause this condition?

- A Any failed CET
- B Less than two valid thermocouples per gradient are working correctly.
- C Any two of the three reference junction box RTD inputs are invalid.
- D Any of the valid CETs has exceeded 700°F.

37 1.00

Given the following:

Unit 1 is at 85% power  
Power to Vital Instrument Bus Channel II (PY-12) has just been lost

Which ONE of the following describes the effect on the plant systems?

- A Loss of power to the remote shutdown panel
- B Control rods insert at the maximum rate
- C The RHR pump trip interlock on low level in RWST is activated, preventing RHR Train B actuation
- D Loss of power to one MFW startup station

38 1.00

Given the following conditions:

The plant was operating normally at 100% power  
S/G 1 narrow range level rapidly decreases to 2%  
S/Gs 2, 3 & 4 narrow range levels in operating band  
The reactor and turbine do NOT trip  
Auxiliary Feedwater pumps do NOT start  
An Anticipated Transient Without Scram [ATWS] condition is announced  
Control rods are manually inserted  
Power Range Instrumentation is decreasing at 10% per minute due to rod insertion

Which of the following is the expected response of the ATWS Mitigating System Actuation Circuitry [AMSAC] system?

- A The AMSAC system will automatically trip the reactor which then causes a turbine trip.
- B The AMSAC system will not actuate since the required S/G low level logic has not been satisfied.
- C The AMSAC system will trip the turbine and automatically start all AFW pumps.
- D The AMSAC system is blocked from actuation since power level will be less than 40% power before the AMSAC time delay expires.

39 1.00

Which ONE of the choices below represents the correct response to a radiation monitor alarm in the intake of the control room ventilation system?

- A Automatic shift to emergency recirculation
- B Automatic shift to emergency ventilation
- C Manual shift to emergency isolation
- D Manual shift to emergency ventilation

40 1.00

Given the following Containment Fan Cooling Unit (CFCU) conditions:

CFCUs 12, 14, & 15 running in high speed  
CFCUs 11 & 13 off  
CFCU drain valves open

What must be done in order to monitor for RCS leakage using Containment Fan Cooling Unit 12?

- A Shift CFCU 12 to low speed and close the CFCU drain valve.
- B Direct the Nuclear Operator to perform the local valve alignment for CFCU 12.
- C No action is required, the collection monitoring is already in service.
- D Close the CFCU 12 drain valve.

41 1.00

The unit is at 100% power with all systems normally aligned.

Which ONE of the following describes the affect of stopping a RCP will have on the Steam Generator in that loop?

The Steam Generator:

- A level will decrease as T-h approaches T-c with steam flow nearly zero.
- B atmospheric relief valve will fully open due to increased heat transfer.
- C pressure will decrease as T-c for the loop decreases with steam flow nearly zero.
- D level will increase as T-h will increase after the RCP stops.

42 1.00

Given the following:

The control room is filling with dense smoke  
The control room is ordered evacuated  
OP AP-8A, Control Room Inaccessibility - Establishing Hot Standby, is entered  
The reactor is tripped from 100% power and the turbine trips

Which ONE of the following describes the action required to be performed prior to leaving the control room?

- A Open the emergency boration valve
- B Initiate safety injection
- C Verify 4kV vital busses energized from startup power
- D Verify VCT outlet valves LCV-112B and C are open

43 1.00

Assume both intermediate range channels are overcompensated. What effect might this have during a reactor start-up?

It will be more likely to reach the

- A P-6 setpoint before reaching 1E04 cps indication.
- B 20% power (current equivalent) rod stop before reaching P-10.
- C point of adding nuclear heat before reaching 1E-08 amps.
- D 1E05 cps source range trip before reaching P-6.

44 1.00

How would the following conditions affect the ability to open RHR-8701 and 8702?

RCS Wide Range pressure at 355 PSIG  
PZR Vapor space temperature instrument has failed at 490°F

- A RHR-8701 & 8702 are both prevented from opening because RCS wide range pressure is greater than 350 PSIG.
- B RHR-8702 is prevented from opening because RCS wide range pressure is greater than 350 PSIG. RHR-8701 is not affected.
- C RHR-8701 is prevented from opening because pressurizer vapor space temperature is greater than 475 degrees. RHR-8702 is not affected.
- D There are NO interlocks associated with opening RHR 8701 & 8702.

45 1.00

What conditions in the Service Cooling Water System (SCW) will automatically start the standby pump?

- A Low head tank level, or high heat exchanger outlet temperature.
- B Low discharge header pressure, or the running pump breaker is open.
- C Low discharge header pressure, or low head tank level.
- D Low pump suction pressure, or the running pump breaker is open.

46 1.00

Which ONE of the following describes the impact of only ONE containment spray pump operating after the ESF actuation following a DBA LOCA?

- A Excess hydrogen may accumulate in the containment atmosphere, increasing the danger of explosion.
- B The peak containment pressure limit may be exceeded unless at least two(2) CFCUs are also running.
- C 10 CFR 100 limits may be exceeded due to inadequate iodine scrubbing.
- D The containment recirculation sump inventory will not have its proper pH value.

47 1.00

If the Pressurizer Level instrument selected as the primary controlling channel failed low, how would the plant respond, WITHOUT operator action?

- A Letdown isolates and charging increases. VCT level decreases until 5% auto switchover to RWST. Boration of the RCS causes RCS pressure to decrease until the reactor trips on OTΔT.
- B Charging increases which causes VCT level to decrease until the Charging Pumps lose suction. The loss of charging flow will cause PZR level to decrease out the bottom.
- C Charging increases which causes PZR level to increase, this will turn on the PZR heaters resulting in a high pressure reactor trip.
- D Letdown isolates and charging increases which causes Pressurizer level to increase until a reactor trip occurs from high Pressurizer level.

48 1.00

Which ONE of the following describes the RCP trip criteria while responding to a SGTR per EOP E-3, "Steam Generator Tube Rupture"?

- A RCPs should be tripped ANYTIME during E-3 if the criteria are met
- B RCPs should be tripped during E-3 ONLY if the criteria are met when the operator is specifically required to check the criteria
- C RCPs should be tripped during E-3 ONLY if the criteria are met before initiating cooldown
- D RCPs should be tripped during E-3 ONLY if the criteria are met before isolating the ruptured SG

49 1.00

Vital 4KV Bus F has been de-energized due to a fault on the Bus. The existing plant failure will not be quickly corrected.

What action should be done to the Digital Rod Position Indication (DRPI)?

- A Align DRPI to its alternate power supply, 1G.
- B Depress the Urgent Failure Alarm Reset Push-button on CC1.
- C Locally reset both of the DRPI data cabinets.
- D Place the DRPI Mode Selector Switch to the DATA "A ONLY" position.

50 1.00

Given the following plant conditions:

Unit 2 is at 55% power.  
Both Condensate Pumps are running.  
All controls are in automatic.  
Condensate Pump 2-02 trips.

Which ONE (1) of the following conditions will result?

- A Turbine run back to 35% power at 60%/min.
- B Main Feedwater Pump 2-02 will trip.
- C The unit will continue to operate at 55% power.
- D The Condensate Transfer Pump will start.

51 1.00

Step 14 of FR-C.1, "Response To Inadequate Core Cooling" directs the operator to stop all RCPs prior to depressurizing all intact SGs from 140 psig to atmospheric pressure. Which ONE (1) of the following is the reason for this action?

- A Remove RCP heat load from RCS
- B Ensure core exit thermocouple temperature will be reduced
- C Ensure RCP number 1 seal integrity
- D Enhance natural circulation cooling of the reactor core

52 1.00

The plant experienced a reactor trip and SI from 100% power. All systems responded as expected for the transient. What actions must be taken before the feedwater control valves can be opened?

- A Reset SI, heat up RCS above low Tavg setpoint, reset Feedwater Isolation.
- B Reset Feedwater Isolation.
- C Cycle the Reactor trip breakers, reset Feedwater Isolation.
- D Reset SI signal, cycle the Reactor trip breakers, reset Feedwater Isolation.

53 1.00

Given the following:

#1 S/G is FAULTED  
Safety Injection is actuated  
Containment Spray is actuated  
Safety Injection has been reset

Chemistry is now required to perform Steam Generator samples.

Which of the following signals must be reset prior to opening the Inside Containment Steam Generator Blowdown Isolation Valves (FCV-760, 761, 762, 763)?

- A Phase A Isolation ONLY
- B Steam Generator Blowdown High Radiation
- C Both Phase A & B Isolations
- D Phase B Isolation ONLY

54 1.00

Which ONE of the following statements describes the Technical Specifications BASES for removal of power to the accumulator power-operated isolation valves, 8808A, B, C, and D when operating in Modes 1, 2, and 3?

- A The valves fail to meet single failure criteria.
- B The valve motor operators have a history of overheating.
- C Ensures that the safety analysis assumptions used for accumulator pressure and volume are met.
- D Valve stroking time may exceed the accident analysis values.

55 1.00

Which ONE of the following are inputs to the High Power Mode of the Digital Feedwater Control System?

- A Feedwater flow, loop average steam flow, feedwater temperature, and turbine load
- B Feedwater temperature, narrow range steam generator level, turbine load and wide range steam generator level
- C Feedwater flow, steam flow, loop average steam flow and loop average steamline pressure
- D Loop average steamline pressure, feedwater header pressure, and narrow range steam generator level.

56 1.000

Unit 1 was at 100% power, when a steam pipe break for S/G 1-1 occurred, causing a reactor trip and eventual Safety Injection.

Present conditions are:

S/G 1-1 pressure = 550 psig  
S/G 1-2, 1-3, 1-4 pressures = 950 psig  
S/G 1-1 indicated steam flow =  $1 \times 10^6$  lbm/hr  
S/G 1-2, 1-3, 1-4 indicated steam flows = 0.0 lbm/hr  
containment pressure = +1.5 psig

Prior to the reactor trip, steam flow increased from all four steam generators. What was the reason for this increase?

- A The drop in steam pressure caused the density compensated steam flow indications for the unaffected Steam Generators to increase.
- B Steam flow from the three unaffected Steam Generators to the Main Turbine increased.
- C The reactivity transient caused by the steam leak caused the steam pressure in the unaffected steam generators to increase.
- D Back flow through the affected Steam Generator's MSIV.

57 1.00

A fire in the relay cabinet area of the control room will be extinguished by an actuation of the automatic total flooding Halon system. Which ONE of the following explains the mechanism by which the Halon extinguishes the fire?

- A The expansion of the Halon in the relay room physically displaces the oxygen needed for combustion
- B The adiabatic expansion of the Halon in the relay room cools the room below the ignition point of most combustible materials found in the room
- C The expansion of the Halon in the relay room chemically removes the oxygen from the combustion process
- D The rapid expansion of the Halon in the relay room physically blows the flame off of the combustible material

58 1.00

Which ONE of the following describes 480V breaker operation if DC control power is lost to these breakers?

- A Breakers will remain in their "as is" condition and operation would only be possible by local operation
- B Automatic breaker trips would remain operational but remote operation of breakers would not be possible
- C Breakers could be operated remotely but automatic trip functions would become inoperable
- D Breakers would trip open and operation would only be possible by local operation

59 1.00

Following a loss of all offsite power, 1-2 Diesel Generator has started and is carrying minimal loads on its associated bus. No changes have been made to the 4kV system. Diesel control is still in AUTO.

If the governor speed control switch was taken to LOWER

- A there would be no change in D/G operation.
- B Voltage and frequency would change.
- C Voltage and megawatts would change.
- D Megawatts and frequency would change.

60 1.00

Which of the following statements concerning P-14, Steam Generator High-High, is correct?

- A Set to actuate at >75% on 1/3 channels on 2/4 steam generators.
- B Protects against a loss of heat sink.
- C Provides a Feedwater Isolation Signal and trips all feedwater pumps and the main turbine.
- D Provides an input to the ATWS Mitigation System Actuation Circuitry (AMSAC) to trip.

61 1.00

While proceeding through EOP-0, "Reactor Trip Or Safety Injection", at step 21 a transition to EOP-1, "Loss Of Reactor Or Secondary Coolant", Step 1 occurs. After the transition, the following conditions exist:

Charging pumps	running
HPSI pumps	running
RCS subcooling	40 degrees F
Containment pressure	55 psig
RCP	all running
SG pressures	increasing
Condenser off gas radiation	normal
SG narrow range levels	all between 15% and 40%
Pressurizer level	35% decreasing
Feedwater flow	220 gpm

Which of the following actions is required?

- A Stop all RCPs and close CCW isolation valves.
- B Manually start the Positive Displacement charging pump to maintain pressurizer level.
- C Transition to FR-H.1, "Response To Loss of Secondary Heat Sink".
- D Transition to FR-Z.1, "Response To High Containment Pressure".

62 1.00

Which of the following conditions will bring in the blue light (located on VB-4) associated with the 4kV vital bus auto transfer circuits?

- A A transfer to Diesel signal only
- B A transfer to S/U OR transfer to Diesel signal
- C A transfer to S/U signal only
- D An actuation of the shed load relay only

63 1.00

Which ONE of the following is the basis for reducing Tave to less than 500 degrees F when the specific activity of the RCS is greater than 100/E microCuries per gram of gross radioactivity?

- A Minimize thermal stress on the fuel cladding.
- B Increase the solubility of the corrosion products in the coolant.
- C Prevent lifting the SG relief valves in the event of a SGTR.
- D Limit containment radiation levels in the event of a LOCA.

64 1.00

Which of following Containment Purge System valves are limited to 50° of travel by the Technical Specifications?

FCV- 660 CONTMT PURGE AIR SUPPLY FAN S-3 DISCH TO CONTMT  
FCV- 661 CONTMT PURGE AIR SUPPLY FAN S-3 DISCH TO CONTMT  
FCV- 662 CONTMT EXCESS PRESS AND VAC RELIEF  
FCV- 663 CONTMT EXCESS PRESS RELIEF TO AUX BLDG EXH FANS  
FCV- 664 CONTMT VAC RELIEF

- A FCV-661, 662, 664
- B FCV-660, 663, 664
- C FCV-660, 661
- D FCV-662, 663, 664

65 1.00

How would the liquid radwaste system respond if RE-18, Liquid Radwaste Rad Monitor, were to come in alarm during a discharge of a Floor Drain Receiver?

- A RCV-18 closes and FCV-477 opens. Flow is directed to the Equipment Drain Receiver that is on fill.
- B RCV-18 opens and FCV-477 closes. The tank that is on discharge will swap to recirculation.
- C RCV-18 closes. The running Floor Drain Receiver pump will receive a trip signal.
- D RCV-18 closes and FCV-477 opens. Flow is directed to the Floor Drain Receiver that is on fill.

66 1.00

Which of the following is a Tech Spec basis for the 164,678 gallons required in the CST?

- A Ensures an adequate heat sink is available for design base SGTR conditions and utilizing the maximum cooldown rate to < 350 degrees for the RHR system to be placed in service.
- B Allows maintaining of the RCS in Hot Standby conditions for 24 hours concurrent with no offsite power available.
- C Ensures an adequate NPSH exists for the Aux Feedwater pumps.
- D Allows cooldown of the RCS to < 350 degrees to allow for the RHR system to be placed in service.

67 1.00

Which ONE of the following is an input utilized by the Reactor Vessel Water Level instrumentation system?

- A Heated junction thermocouple
- B Reactor Vessel differential pressure
- C Loop 1 wide range pressure
- D Tcold instrument on Loop 3

68 1.00

After a long period of stable plant operation, the following plant response occurs:

Rods stepping in at an increasing rate  
Generator load decreasing rapidly in steps  
"RUNBACK OPER" light on the DEHC indication panel flashing at a steady low frequency.

Which of the following conditions is most likely to cause such a plant response?

- A Stator cooling water high conductivity
- B Stator cooling water flow low
- C All loops of OP $\Delta$ T (C-4) 3% below their calculated trip setpoint
- D Loop 1 OT $\Delta$ T (C-3) 1% below its calculated trip setpoint

69 1.00

While observing the containment purge radiation monitor (RM44A) radiation display unit (RDU), you notice that the HIGH ALARM and CVI BYP status lights on the panel are both on.

Based solely on the indications at the RDU, which of the following is true regarding the containment purge CVI status?

- A A CVI signal has been sensed and a CVI has occurred.
- B The status is normal; high radiation on R-44A will cause a CVI.
- C A CVI signal is sensed, but the CVI function is bypassed and it will not occur.
- D A CVI has not been sensed, but CVI actions will occur when it is sensed.

70 1.00

The present plant parameters are:

Reactor Trip	actuated
Safety Injection	actuated
Pressurizer level	5%
Pressurizer pressure	1450 psig

Given the above conditions, which of the following actions will result in energizing the pressurizer heaters?

- A The operator must reset the Safety Injection signal and take the heater switch to the "on" position.
- B The operator must reset the Safety Injection signal, take the heater switch to the "trip" position then to the "on" position after pressurizer level increases above 17%.
- C The operator must take the heater switch to the "on" position after pressurizer level increases above 17% and the pressurizer heater breakers have been reset locally.
- D The operator must take the heater switch to the "on" position after resetting the Safety Injection signal and the pressurizer heater breakers have been reset locally.

71 1.00

A leak has developed at the spent fuel pit pumps. If this leak is not isolated, Spent Fuel Pool level would decrease to approximately:

- A 10 feet below the normal level.
- B 12 feet above the top of the fuel assemblies.
- C 6 feet above the top of the fuel assemblies.
- D 4 feet below the normal level.

72 1.00

A reactor trip and SI have occurred five minutes ago and the following conditions exist:

MSIVs 1, 3, and 4 are shut.  
1-1 S/G pressure is 1005 psig.  
1-2 S/G pressure is 850 psig.  
1-3 S/G pressure is 975 psig.  
1-4 S/G pressure is 1005 psig.

Where is the turbine driven aux feed pump getting its motive steam?

- A Steam line 3 down stream of MSIV
- B Steam lines 1 and 4 upstream of MSIV
- C Steam lines 2 and 3 upstream of MSIVs
- D Steam line 3 upstream of MSIV

73 1.00

A reactor start up is in progress with the following plant conditions:

Control rods	Manual
Reactor power	5%
IR SUR	0
Steam Dumps	Pressure mode
HC-507	AUTO

What would happen if the steam dump pressure controller HC-507 pot setting were to be changed to 7.20? (Normal setting is 8.38)

- A Tav<sub>g</sub> would decrease and reactor power would increase.
- B Tav<sub>g</sub> would increase and reactor power remain the same.
- C Tav<sub>g</sub> would remain the same and reactor power would increase.
- D Tav<sub>g</sub> and reactor power would remain the same.

74 1.00

The plant is operating at 100% power. Pressurizer Level control is selected for LT-459/LT-461. What would be the plant response to Pressurizer Level Channel LT-460 failing high?

- A Letdown will isolate and all Pressurizer Heaters will de-energize.
- B PK05-21, PZR LEVEL HI/LO, annunciator will actuate.
- C Charging flow will increase, backup heaters will energize.
- D PZR HIGH LEVEL RX TRIP Bistable Status Light will energize.

75 1.00

During a secondary plant start-up, what is the effect on the MSR bypass valves (CV-1s) and supply valves (CV-2s) when the ramp push button, on the MSR controller, is depressed?

- A CV-1 valves open in 60 minutes based on feedback from hot reheat temperature. CV-2 valves open when CV-1 is 60% open.
- B CV-1 valves open in about 120 minutes. CV-2 valves open 30 minutes after CV-1 is full open.
- C CV-1 valves open based on main turbine first stage impulse pressure signal. CV-2 valves open after 400°F is sensed.
- D CV-1 valves open based on feedback from hot reheat temperature. CV-2 valves open when CV-1 is full open.

76 1.00

Subsequent to a reactor trip from 100% power, a severe water hammer causes the aux feedwater line to Feed Lead 2-1 to break.

The break is just upstream of the check valve that isolates main feedwater from aux feedwater.

How do the following AFW LCVs respond to this malfunction?

LCV-110 AFW PP 2-2 discharge to S/G 2-1  
LCV-111 AFW PP 2-2 discharge to S/G 2-2  
LCV-106 AFW PP 2-1 discharge to S/G 2-1

- A Low pressure on the AFW line to S/G 2-1 will send a signal to close LCV-110 and LCV-106. LCV-111 will be available to feed S/G 2-2.
- B Low AFW PP 2-2 discharge pressure will result in throttling LCV-110 and LCV-111. LCV-106 will remain open until closed by operator action.
- C High AFW flow to S/G 2-1 will result in LCV-110 throttling. LCV-111 will open in an attempt to feed S/G 2-2. LCV-106 will remain open until closed by operator action.
- D Low pressure on the AFW line will send a close signal to LCV-110. LCV-111 will open in an attempt to feed S/G 2-2. LCV-106 will remain open until closed by operator action.

77 1.00

If a pressurizer PORV fails open which ONE of the following actions concerning the Pressurizer Relief Tank (PRT) will occur assuming NO operator action?

- A The PRT primary water spray valve will automatically open at 3 psig.
- B The PRT vent valve to the waste gas vent header will automatically open at 10 psig.
- C The PRT relief valve will lift at 50 psig.
- D The PRT rupture disks will rupture at 100 psig.

78 1.00

A Gaseous Waste Processing System release is in progress. Which ONE of the following malfunctions could result in the release exceeding the limits on the permit?

- A A loss of control power to system discharge valve FCV-410.
- B Isolation of air to system discharge valve FCV-410.
- C Vent Stack radiation monitor fails high.
- D Aux. building vent duct monitor RM-44A/B fails low.

79 1.00

The plant has experienced a safety injection from 100% power due to a Main Steam Line Break inside containment. Containment pressure is at 27 psig.

What would be the status of the Containment Spray system?

- A CS pumps supplying the spray rings with only RWST water.
- B Spray additive tank outlet valves will be open but the CS pumps will NOT be running.
- C CS pumps supplying the spray rings with RWST water and NaOH.
- D CS pumps running with their discharge valves closed and the Spray additive tank outlet valves open.

80 1.00

Which ONE of the following describes a method used to cool the Pressurizer Relief Tank (PRT) that would NOT generate radwaste?

- A Spray from Reactor Makeup Water System and pump to the LWPS.
- B Spray water from the RCDDT heat exchanger into the PRT.
- C Spray from RCDDT pump and pump to the LWPS.
- D Sparging from the Charging Pump discharge.

81 1.00

What combination of RCS temperature and pressure changes would cause the setpoint for C-3 (OTΔT Rod Stop & Turbine Runback) to INCREASE the most?

- A Tavg INCREASING with RCS pressure DECREASING
- B Tavg CONSTANT with RCS pressure INCREASING
- C Tavg DECREASING with RCS pressure INCREASING
- D Tavg DECREASING with RCS pressure CONSTANT

82 1.00

Given the following:

RCS pressure is 225 psig.  
RCS temperature is 200 degrees F.  
RHR Heat Exchanger Flow control valve (HCV-638) is 10% open.  
ONLY RHR train "A" is in operation.

Which ONE of the following describes the expected operator actions when a CCW SURGE TANK HI alarm on PK01-07 annunciates?

- A RHR Heat Exchanger flow control valve (HCV-638) will be OPENED to maintain desired RHR system flow rate and PZR Level maintained by increasing charging flow.
- B RHR Heat Exchanger bypass valve (HCV-670) will be OPENED to bypass RHR Heat Exchanger and Train "2" placed in service.
- C RHR Heat Exchanger flow control valve (HCV-638) will be CLOSED and RHR pump recirculation flow control valve fully OPENED.
- D RHR Heat Exchanger flow control valve (HCV-638) will be CLOSED and HCV-133 to CVCS Letdown CLOSED.

83 1.00

Which ONE of the following is the correct classification of a fire in the Diesel Generator Fuel Day Tank?

- A Class A
- B Class B
- C Class C
- D Class D

84 1.00

With the unit at 100% power, a loss of a vital DC bus will:

- A Initiate closure of a train of phase "A" isolation valves.
- B Result in loss of a 4kV vital bus when the unit trips.
- C Prevent a reactor trip signal from being processed for the effected instrumentation channel.
- D Result in a loss of DC power to the main generator air side seal oil backup pump.

85 1.00

While conducting refueling operations in the FHB, the ALERT ALARM/TRIP 1 setpoint for the New Fuel Radiation monitor RE-59 is reached. Besides the local alarm in the FHB at radiation monitor RE-59 actuating, what automatic action(s) will occur due to this alarm?

- A FHB evacuation alarm will sound.
- B FHB Hi Rad Alarm (PK11-10) will annunciate.
- C No other automatic actions will occur.
- D FHB ventilation will switch to the Iodine Removal mode.

86 1.00

Which ONE of the following is the purpose of the Carbon Filter Units used in the Containment Ventilation System?

Removal of:

- A Radioiodine.
- B Hydrogen.
- C Ultra-fine particulates.
- D Steam.

87 1.00

Given the following:

A reactor trip occurred coincident with a loss of offsite power  
EOP E-0.4, "Natural Circulation Cooldown with Steam Void in Vessel (without  
RVLIS)" is in progress

The following conditions currently exist:

RCS pressure is 1600 psig  
RCS temperature is 450°F

Which ONE of the following is the reason for equalizing charging and letdown flows during the subsequent depressurization?

- A Allows Pressurizer level to be used for monitoring void growth
- B Assures RCS total mass does not exceed the maximum conditions assumed in FSAR analysis
- C Pressurizer level is not accurate during these conditions and flow matching assures the pressurizer will not go solid
- D Assures the volume control tank is not overstressed due to large fluctuations in charging and letdown

88 1.00

Which ONE of the following establishes the initial conditions for the accident analyses addressed in the FSAR?

- A Technical Specifications.
- B Site specific Probabilistic Risk Analysis Report.
- C Westinghouse Owners' Group Emergency Response Guidelines.
- D Westinghouse Transient and Accident Analysis Report.

89 1.00

Which of the following describes why a Main Steam Isolation Valve (MSIV) could stay OPEN after going to CLOSE on its control switch?

- A Loss of power to its solenoids.
- B No P-4 signal.
- C Insufficient air volume in the accumulators.
- D Loss of instrument air.

90 1.00

Which ONE of the following conditions will cause Area Radiation Monitoring System "Channel in High Alarm"?

- A Steam Generator Tube Rupture.
- B Reactor Coolant System (RCS) to Component Cooling Water System (CCWS) leak.
- C Gas storage tank rupture.
- D RCP thermal barrier heat exchanger tube rupture.

91 1.00

Which ONE of the choices below correctly describes the plant response to pressure channel PT-455 failing HIGH while selected as the control channel with the plant at full power and without operator action?

- A The reactor will trip on high pressure.
- B The PORV block valve will shut when pressure reaches the interlock channel setpoint.
- C The reactor will trip on low pressure.
- D The spray valve will shut when pressure reaches the interlock channel setpoint.

92 1.00

Given the following Unit 1 plant conditions:

Unit was at 100% power when it tripped due to a LOCA.  
Containment pressure is now 16 psig and increasing.  
Hydrogen concentration is 3% and stable.  
Hydrogen Recombiners are being placed in service in accordance with FR-Z.1, "Response to High Containment Pressure."

Which ONE of the following indicates that recombination is occurring after having placed the Hydrogen Recombiners in service?

- A Containment pressure decreases after Hydrogen Recombiners are placed in service.
- B Hydrogen Recombiner average thermocouple temperature is above 1225 degrees F.
- C Containment dewpoint decreases after hydrogen recombiners are placed in service.
- D Hydrogen Recombiner power increases to 120 KW.

93 1.00

Which ONE of the following reflects the condition and the bases for Technical Specification 3.5.4 "Emergency Core Cooling Systems", requirement that ALL Safety Injection Pumps be verified INOPERABLE?

- A In Mode 4 to ensure that a mass addition transient can be relieved by one Pressurizer safety valve.
- B In Mode 5 with water above the reactor vessel flange to ensure that a mass addition transient can be relieved by one PORV.
- C In Mode 5 with water below the reactor vessel flange to ensure that a mass addition transient can be relieved by one RHR suction relief valve.
- D In Mode 6 with the reactor vessel head removed and core alterations in progress in the vicinity of the reactor vessel hot legs.

94 1.00

Upon complete loss of instrument air which ONE of the following valves will an operator NOT be able to control?

- A LCV-459, Letdown isolation
- B PCV-455A, Pressurizer Spray
- C HCV-142, RCP seal back pressure control valve
- D PCV-19, Steam Generator 10% atmospheric dump valve

95 1.00

Which ONE of the following will AUTOMATICALLY terminate a Liquid Radwaste release?

- A Service Water Radiation Monitor Hi Hi.
- B Low dilution water flow rate.
- C High liquid radwaste discharge flow rate.
- D High dilution water flow rate.

96 1.00

The applicability statement for Procedure EOP E-0, "Reactor Trip Or Safety Injection", indicates that this procedure is used for initiating events occurring in Modes 1, 2 and 3. Which of the following describes the applicability of EOP E-0 while in Mode 4?

- A E-0 can not be used in Mode 4, therefore procedure E-0.1, "Reactor Trip Response" must be used.
- B E-0 can not be used in Mode 4 since Abnormal Conditions Procedures must be used in Mode 4 through Mode 6.
- C E-0 can only be used in Mode 4 if so directed by the Critical Safety Function Status Trees.
- D E-0 can be used if a step by step evaluation is made to determine if the action is still applicable.

97 1.00

Given the following:

Unit 1 has tripped from 100% power due to a loss of coolant accident (LOCA).  
A loss of offsite power (LOOP) has also occurred.  
Containment pressure is 15 psig.  
Core Exit Thermocouples indicate 330 degrees F.  
RCS pressure is 400 psig.  
RWST level is 50%.  
Emergency Diesel Generator #1 has failed to start.  
NO flow is indicated for running Residual Heat Removal pump #2.

Which ONE of the following is the reason that RHR pump #2 has NO flow indication?

- A RCS pressure is above the RHR shutoff head.
- B RHR HX bypass valve (HCV-670) is closed.
- C SI cross-connect valves 8716A/B are OPEN.
- D RHR pump Containment Sump Suction valves have failed to open automatically on low RWST level.

98 1.00

Given the following conditions:

A normal plant cooldown is in progress.  
The CCW surge tank indicates a need for makeup.  
Auxiliary operator confirms there is no local problem.  
The water level in the surge tank is slowly DECREASING.  
The makeup valves to the surge tank are fully open.

Which ONE of the following is the source of the leak?

- A RCP thermal barrier heat exchanger
- B Seal water heat exchanger
- C Letdown heat exchanger
- D Primary sample coolers

99 1.00

A Nuclear Engineer calculates core thermal power using a heat balance, but neglects the effects of RCP horsepower and of S/G blowdown being in service.

Which of the following best describes how this will effect the calculated value versus actual thermal power?

- A Both effects make the calculated value higher.
- B Neglecting RCPs makes the calculated value higher, neglecting blowdown makes it lower.
- C Neglecting RCPs makes the calculated value lower, neglecting blowdown makes it higher.
- D Both effects make the calculated value lower.

100 1.00

Which ONE of the following statements describes the function of the pressure detectors located at the discharge of the Residual Heat Removal Pumps?

- A Provide an overpressure interlock that prevents opening 8701 A/B and 8702 A/B hot leg suction valves.
- B Provide an overpressure interlock that prevents opening 8812 A/B RWST suction valves.
- C Provide differential pressure input for flow indication.
- D Provide high pressure alarm.

ANSWER SHEET FOR REACTOR OPERATOR WRITTEN EXAMINATION

Multiple Choice (Circle or X your choice)

NAME:

KEY

001	<u>A</u>	B	C	D	_____	026	A	B	C	<u>D</u>	_____
002	<u>A</u>	B	C	D	_____	027	A	B	C	<u>D</u>	_____
003	A	B	C	<u>D</u>	_____	028	A	B	C	<u>D</u>	_____
004	A	B	C	<u>D</u>	_____	029	<u>A</u>	B	C	D	_____
005	<u>A</u>	B	C	D	_____	030	A	B	<u>C</u>	D	_____
006	A	B	<u>C</u>	D	_____	031	<u>A</u>	B	C	D	_____
007	A	<u>B</u>	C	D	_____	032	<u>A</u>	B	C	D	_____
008	A	<u>B</u>	C	D	_____	033	A	B	C	<u>D</u>	_____
009	A	B	<u>C</u>	D	_____	034	A	B	<u>C</u>	D	_____
010	A	B	C	<u>D</u>	_____	035	<u>A</u>	B	C	D	_____
011	A	B	<u>C</u>	D	_____	036	A	B	C	<u>D</u>	_____
012	A	B	C	<u>D</u>	_____	037	A	<u>B</u>	C	D	_____
013	A	B	<u>C</u>	D	_____	038	A	<u>B</u>	C	D	_____
014	A	B	C	<u>D</u>	_____	039	<u>A</u>	B	C	D	_____
015	A	B	<u>C</u>	D	_____	040	<u>A</u>	B	C	D	_____
016	A	B	<u>C</u>	D	_____	041	<u>A</u>	B	C	D	_____
017	A	<u>B</u>	C	D	_____	042	A	B	<u>C</u>	D	_____
018	A	B	<u>C</u>	D	_____	043	A	B	C	<u>D</u>	_____
019	A	B	C	<u>D</u>	_____	044	A	B	<u>C</u>	D	_____
020	A	<u>B</u>	C	D	_____	045	A	<u>B</u>	C	D	_____
021	A	B	C	<u>D</u>	_____	046	A	<u>B</u>	C	D	_____
022	A	<u>B</u>	C	D	_____	047	A	B	C	<u>D</u>	_____
023	A	B	C	<u>D</u>	_____	048	A	B	<u>C</u>	D	_____
024	A	B	<u>C</u>	D	_____	049	<u>A</u>	B	C	D	_____
025	A	B	<u>C</u>	D	_____	050	A	B	<u>C</u>	D	_____

ANSWER SHEET FOR REACTOR OPERATOR WRITTEN EXAMINATION

Multiple Choice (Circle or X your choice)

NAME:

KEY

051	A	B	<u>C</u>	D	_____	076	A	<u>B</u>	C	D	_____
052	A	B	C	<u>D</u>	_____	077	A	B	C	<u>D</u>	_____
053	A	B	<u>C</u>	D	_____	078	A	B	C	<u>D</u>	_____
054	<u>A</u>	B	C	D	_____	079	A	B	<u>C</u>	D	_____
055	<u>A</u>	B	C	D	_____	080	<u>A</u>	B	C	D	_____
056	A	<u>B</u>	C	D	_____	081	A	B	<u>C</u>	D	_____
057	<u>A</u>	B	C	D	_____	082	A	B	C	<u>D</u>	_____
058	<u>A</u>	B	C	D	_____	083	A	<u>B</u>	C	D	_____
059	<u>A</u>	B	C	D	_____	084	A	<u>B</u>	C	D	_____
060	A	B	<u>C</u>	D	_____	085	A	B	<u>C</u>	D	_____
061	A	B	C	<u>D</u>	_____	086	<u>A</u>	B	C	D	_____
062	A	<u>B</u>	C	D	_____	087	<u>A</u>	B	C	D	_____
063	A	B	<u>C</u>	D	_____	088	<u>A</u>	B	C	D	_____
064	A	B	C	<u>D</u>	_____	089	<u>A</u>	B	C	D	_____
065	<u>A</u>	B	C	D	_____	090	A	B	<u>C</u>	D	_____
066	A	B	C	<u>D</u>	_____	091	A	B	<u>C</u>	D	_____
067	A	<u>B</u>	C	D	_____	092	A	<u>B</u>	C	D	_____
068	A	<u>B</u>	C	D	_____	093	<u>A</u>	B	C	D	_____
069	A	B	<u>C</u>	D	_____	094	A	<u>B</u>	C	D	_____
070	A	<u>B</u>	C	D	_____	095	A	<u>B</u>	C	D	_____
071	A	B	C	<u>D</u>	_____	096	A	B	C	<u>D</u>	_____
072	A	B	C	<u>D</u>	_____	097	<u>A</u>	B	C	D	_____
073	<u>A</u>	B	C	D	_____	098	A	<u>B</u>	C	D	_____
074	A	B	C	<u>D</u>	_____	099	<u>A</u>	B	C	D	_____
075	A	<u>B</u>	C	D	_____	100	A	B	C	<u>D</u>	_____