

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

**Applicant Information**

Name: RO MASTER	Region: III
Date: August 1, 2003	Facility/Unit: PALISADES
License Level: RO	Reactor Type: CE
Start Time: 0810	Finish Time:

**Instructions**

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

**Applicant Certification**

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

\_\_\_\_\_  
Applicant's Signature

**Results**

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

1. **[Read Verbatim]** Cheating on any part of the examination will result in a denial of your application and/or action against your license.
2. If you have any questions concerning the administration of any part of the examination, do not hesitate asking them before starting that part of the test.
3. SRO applicants will be tested at the level of responsibility of the senior licensed shift position (i.e., shift supervisor, senior shift supervisor, or whatever the title of the position may be).
4. You must pass every part of the examination to receive a license or to continue performing license duties. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.
5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facility licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

#### PART B - WRITTEN EXAMINATION GUIDELINES

1. **[Read Verbatim]** After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.
2. To pass the examination, you must achieve a grade of 80.00 percent or greater; grades will not be rounded up to achieve a passing score. Every question is worth one point.
3. For an initial examination, the nominal time limit for completing the examination is six hours; extensions will be considered under extenuating circumstances.
4. You may bring pens, pencils, and calculators into the examination room. Use black ink to ensure legible copies; dark pencil should be used only if necessary to facilitate machine grading.
5. Print your name in the blank provided on the examination cover sheet and the answer sheet. You may be asked to provide the examiner with some form of positive identification.
6. Mark your answers on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you are using ink and decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.
7. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate asking them before answering the question. Ask questions of the NRC examiner or the designated facility instructor *only*. When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For

example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*.

8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.
9. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.
10. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.
11. Do you have any questions?

QUESTION: 001 (1.00)

Given the following plant conditions:

- The plant was at 60% power when a Loss of All Offsite Power occurred.
- Initially NO Diesel Generator was running.
- During the performance of EOP-1.0, "Standard Post-Trip Actions" D/G 1-1 was started.
- Critical Service Water header pressure is 25 psig and stable.
- Pressurizer pressure is 1900 psia and stable.
- Safety Injection has NOT actuated.

The first action required is to CLOSE ...

- a. Containment Air Cooler high capacity valves as needed.
- b. CV-0847, Containment Air Cooler Supply.
- c. CV-1359, Non-critical Service Water isolation.
- d. Containment Air Cooler outlet bypass valves as needed.

QUESTION: 002 (1.00)

Given the following plant conditions:

- A small break loss of coolant accident has occurred.
- Both Safety Injection and Containment High Pressure have initiated.
- HPSI Pump P-66A has failed to start.
- Actual Pressurizer level is 34% and rising rapidly.
- Actual Pressurizer pressure is 1060 psia and slowly lowering.
- Average of the Qualified CETs is 560°F and slowly lowering.
- All Primary Coolant Pumps (PCP) are stopped.
- The accident initiated 30 minutes ago.
- One of the annunciating alarms is EK-1120, LOW SUB-COOLING MARGIN

Which one of the following describes what is occurring and a prescribed action which will mitigate the condition?

- a. Steam Generator tube voiding is occurring. Start one PCP in each loop to sweep any voids from hotter areas.
- b. Reactor head voiding is occurring. Raise Pressurizer pressure within procedural limits to try collapsing the void.
- c. Safety Injection flow is excessive. Throttle Safety Injection to stabilize Pressurizer level.
- d. Safety Injection flow is inadequate. Lower Pressurizer pressure in order to raise HPSI flow.

## QUESTION: 003 (1.00)

During the performance of EOP-2.0, "Reactor Trip Recovery", which one of the following describes the expected response of reactor power? (Assume initial power was stable at 100% for the last 30 days.)

After the initial rapid power reduction reactor power will stabilize at ...

- a.  $10^{-4}\%$  and then slowly lower over a period of hours.
- b. the subcritical multiplication level and then slowly lower.
- c. the subcritical multiplication level and then remain at that level.
- d.  $10^{-4}\%$  and then rise slowly over a 24 hour period as Xenon burns out.

## QUESTION: 004 (1.00)

Given the following conditions:

- The plant is at 100% power.
- An instrument failure caused letdown to isolate.
- Charging and Letdown are secured.
- Tave is maintained constant.

What is the expected effect of the above conditions?

- a. Pressurizer level lowers, Volume Control Tank level rises.
- b. Pressurizer level is constant, Volume Control Tank level lowers.
- c. Pressurizer level lowers, Volume Control Tank level is constant.
- d. Pressurizer level is constant, Volume Control Tank level rises.

QUESTION: 005 (1.00)

During a plant startup and just prior to Main Generator synchronization the following conditions exist:

- Reactor power is stable at 9%.
- Main Turbine speed is at 1800 RPM.

Subsequently, Wide Range Log Channel NI-03 fails HIGH.

- Reactor power remains stable at 9%.
- Main Turbine speed remains at 1800 RPM.

Which of the following is the correct assessment of the above conditions?

- a. Plant responded as expected since the Reactor Protective System trip associated with the failed instrument is not active until greater than 15% power.
- b. Plant responded as expected since the Reactor Protective System trip associated with the failed instrument requires failure of BOTH Wide Range channels to cause a Reactor trip.
- c. The Reactor should have tripped due to the fact that one Wide Range channel supplies signals to TWO RPS channels.
- d. The Reactor should have tripped due to the fact that one Wide Range channel supplies signals to ALL RPS channels.

QUESTION: 006 (1.00)

Given the following conditions:

- The plant was at 89% power when an accident occurred which required a manual reactor trip.
- Three (3) control rods will NOT insert into the core.
- The crew is implementing EOP-9.0, "Functional Recovery Procedure" and have chosen Success Path RC-1 for Reactivity Control.

If ALL Wide Range Nuclear Instruments have become INOPERABLE, what is the effect, if any, on the Reactor Operator's ability to check the status of the Reactivity Control safety function?

- a. No effect, since Reactivity Control is satisfied due to Xenon building in for the next approximately 10-12 hours.
- b. Reactivity Control must be satisfied by manually driving down ONE of the stuck control rods.
- c. Will need to check Reactor power at less than 100 cps and constant or lowering using the Source Range NIs.
- d. Will need to check Reactor power at less than 2% using  $\Delta T$  power indication.

QUESTION: 007 (1.00)

Given the following plant conditions:

- PCS temperature is 420°F.
- Variable Low Temperature Overpressure Protection (LTOP) system is armed in LTOP mode.
- Charging Pump P-55A is operating.
- Letdown is in service.

The following alarm then annunciates:

EK-0547, 125V DC BUS GROUND

Immediately after this alarm, DC Panel D-11-1 voltage drops to 0 volts. With NO operator action, Primary Coolant System leakage will occur due to ...

- a. PIC-0202, CVCS Letdown Pressure Controller, failing CLOSED.
- b. CV-2009, Letdown Isolation Valve, failing CLOSED.
- c. PRV-1042B, Pressurizer PORV, failing OPEN.
- d. PT-0105B, Wide Range Pressurizer Pressure, failing HIGH.

QUESTION: 008 (1.00)

Given the following conditions:

- The plant is at full power when a Loss of All Offsite Power occurs.
- BOTH Diesel Generators have started and loads are sequencing.
- The Reactor trips, but the Main Turbine does NOT automatically trip.
- Steam Generator (S/G) levels quickly lower to approximately 10% before the NCO manually trips the Main Turbine.
- 30 seconds after manually tripping the Main Turbine the NCO notes that Auxiliary Feedwater (AFW) flow indicates 0 gpm to each S/G.

What action, if any, is required, and why?

- a. No action is required, since AFW Pump P-8A will be sequenced on and deliver design flow to each S/G.
- b. The operator must manually initiate AFAS (Aux. Feed Actuation Signal) due to the Loss of Offsite Power.
- c. The operator must manually start AFW Pump P-8C since P-8A has failed to start on low Steam Generator level.
- d. No action is required since no power is available to motor driven AFW pumps and the turbine driven AFW pump will deliver design flow in 92 seconds.

QUESTION: 009 (1.00)

During a critical approach the following conditions exist:

- All Shutdown Rods are fully withdrawn.
- Control Rod Drive Motor power is selected as shown in photo below.
- Motor Control Center #1 de-energizes.

For the above conditions, which one of the following is true?

- a. The Reactor trip breakers remain closed, but a rod driven down automatically inserts the Shutdown Rods.
- b. If the Reactor were to trip for some reason, rod driven down would NOT occur.
- c. The Reactor cannot be tripped unless HS-C15-MBTS is selected to "Bus #1".
- d. Automatic Reactor trips are disabled, but the Reactor can be manually tripped from C-01 or C-06.

QUESTION: 010 (1.00)

Given the following plant conditions:

- During a power escalation the plant is at 86% power
- Primary Coolant Pump (PCP) P-50C upper reservoir oil level has lowered to 22% due to a known oil leak which has gotten worse.

What is the impact of these conditions, and how are the procedures used to mitigate the condition?

These conditions lead to ...

- a. elevated winding temperatures. The Off-Normal procedure for loss of Component Cooling Water is used to provide pump trip criteria.
- b. high bearing temperatures. The Alarm Response Procedure is used to provide guidance on monitoring the bearings.
- c. high bearing temperatures. SOP-1, "Primary Coolant System" provides a troubleshooting guide to minimize oil leak rate.
- d. pump high vibration (DANGER level). The Off- Normal procedure for rapid power reduction is used to provide plant shutdown criteria.

QUESTION: 011 (1.00)

Given the following conditions:

- Plant is in MODE 3 at EOL.
- SIRW Tank boron is 2420 ppm.
- Volume Control Tank (VCT) level is 67%.
- A critical approach is in progress.

If directed to raise VCT level to 75% using SIRW inventory, the NCO should ...

- a. perform the evolution using SOP-2a, "Chemical and Volume Control System"
- b. perform the evolution ONLY after a second SIRW Tank boron sample.
- c. NOT perform the evolution since the upcoming criticality may occur at a HIGHER rod position than planned.
- d. NOT perform the evolution since the upcoming criticality may occur at a LOWER rod position than planned.

QUESTION: 012 (1.00)

A Containment High Pressure (CHP) has occurred. The operators are attempting to determine the hydrogen concentration of containment.

What would be the effect of operating the Hydrogen Monitors in ANALYZE without taking any other actions?

- a. A potential leakage path to the environment would be established.
- b. An explosive mixture of hydrogen and oxygen may be created in the monitors.
- c. The monitor may be damaged due to overpressure.
- d. The sample pumps may be damaged due to having no flow path.

QUESTION: 013 (1.00)

For accident conditions with NO Primary Coolant Pumps operating which of the following is the PREFERRED means of monitoring actual temperatures in the reactor core?

- a. Hot Leg Temperatures since all RTDs are in the flowstream of any natural circulation that has developed.
- b. Hot Leg Temperatures since the Class 1E RTDs are located closer to the actual core than are the CET thermocouples.
- c.  $T_{ave}$  indication, since it uses the average value of both  $T_{hot}$  and  $T_{cold}$  indications.
- d. Core Exit Thermocouples (CETs) since they are located at the top of the core, and do not rely on loop flows.

QUESTION: 014 (1.00)

Given the following:

- A DBA LOCA has occurred
- ALL ESF equipment has actuated as designed

Which ONE of the following describes the expected Containment Air Cooling Fan configuration?

- a. "A" fans running, "B" fans tripped, and the Service Water discharge valves from Coolers V-1, V-2 and V-3 CLOSED
- b. "A" fans tripped, "B" fans running, and the Service Water inlet valves to Coolers V-1, V-2, and V-3 OPEN
- c. "A" fans tripped, "B" fans running, and the Service Water discharge valve from Cooler V-4 OPEN
- d. "A" fans running, "B" fans tripped, and the Service Water inlet valve to Cooler V-4 CLOSED

QUESTION: 015 (1.00)

Given the following conditions:

- The Plant is at 30% power during a power escalation.
- BOTH Condensate Pumps are in service.
- ONE Main Feedwater Pump is in service.
- One of the operating Condensate Pumps trips.

Which of the following describes the impact on the Condensate System Recirculation Valve (CV-0730), and what must the operator do?

CV-0730 will throttle in the ...

- a. OPEN direction and direct more flow to feedwater trains. Monitor Heater Drain Pumps for normal operation.
- b. OPEN direction and direct more flow to the Main Condenser Hotwell. Align alternate Gland Seal Exhauster to maintain vacuum.
- c. CLOSED direction and direct more flow to feedwater trains. Monitor Heater Drain Pumps for normal operation.
- d. CLOSED direction and direct more flow to the Main Condenser Hotwell. Align alternate cooling to Air Ejector Condenser to maintain vacuum.

QUESTION: 016 (1.00)

Which of the following describes the operation and purpose of the Main Feed Regulating Bypass Valve "auto closure on low S/G pressure" key switch?

- a. "ENABLE" allows an operator to open the bypass valve on a low S/G pressure to allow feeding the steam generators with the condensate pumps.
- b. "DEFEAT" allows an operator to open the bypass valve on a low S/G pressure to allow feeding the steam generators with the condensate pumps.
- c. "DEFEAT" ensures that the valve is closed on a low S/G pressure.
- d. "ENABLE" ensures that the valve is open on a low S/G pressure.

QUESTION: 017 (1.00)

For the Auxiliary Feedwater System, which one of the following conditions requires entry into a Technical Specification Limiting Condition of Operation (LCO)? (Assume MODE 1 conditions.)

- a. T-2, Condensate Storage Tank, inventory is 63,500 gallons, and T-81, Primary Makeup Water, is 41,000 gallons.
- b. FIC-0737A has been selected to AUTO.
- c. P-8B and P-8C are the only operable Aux. Feedwater Pumps.
- d. P-8C control handswitch HS-P-8C has been selected to the MANUAL position for 3 hours for surveillance testing.

QUESTION: 018 (1.00)

Which of the following describes the process for providing sample flow for a Waste Gas Decay Tank? (Assume normal plant conditions.)

- a. Sampling is performed at four different pressures during the fill. Sample flow is provided by OPENING a manual air valve, which OPENS the sample valve.
- b. Sampling is performed at two different pressures during the fill. Sample flow is provided by CLOSING a manual air valve, which OPENS the sample valve.
- c. As the tank fills, sampling is performed CONTINUOUSLY. Sample flow is provided by CLOSING a manual air valve, which OPENS the sample valve.
- d. The tank is sampled once when it is full (isolated at 95 psi). Sample flow is provided by OPENING a manual air valve, which OPENS the sample valve.

QUESTION: 019 (1.00)

How can knowledge of the relationship between reactor power and PCS differential temperature ( $T_{\text{hot}} - T_{\text{cold}}$ ) be used to predict the effects on the Axial Shape Index (ASI) for a plant downpower? (Assume plant at Middle of Life.)

During the downpower, the temperature at the TOP of the core lowers...

- a. MORE than the temperature at the bottom of the core. ASI becomes more POSITIVE as power moves toward BOTTOM of the core.
- b. MORE than the temperature at the bottom of the core. ASI becomes more NEGATIVE as power moves toward TOP of the core.
- c. LESS than the temperature at the bottom of the core. ASI becomes more NEGATIVE as power moves toward TOP of the core.
- d. LESS than the temperature at the bottom of the core. ASI becomes more POSITIVE as power moves toward BOTTOM of the core.

QUESTION: 020 (1.00)

Which of the following are the power supplies for the Reactor Protection System BC logic matrix?

- a. Y-10 and Y-30
- b. Y-10 and Y-40
- c. Y-20 and Y-30
- d. Y-20 and Y-40

QUESTION: 021 (1.00)

The plant is at 100% power. RPS Channel B for "A" Steam Generator Low Level is BYPASSED due to a failure of LI- 0751B.

Refer to the attached graphic of Steam Generator level instrumentation.

Which one of the following additional instrument failures will result in a Reactor trip? (Assume no operator action.)

- a. LI-0751A fails LOW.
- b. LI-0751A fails HIGH.
- c. LIA-0702 fails LOW.
- d. LIA-0702 fails HIGH.

QUESTION: 022 (1.00)

The plant is in MODE 3 and a Containment Purge is to be performed.

Consider the following equipment:

- 1. V-46, Air Room Purge Supply Fan
- 2. CV-1805, 1806, 1807, 1808, Containment Purge Exhaust Valves
- 3. T-64D, Clean Waste Receiver Tank

Which of the following describes operational restrictions for performing this Containment Purge?

- a. V-46 can be used ONLY if the Containment Purge Exhaust Valves are OPEN in order to prevent pressurizing containment.
- b. V-46 operation is NOT allowed, but the Containment Purge Exhaust Valves must be OPEN to completely purge containment.
- c. Containment Purge Exhaust Valves must be locked CLOSED, and purge flow is via T-64D removed rupture disk. V-46 operation is NOT allowed.
- d. Containment Purge Exhaust Valves must be locked CLOSED. V-46 is operated to provide adequate purge flow via T-64D removed rupture disk.

## QUESTION: 023 (1.00)

What indication is available in the Control Room for a low suction pressure trip of the turbine driven Auxiliary Feedwater Pump P-8B, and what operation is required for resetting the trip? (For resetting, assume that the low suction pressure condition has been corrected.)

- a. A shared alarm with P-8A provides indication of low suction pressure condition. Reset by taking HS-0522B (K-8 Normal Steam Supply) to OPEN.
- b. AMBER light above HS-0522B will illuminate to indicate low suction pressure condition. Reset by taking HS-0552B to CLOSE.
- c. AMBER light above HS-0522B will illuminate to indicate low suction pressure condition. Reset by taking HS-0522B to OPEN.
- d. A shared alarm with P-8A provides indication of low suction pressure condition. Reset by taking HS-0522B to CLOSE.

## QUESTION: 024 (1.00)

Given the following conditions:

- The plant is operating at 60% power.
- EK-0331, MAIN TRANSFORMER SUDDEN PRESS, alarms.
- All plant components/systems respond as expected.

The Main Transformer deluge actuates and ...

- a. the plant remains at power. 4160 VAC Buses 1A and 1B fast transfer to Startup Transformers 1-1 and 1-3, respectively.
- b. the plant trips. 4160 VAC Buses 1A and 1B fast transfer to Startup Transformer 1-1 and 1-3.
- c. the plant remains at power. 2400 VAC Safeguards Buses Bus 1C and 1D deenergize and are repowered by the Diesel Generators.
- d. the plant trips. 2400 VAC Safeguards Buses Bus 1C and 1D fast transfer to Startup Transformer 1-2.

QUESTION: 025 (1.00)

Given the following plant conditions:

- The plant is at 40% power.
- No equipment is out of service.
- Due to a mis-communication, the Auxiliary Operator manually shuts off P-13 Fire Jockey Pump.

Assuming all equipment functions per design, what is the expected impact of this action on the Fire Protection System, and which procedure should be referred to by the operator?

- a. NO automatic action occurs. Operator refers to EK-1135, "FIRE SYSTEM HEADER LO PRESS" for required actions.
- b. NO automatic action occurs. Operator refers to SOP-21, Fire Protection System for manually starting P-9B Diesel Fire Pump.
- c. P-9A Motor Driven Fire Pump auto starts. Operator refers to EK-1134, "MOTOR DRIVEN FIRE PUMP RUNNING" for required actions.
- d. P-41 Diesel Fire Pump auto starts. Operator refers to EK-1140, "DIESEL FIRE PUMP RUNNING" for required actions.

## QUESTION: 026 (1.00)

During a planned power reduction from full power Group 4 rod positions are indicating as follows:

- Rod 41 - 122.0"
- Rod 40 - 123.3"
- Rod 39 - 112.2"
- Rod 38 - 114.1"

What adverse consequences are of concern with these rod positions?

- a. Rod 41 and 40 CRDM motors will overheat due to continuous drivedown.
- b. Power peaking limits may have been exceeded.
- c. Excessive negative reactivity has been inserted into the core.
- d. Uncontrollable Xenon oscillations will be induced.

## QUESTION: 027 (1.00)

The plant was at 100% power and operating normally when the following occurred:

- P-50A Primary Coolant Pump (PCP) ammeter pegged HIGH and then dropped to 0 amps and remained at 0.
- The reactor automatically tripped approximately 1- 2 seconds later.
- PCPs P-50B, C, D remain operating normally.

Which of the following would account for all of the above conditions?

- a. P-50A has a seized pump shaft and the reactor tripped due to low Primary Coolant flow.
- b. P-50A has a sheared pump shaft and the reactor tripped due to low Primary Coolant flow.
- c. The feeder breaker to Bus 1A tripped due to a fault which caused a Main Generator protective relay actuation and a reactor trip.
- d. P-50A was cavitating which caused at least 2 out of 4 TM/LP channels to actuate an automatic reactor trip.

QUESTION: 028 (1.00)

The plant was at 50% power when the power supplies for all Primary Coolant Pumps became de-energized.

Which one of the following describes an operating behavior characteristic of the Primary Coolant System (PCS) that is present during natural circulation?

- a. Loop  $\Delta T$  LESS than normal full power  $\Delta T$  due to the reduced core power level.
- b. Loop  $\Delta T$  GREATER than normal full power  $\Delta T$  since a higher thermal driving head is required.
- c. Rate of steam generator pressure reduction is LESS than rate of PCS temperature reduction due to HIGHER thermal driving head.
- d. Rate of steam generator pressure reduction is LESS than rate of PCS temperature reduction due to the REDUCED thermal driving head.

QUESTION: 029 (1.00)

The crew is initiating Emergency Manual Boration per EOP 1.0, "Standard Post Trip Actions" following a reactor trip with 2 full length control rods not fully inserted.

- Bus 1C and Bus 1D are both energized.
- One HPSI pump running.
- Boric Acid Pump P-56A is running.
- Charging Pump P-55A is operating.

Which of the following emergency boration methods should be selected if VCT outlet valve (MO-2087) is open and will NOT close from the Main Control Board?

- a. Open MO-2169 and MO-2170, Gravity Feed Valves.
- b. Open MO-2160, SIRWT to Charging Pump Suction.
- c. Open MO-2140, Pumped Feed Valve.
- d. Open MO-3072, CVCS to HPSI Train 2.

QUESTION: 030 (1.00)

Which one of the following Engineered Safeguards Features will result in a loss of Component Cooling Water (CCW) to the Primary Coolant Pumps (PCPs), and what is the reason for the alignment?

- a. Containment High Pressure (CHP) - ensures containment building performs its design function.
- b. Containment High Radiation (CHR) - reduces radiation release potential by isolating CCW headers.
- c. Safety Injection Signal (SIS) on Low Pressurizer Pressure - Since operators will be manually tripping PCPs for Low Pressurizer Pressure events, this provides more cooling for SIS actuated components.
- d. Recirculation Actuation Signal (RAS) - ensures adequate cooling capability for the hotter containment sump water following a Large Break LOCA, by isolating CCW to the PCPs.

QUESTION: 031 (1.00)

Given the following plant parameters during a Primary Coolant System (PCS) heatup:

- PCS temperature is at 195°F
- Pressurizer pressure is 250 psia
- Pressurizer temperature is 380°F
- Pressurizer level is 100%
- P-50B PCP is the only Primary Coolant Pump in service.

A Pressurizer Pressure Control System malfunction causes both spray valves to open and remain open. Why does the reactor operator NOT expect to see an immediate reduction in Pressurizer pressure?

- a. At this pressure and temperature, heat input is matching spray flow effectiveness.
- b. Subcooling conditions are indicated in the pressurizer.
- c. Pressurizer spray flow is inadequate for given conditions.
- d. CVCS backpressure regulator will automatically open to maintain pressure.

QUESTION: 032 (1.00)

The Plant has tripped and the immediate actions of EOP-1.0 are in progress. It is noted that BOTH Steam Generator pressures are approximately 760 psia and lowering slowly.

Which one of the following actions is the operator required to perform?

- a. Manually trip BOTH Main Feedwater pumps.
- b. Manually initiate Safety Injection Actuation signal
- c. Verify main steam isolation signal
- d. Close BOTH Main Steam Isolation Valves

QUESTION: 033 (1.00)

Given the following:

- A Main Steam Line Break has occurred upstream of the "B" S/G MSIV.
- Main Steam Line Isolation has automatically actuated.

Which one of the following is of concern if a steaming path from the unaffected steam generator is not established immediately following dryout of the affected steam generator?

- a. Void formation in the Reactor Vessel upper head region.
- b. Rise in core exit temperatures causing a loss of natural circulation.
- c. Rapid rise in Tcold of the unaffected loop which would result in a loss of natural circulation.
- d. Rapid repressurization of the Primary Coolant System and subsequent pressurized thermal shock.

QUESTION: 034 (1.00)

Given the following conditions:

- The plant is operating at 85% power.
- Cooling Tower Pump 'B' trips.
- Main Condenser vacuum begins lowering, as prescribed by ONP-14, "Loss of Condenser Vacuum."
- The crew begins lowering power using ONP-26, Rapid Power Reduction.
- When power level reaches 55% during the power reduction, EK-0111, VACUUM LO, alarms due to vacuum at 24" Hg.
- Vacuum is at 22" and CONTINUES LOWERING.

Which of the following actions are required to be taken?

- a. Trip the turbine, verify the reactor automatically trips, and go to EOP-1.0, Standard Post-Trip Actions.
- b. Trip the reactor, verify the turbine automatically trips, and go to EOP-1.0, Standard Post-Trip Actions.
- c. Continue the rapid power reduction until condenser vacuum stabilizes.
- d. Continue the power reduction, using normal de-escalation rates, until condenser vacuum stabilizes.

QUESTION: 035 (1.00)

Given the following conditions:

- The plant is in MODE 2.
- Charging Pump P-55A is operating.
- Charging Pumps P-55B and P-55C are in AUTO.
- All control systems are aligned normally and functioning properly.
- A loss of Instrument AC Bus Y-01 occurs.

Which of the following describes why ONP-24.5, "Loss of Instrument AC Bus Y01" directs the operators to isolate PCP bleedoff from the Volume Control Tank (VCT) and realign it to the Primary System Drain Tank?

- a. Minimizes the likelihood of gas intrusion in to the PCP seals.
- b. Minimizes the amount of pressure reduction in the VCT.
- c. Prevents a complete draining of the VCT.
- d. Prevents overfilling of the VCT.

QUESTION: 036 (1.00)

Given the following plant conditions:

- During power operations a Large Break Loss of Coolant Accident (LOCA) has occurred.
- A Safety Injection has occurred as designed.
- A Containment High Pressure (CHP) also occurred as designed.
- 30 minutes later the Safety Injection & Refueling Water Tank level is at 1.8%.

(Refer to the attached drawing.)

What is the expected response of the highlighted valves (CV-0823 and CV-0826) and what is the reason for that response?

- a. Failed AS IS to provide a gradual cooling of the containment sump fluid.
- b. Modulating to provide a gradual cooling of the containment sump fluid.
- c. Opened to a preset hardstop to provide maximum cooling for containment spray and safety injection recirculation flow.
- d. Closed to a preset hardstop to ensure maximum cooling water flow is maintained for the Containment Air Coolers.

QUESTION: 037 (1.00)

Given the following conditions:

- There is a fire at the north end of the Service Building.
- This fire is generating a significant amount of smoke.
- NO radiological event is in progress.
- Wind direction is from due North at 5 to 10 miles per hour.

For these conditions, there is a need to operate the Control Room HVAC system in the Recirculation mode because it will ...

- a. pressurize the Control Room envelope, thereby preventing entry of smoke and other contaminants.
- b. filter out smoke through the charcoal filters, thereby preserving habitability of the Control Room envelope.
- c. minimize smoke intake in the Control Room envelope, and also protect the charcoal filters.
- d. maximize fresh air intake and purge the Control Room envelope of any smoke particles.

QUESTION: 038 (1.00)

Given the following initial plant conditions:

- The plant is at 100% power.
- The Personnel Air Lock between the seals test (DWO-13) has just been completed and BOTH seals have FAILED.

Subsequent plant conditions:

- A Main Steam Line Break inside containment occurs on the "A" Steam Generator (S/G).
- EOP-1.0, "Standard Post Trip Actions" is in progress.
- P-8A Aux. Feedwater Pump is in service providing 165 gpm to each S/G.
- A Containment High Pressure (CHP) has actuated.
- SIRW tank level is at 85% at lowering.
- CV-0510 "A" S/G MSIV is stuck OPEN and will not close by any means.
- CV-1359 (Non-Critical Service Water Isolation) did NOT automatically close.
- P-52C Component Cooling Water Pump did NOT automatically start.

Which one of the following operations will result in a REDUCTION of leakage out of the failed Personnel Air Lock seals?

- a. Manually start P-52C Component Cooling Water Pump.
- b. Manually close CV-1359 (Non-Critical Service Water Isolation).
- c. RAISE Auxiliary Feedwater flow to "A" S/G to 200 gpm.
- d. LOWER Auxiliary Feedwater flow to "B" S/G to 100 gpm.

QUESTION: 039 (1.00)

Given the following:

- During a power escalation at 18% power, Containment Radiation Monitors are indicating as follows:  

RIA-1805 = 8 R/hr.	RIA-1806 = 11R/hr.
RIA-1807 = 10.5R/hr.	RIA-1807 = 8 R/hr.
- A fuel cladding failure has been verified.
- The crew has entered ONP-11.1, "Fuel Cladding Failure".

Which one of the following describes the reason for any required actions?

- a. Manual alignment of Control Room HVAC to Emergency mode is required to maintain Control Room habitability.
- b. Operators are required to close Letdown Orifice Stop Valves, since letdown has automatically isolated.
- c. Operators must closely monitor Pressurizer level and maintain it at less than 78.2% since letdown has automatically isolated.
- d. Since the Stack Gas Monitor is expected to be in high alarm, operators are required to start an additional Main Exhaust Fan, V-6A/B.

QUESTION: 040 (1.00)

During a critical approach, all Group 4 Regulating Rods start to continuously withdraw with NO operator action. What Control Room indications can be used to determine that a continuous rod withdrawal is occurring?

- a. Associated core matrix indicating lights change from RED to AMBER.
- b. EK-0911, "ROD POSITION 4 INCHES DEVIATION" annunciates.
- c. Rod Deviation (RED) light is ON for Group 4 rod indicating lights on control panel C-02.
- d. PPC GREEN indicating bars on Page 410 for Group 4 rod positions are getting SHORTER.

QUESTION: 041 (1.00)

Which one of the following conditions would PREVENT retrieval of a dropped control rod?

- a. A valid EK-0916, "CONTROL RODS OUT OF SEQUENCE" is annunciating.
- b. Motor Control Center 10 is de-energized for diagnostic testing.
- c. Rod Drive Control System power supply switch is in "Bus #2" position.
- d. A valid EK-0605, "VARIABLE HIGH POWER LEVEL CHANNEL PRE-TRIP" is annunciating.

QUESTION: 042 (1.00)

Following a reactor trip caused by a loss of feedwater to the Steam Generators, one of the Pressurizer code safety valves is stuck slightly open. The following parameters are noted:

- PCS pressure = 900 psia
- PZR vapor space temperature = 532°F
- Quench Tank level = 50%
- Quench Tank pressure = 20 psig

What is the expected tail pipe temperature for the above plant conditions?

- a. 532°F
- b. 360°F
- c. 315°F
- d. 212°F

QUESTION: 043 (1.00)

Following a small break LOCA, the following conditions are observed:

- Core exit thermocouple temperatures are approximately 650°F and stable.
- PCS hot leg temperatures are approximately 550°F and stable.
- Pressurizer pressure is 1100 psia.
- PCS cold leg temperatures are approximately 330°F and lowering slowly.

What is the status of PCS inventory and core cooling? The core is ...

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

QUESTION: 044 (1.00)

The plant was on Shutdown Cooling when a loss of Shutdown Cooling occurred due to a seized bearing on P-67A Low Pressure Safety Injection (LPSI) Pump. The crew is now ready to start the alternate LPSI Pump (P-67B) to restore shutdown cooling flow.

Which one of the following flow rates for P-67B is the MINIMUM acceptable flow rate for pump protection?

- a. 150 gpm
- b. 250 gpm
- c. 500 gpm
- d. 2810 gpm

QUESTION: 045 (1.00)

Source/Wide Range NI - 1/3A must be taken out of service. Prior to removing NI - 1/3A from service, which of the following conditions regarding the High SUR Trip RPS channels would be acceptable? (Assume all other Technical Specification requirements are met.)

	RPS 'A'	'RPS 'B'	RPS 'C'	RPS 'D'
a.	NORMAL	BYPASS	NORMAL	TRIP
b.	BYPASS	NORMAL	TRIP	NORMAL
c.	TRIP	NORMAL	NORMAL	BYPASS
d.	NORMAL	TRIP	BYPASS	NORMAL

QUESTION: 046 (1.00)

The alarm "PROCESS LIQ MONITORING HI RADIATION" annunciates due to a high alarm condition on RIA-0707, Steam Generator Blowdown Radiation Monitor.

The following valve positions are subsequently noted:

CV-0704, Blowdown Tank Discharge to Mixing Basin	CLOSED
CV-0738, 'B' S/G Surface Blowdown	CLOSED
CV-0739, 'A' S/G Surface Blowdown	CLOSED
CV-0770, 'B' S/G Bottom Blowdown	OPEN
CV-0771, 'A' S/G Bottom Blowdown	OPEN

Which of the following is the correct diagnosis of the above valve positions?

- Per design. S/G sampling capability is maintained through bottom blowdown CVs, and secondary plant contamination is minimized by closing the surface blowdown CVs.
- Per design. S/G sampling capability is lost since the surface blowdown CVs are closed. Bottom blowdown CVs remain open to allow further trending of RIA-0707.
- NOT per design. ALL valves should be CLOSED to prevent secondary plant contamination.
- NOT per design. ALL valves should remain OPEN to maintain full S/G sampling capability.

QUESTION: 047 (1.00)

Given the following conditions:

- EOP-7.0, Loss of All Feedwater, actions are in progress.
- The crew is implementing a cooldown in order to use the Condensate Pumps for feeding the Steam Generators (S/G).
- Feed Reg Bypass Valves (CV-0734, CV-0735) have been positioned to 10% open as read on valve position indicators on panel C-01.

Given the following information:

- Feed pump discharge pressure = 500 psia
- S/G pressure = 420 psia

How much flow is being delivered to EACH S/G from the Condensate Pumps?

- a. 300 gpm
- b. 100 gpm
- c. 140 gpm
- d. 125 gpm

QUESTION: 048 (1.00)

Which one of the following operations is performed at Palisades that reduces the potential consequences if an Accidental Liquid Radwaste Release event were to occur?

- a. Maintaining the Spent Fuel Pool level above the low level alarm setpoint.
- b. Minimizing the amount of weir overflow from the Makeup Basin to the Mixing Basin.
- c. Recirculating T-91 Utility Water Storage Tank through demineralizers if the normal value of gamma (in  $\mu\text{Ci/ml}$ ) is exceeded.
- d. Maximizing Cooling Tower blowdown in order to ensure the amount of tritium (in  $\mu\text{Ci/ml}$ ) is maintained below allowable limits.

## QUESTION: 049 (1.00)

For a rupture of the Volume Control Tank and subsequent gaseous release, what operational requirement ensures required dose limits are not exceeded?

- a. Limiting primary coolant gross gamma activity to less than 100  $\mu\text{Ci/gm}$ .
- b. Maintain a hydrogen overpressure on the Volume Control Tank in MODE 1.
- c. Ensuring primary coolant lithium concentration is less than 1.0 ppm.
- d. Operating with no more than 3% failed fuel in all plant modes.

## QUESTION: 050 (1.00)

Given the following conditions:

- The plant is at full power.
- Train "A" of Control Room HVAC is in service in Normal Mode.
- The following alarm annunciates:
  - EK-0239, "CRHVAC TRAIN A RIA-1818A HI RAD/FAIL"
- It is determined that RIA-1818A has failed and is inoperable.

What are the consequences of continuing to operate the Control Room HVAC system in these conditions?

- a. If a CHP/CHR occurs ONLY the operating train will FAIL to automatically swap to Emergency Mode.
- b. If a CHP/CHR occurs NEITHER train will automatically swap to Emergency Mode.
- c. Due to the loss of RIA-1818A, any radioactive contamination entering the Control Room from the outside will not be detected.
- d. Due to the loss of RIA-1818A, Train "A" CRHVAC automatically swaps to Purge Mode and the Control Room depressurizes.

QUESTION: 051 (1.00)

The crew is implementing ONP-25.1, "Fire Which Threatens Safety-Related Equipment" for a fire inside containment.

Why does ONP-25.1 refer the operators to EOP-9.0, "Functional Recovery Procedure" Attachment G-1 for these conditions?

- a. Determine which Success Paths are available for mitigating the event.
- b. Establish the hierarchy of which safety functions to address first.
- c. Establish which Continuing Actions to perform after the fire is out.
- d. Determine actions for inoperable instrumentation inside containment.

QUESTION: 052 (1.00)

Given the following conditions:

- Plant is at 100%.
- Level Controller LIC 0101B is in CASCADE.
- Level Control Selector is in Channel B.
- Pressurizer level transmitter LT-0101B diaphragm ruptures.

What is the resulting effect on actual Pressurizer level and the reason for it?

- a. Level LOWERS due to the controller's normal level control signal ramping to letdown.
- b. Level LOWERS due to the unselected controller's backup signal overriding the failed signal.
- c. Level RISES due to the backup signal being calculated from Tave and overriding the failed signal.
- d. Level RISES due to the controller's normal level control signal ramping to charging.

QUESTION: 053 (1.00)

Given the following plant conditions:

- The plant is on shutdown cooling (SDC) in reduced inventory.
- P-67A LPSI Pump is in service. P-67B is NOT running.
- All SDC system controls are aligned normally.
- A leak develops in the Primary Coolant System.
- A moment or two later LPSI injection flow becomes erratic and the following valid alarm then annunciates:
  - EK-1157, LO PRESS SI PUMPS P-67A & P-67B TRIP

Which one of the following describes any required operator actions for these conditions?

- a. Closely monitor operating parameters of P-67B since it has auto started, and there are potential cavitation concerns.
- b. Since the LPSI Pump STANDBY auto start feature is not used, the operator must manually start P-67B to maintain SDC flow.
- c. Since the LPSI Pump STANDBY auto start feature is not used, the operator must report that a Loss of Shutdown Cooling event has occurred.
- d. The operator should attempt only one restart of P- 67A to prevent exceeding motor starting duty limitations and to avoid a loss of shutdown cooling.

QUESTION: 054 (1.00)

What is the concern for two adjacent control rods that are determined to be untrippable, but moveable?

- a. On a reactor trip a portion of the core would have excess reactivity until the two rods could be inserted.
- b. For an emergency downpower the Axial Shape Index (ASI) could not be maintained within the prescribed band.
- c. On a reactor trip the required Shutdown Margin could not be achieved using Emergency Boration.
- d. For an emergency downpower the Power Dependent Insertion Limits would be violated for the two affected rods.

QUESTION: 055 (1.00)

Assume the Plant is in MODE 3 with both Steam Generators available. Which statement describes the effect on the Primary Coolant System (PCS) of the number of operating Primary Coolant Pumps (PCPs)?

- a. Operating ALL PCPs raises PCS flow rate, but results in a reduction in DNB margin due to pump heat input.
- b. Fifteen minutes after shutting off ALL PCPs there will be NO flow in the PCS, and margin to DNB will be reduced.
- c. Reducing the number of operating PCPs lowers the PCS flow rate which causes a RISE in DNB margin.
- d. Reducing the number of operating PCPs lowers the PCS flow rate which causes a REDUCTION in DNB margin.

QUESTION: 056 (1.00)

The crew is implementing EOP-8.0, "Loss of Forced Circulation Recovery" and is using Auxiliary Spray to control Pressurizer pressure. TWO Charging Pumps are in service.

If the operator desires to REDUCE Pressurizer pressure, which of the following methods should be used?

- a. Start a third Charging Pump and open the Main Spray valves.
- b. Start a third Charging Pump and close the Main Spray valves.
- c. Shutoff one Charging Pump and open the Main Spray valves.
- d. Shutoff one Charging Pump and close the Main Spray valves.

QUESTION: 057 (1.00)

Given the following conditions:

- A small break LOCA has occurred and the Control Room crew is performing the actions of EOP-4.0, "Loss of Coolant Accident Recovery".
- Pressurizer pressure is 980 psia and very slowly lowering.
- A plant cooldown has been initiated using the Steam Generators and Auxiliary Feedwater.
- Safety Injection throttling criteria have been met and the operator is ready to throttle Safety Injection by shutting off one HPSI pump.

What plant response should the operator expect when throttling Safety Injection for the above conditions?

- a. The cooldown rate will LOWER unless the operator raises the steaming rate.
- b. The cooldown rate will RISE unless the operator lowers the steaming rate.
- c. The resulting unbalanced loop injection flows will interrupt natural circulation unless the operator raises the steaming rate.
- d. The resulting Pressurizer pressure reduction may result in core voiding unless the operator lowers the steaming rate.

QUESTION: 058 (1.00)

Which of the following lists the normal power supplies for the indicated Nuclear Instruments?

- |    | NI-1 | NI-2 | NI-3 | NI-4 | NI-5 | NI-6 | NI-7 | NI-8 |
|----|------|------|------|------|------|------|------|------|
| a. | Y10  | Y20  | Y10  | Y20  | Y30  | Y40  | Y30  | Y40  |
| b. | Y40  | Y30  | Y40  | Y30  | Y10  | Y20  | Y10  | Y20  |
| c. | Y30  | Y40  | Y30  | Y40  | Y10  | Y20  | Y30  | Y40  |
| d. | Y10  | Y20  | Y30  | Y40  | Y10  | Y20  | Y30  | Y40  |

QUESTION: 059 (1.00)

The Cutler-Hammer Interface has failed and therefore QCET indication is not available on the PPC. QCET temperatures can then be monitored using which one of the following?

- a. TYT-0100 or TYT-0200
- b. SPI Node
- c. PIP Node
- d. C-11A recorders

QUESTION: 060 (1.00)

Which Containment Air Cooler (CAC) fans have power available if D/G 1-2 is the ONLY available source of AC power?

- a. V-1A, V-2A, and V-3A
- b. V-4A only
- c. ALL CAC "A" fans
- d. ALL CAC "A" and "B" fans

QUESTION: 061 (1.00)

The plant is operating at 100% power when BOTH Condensate Pumps P-2A and P-2B unexpectedly trip.

What is the resulting effect on the Main Feedwater (MFW) Pumps?

- a. They trip due to a reduction in MFW pump suction pressure.
- b. They trip due to overspeeding of the MFW pump turbines.
- c. MFW pumps will experience excessive vibration due to cavitation at the pump suction.
- d. MFW pump turbines ramp down to minimum speed to prevent overfeeding Steam Generators.

QUESTION: 062 (1.00)

The plant is operating at 60% power with the Steam Generator Level Control System in automatic, when Annunciator EK-0961, "STEAM GEN E-50A HI LEVEL" alarms.

Which one of the following sets of indications would be expected immediately for the above plant conditions?

	CV-0701 position indicator POI-0701	Steam Generator Level
a.	Lowering	55%
b.	Rising	85%
c.	Rising	55%
d.	Lowering	85%

QUESTION: 063 (1.00)

Given the following conditions:

- From full power a transient occurs that results in a valid Aux. Feedwater Actuation Signal (AFAS).
- P-8A Aux. Feed Pump is tagged out.
- Plant conditions also require a Natural Circulation plant cooldown.
- P-8C AFW Pump is the ONLY AFW Pp. operating.
- AFW flow to "A" S/G = 80 gpm and stable.
- AFW flow to "B" S/G = 120 gpm and stable.

Which one of the following describes AFW System response in establishing and maintaining a natural circulation cooldown?

- a. acceptable since Auxiliary Feedwater flow to at least ONE S/G is greater than 100 gpm.
- b. acceptable since Auxiliary Feedwater flow to BOTH S/Gs is greater than 70 gpm.
- c. NOT acceptable since P-8B turbine driven pump should have auto started due to flow to ONE S/G at less than 100 gpm.
- d. NOT acceptable since P-8B turbine driven pump should have auto started due to flow to BOTH S/Gs at less than 165 gpm.

QUESTION: 064 (1.00)

Containment is normally vented to the \_\_\_\_ (1) \_\_\_\_ via the \_\_\_\_ (2) \_\_\_\_.

- |    | (1)                        | (2)                             |
|----|----------------------------|---------------------------------|
| a. | Waste Gas Collection Hdr   | Shield Cooling Surge Tank       |
| b. | Main Exhaust Plenum        | Waste Gas Surge Tank            |
| c. | Waste Gas Surge Tank       | T-64A Clean Waste Receiver Tank |
| d. | Vent Gas Collection Header | T-64D Clean Waste Receiver Tank |

QUESTION: 065 (1.00)

Flammable gas mixtures are prevented in the Waste Gas Decay Tanks by ...

- a. venting Volume Control Tank hydrogen if Waste Gas Decay Tanks oxygen exceeds 5%.
- b. maintaining the Waste Gas Surge Tank at a slightly positive pressure.
- c. maintaining the Vacuum Degasifier Tank with a nitrogen overpressure when in standby.
- d. placing the Vacuum Degasifier Tank in service during all resin sluices.

QUESTION: 066 (1.00)

Placing the Fuel Handling Area Monitors RIA-2316 and RIA- 2317 cutout switches to the IN position will:

- a. Enable automatic closure of selected Containment Isolation valves.
- b. Trip the Fuel Handling Area Supply Fan V-7 on one out of two logic.
- c. Enable automatic closure of Fuel Handling Area exhaust dampers.
- d. Trip the Penetration and Fan Room V-78 and V-79 on high radiation.

QUESTION: 067 (1.00)

Given the following:

The Plant is in MODE 3. Safety Injection Tank parameters are as follows:

SIT	PRESSURE	BORON (PPM)
T-82A	205	1750
T-82B	215	1920
T-82C	225	1705
T-82D	220	2150

Which ONE of the Safety Injection Tanks (SITs) will prevent entry into MODE 2 per Technical Specifications?

- a. T-82A
- b. T-82B
- c. T-82C
- d. T-82D

QUESTION: 068 (1.00)

The plant is operating at 65% power when both pressurizer spray valves fail OPEN. With NO operator action, which of the following automatic actuations is expected to occur?

- a. Safety Injection and then a Reactor trip.
- b. Reactor trip and then a Safety Injection.
- c. ONLY a Reactor trip.
- d. ONLY a Safety Injection.

QUESTION: 069 (1.00)

Given the following plant conditions:

- During a small break LOCA Pressurizer level begins slowly lowering.
- Pressurizer level drops to 34% before the operator notices the trend.

Which of the following describes the status of the Pressurizer heaters?

- a. ONLY the proportional heaters are energized.
- b. ONLY the backup heaters are energized.
- c. ALL heaters are energized.
- d. NO heaters are energized.

QUESTION: 070 (1.00)

Which one of the following describes the use of the PIP (Primary Indication Panel) indication as compared to the SPI (Secondary Position Indication) indication when monitoring control rod positions?

- a. PIP is a MORE accurate indication since it receives input from the synchro-transmitters.
- b. PIP is a LESS accurate indication since it receives input from the reed stack switches.
- c. SPI is a LESS accurate indication since it receives input from the synchro-transmitters.
- d. SPI is a MORE accurate indication since it receives input from the reed stack switches.

QUESTION: 071 (1.00)

The following plant conditions exist:

- SIRW tank level indicates 23% and is lowering.
- Pre RAS alignment verification is being performed per EOP Supplement 42 "Pre and Post RAS Actions"
- Only ONE Containment Spray Pump is available and is operating.
- Actions were taken per EOP Supplement 42 to secure one HPSI pump and to CLOSE the Containment Spray Header isolation valve CV-3001.

These actions were taken to ensure that when the Recirculation Actuation signal (RAS) does occur...

- a. the operating Containment Spray Pump will not be in a runout condition.
- b. the operating HPSI pump will not be above its design discharge pressure rating.
- c. the operating Containment Spray Pump will not be above its design discharge pressure rating.
- d. the operating HPSI pump will not be in a runout condition.

QUESTION: 072 (1.00)

Refer to attached drawing. When transferring water from the Spent Fuel Pool (SFP) to the SIRW Tank using only P-82, Spent Fuel Pool Recirc Booster Pump, MV-SFP113 (T-50 to the SFP) is closed and MV-SFP127 (T-50 to the SIRW Tank) is opened.

When restoring the Spent Fuel Pool Cooling System to its normal lineup and P-82 is shut off, what concern is addressed by closing MV-SFP127 PRIOR to re-opening MV- SFP113?

- a. SFP overfill due to backflow from the SIRW tank.
- b. SFP low level due to siphoning action.
- c. A high level in the SIRW tank due to unplanned transfer from SFP.
- d. Elevated temperature of SIRW tank water due to unplanned transfer from SFP.

QUESTION: 073 (1.00)

Given the following plant conditions:

- Plant is at 80% power and was performing a power escalation to full power when EK-1364, "GASEOUS MONITORING HI RADIATION" annunciated.
- It is determined that this alarm is due to RIA-0631, Condenser Off- Gas Monitor in an alarm condition.
- PCS total gas activity is 0.18  $\mu\text{Ci/cc}$ .
- Off Gas flow is 2 cfm
- At 0610 RIA-0631 indicated 1.00 E4 cpm
- At 0710 RIA-0631 indicates 2.00 E4 cpm
- "B" Steam Generator is the affected generator.

What actions should be taken to address the above plant conditions?

- a. Trip the reactor and carry out the Immediate Actions of EOP-1.0, "Standard Post-Trip Actions"
- b. Plant management must evaluate the need to perform a controlled Plant shutdown per GOP-8, "Power Reduction and Plant Shutdown".
- c. Place the Plant in Mode 3 within 24 hours per ONP-23.2, "Steam Generator Tube Leak", Step 4.2.
- d. Place the Plant in Mode 3 within 4 hours per ONP-23.2, "Steam Generator Tube Leak", Step 4.2.

QUESTION: 074 (1.00)

With the plant at full power, a Steam Generator tube leak occurs. With the Offgas flow rate at 2 cubic feet per minute, a reading is obtained from RIA-0631, Off-Gas Monitor that confirms the tube leak.

(Assume the Steam Generator tube leak rate has remained stable.)

If the Offgas flow rate were raised to 7 cubic feet per minute, the RIA-0631 indication would be...

- a. unreliable since the detector is overranged.
- b. higher due to the higher offgas flow rate.
- c. lower due to the higher offgas flow rate.
- d. unaffected.

QUESTION: 075 (1.00)

Given the following conditions and the provided references, as needed:

- Battery Chargers #1 and #2 are in service.
- Battery Charger #3 is inoperable and is to be tagged out.

The following sequence of events occur:

- Breaker 52-285 (Station Battery Charger #3) is opened.
- Breaker 72-15 (Charger #1) is mistakenly opened.

Which of the following additional breaker trips will result in a reactor trip?

- a. 72-10
- b. 72-18
- c. 72-36
- d. 72-37

QUESTION: 076 (1.00)

Following a Loss of Coolant Accident, the reactor was tripped and Safety Injection initiated.

- 2400 VAC Bus 1D is being powered by the Safeguards Transformer.
- 2400 VAC Bus 1C has had a load shed.
- EDG 1-1 is running with normal voltage.
- Breaker 152-107, EDG 1-1 output breaker will NOT close.

What is the resulting effect on the DBA load sequencers?

- a. Left channel DBA sequencer IS operating, right channel DBA sequencer IS operating.
- b. Left channel DBA sequencer is NOT operating, right channel DBA sequencer IS operating.
- c. Left channel DBA sequencer IS operating, right channel DBA sequencer is NOT operating.
- d. Left channel DBA sequencer IS NOT operating, right channel DBA sequencer IS NOT operating.

QUESTION: 077 (1.00)

Many Process Liquid Monitors have a HIGH alarm and a LOW alarm setpoint. SOP-37, "Process Liquid Monitor System" Plant Requirements prescribes how these alarm setpoints are to be set.

Which one of the following explains how the LOW level alarm setpoints are to be set?

- a. Below background so as to act as a circuit failure alarm for the monitor.
- b. Above background so as to act as a circuit failure alarm for the monitor.
- c. Below background so as to prevent overranging of the monitor.
- d. Above background so as to prevent overranging of the monitor..

QUESTION: 078 (1.00)

Which of the following describes the power supplies for the Service Water Pumps?

	P-7A	P-7B	P-7C
a.	Bus 1D	Bus 1D	Bus 1C
b.	Bus 1D	Bus 1C	Bus 1D
c.	Bus 1C	Bus 1C	Bus 1D
d.	Bus 1C	Bus 1D	Bus 1C

QUESTION: 079 (1.00)

Given the following conditions:

- The actions of ONP-7.1, "Loss of Instrument Air" have been implemented.
- Instrument air is being provided from Feedwater Purity Air system, using C-903A air compressor. System header pressure is being maintained at the normal pressure.
- Subsequently, a Large Break LOCA inside containment occurs, with all equipment responding per design.

What is the impact, if any, of the air system cross connection for the current plant conditions, and what action, if any, is required?

- a. Since C-903A is now operating with reduced cooling flow and elevated temperatures, an Auxiliary Operator must locally raise cooling flow per SOP-19, "Instrument Air System".
- b. C-903A continues to operate normally and provide plant instrument air header pressure, and no additional action is required.
- c. Since C-903A has tripped due to loss of power; operators will have to implement an EOP Supplement for repowering and restarting C-903A.
- d. C-903A is running, but must be manually tripped since it has NO cooling water. Operators will have to align High Pressure Air System to supply the Instrument Air System.

QUESTION: 080 (1.00)

The plant is in a heatup from MODE 4 to MODE 3 and drawing a bubble in the Pressurizer. What is the pressure requirement for the Quench Tank?

- a. less than 10 psig.
- b. greater than 10 psig.
- c. less than 25 psig.
- d. greater than 25 psig.

QUESTION: 081 (1.00)

SOP-16, "Component Cooling Water System," contains a precaution that relates to operation of the following valves:

- CV-0937 and CV-0938, Shutdown Cooling Heat Exchanger CCW Inlet Valves.

Which one of the following describes the applicability of this precaution (including the concern it addresses), AND the action required to satisfy the precaution?

- a. If only ONE CCW pump is operating, manually start a second CCW pump. This action prevents auto starting of the STANDBY CCW pump and is done prior to OPENING the valves.
- b. If only ONE Service Water pump is operating, manually start a second Service Water pump. This action prevents auto starting of the STANDBY Service Water pump and is done prior to OPENING the valves.
- c. If more than one CCW pump is operating, shut off one CCW pump prior to CLOSING the valves. This action ensures the valves operate smoothly, due to lowered system flow.
- d. If more than Service Water pump is operating, shut off one Service Water pump prior to CLOSING the valves. This action prevents overcooling of the CCW System, since Service Water system flow has been reduced.

QUESTION: 082 (1.00)

Which one of the following describes the operation of the containment Iodine Removal Fan units (V-940A, V-940B) and associated charcoal filters?

- a. Automatically start on a Safety Injection Signal (SIS) to remove I-131 generated during a Loss of Coolant Accident (LOCA).
- b. Manually started during a normal Plant shutdown to remove I-131 for containment habitability.
- c. Manually started during a normal Plant startup to minimize potential I-131 release to the environment.
- d. Automatically start on a Containment High Pressure (CHP) to assist Containment Spray System in removing I-131 from containment.

QUESTION: 083 (1.00)

Given the following plant conditions:

- From full power, a Large Break LOCA occurred.
- Containment hydrogen concentration is at 3%.

Which one of the following actions should be taken to address these conditions?

- a. Re-start all of the Containment Air Cooling "B" fans to ensure adequate mixing of Containment atmosphere.
- b. Initiate a containment purge to reduce hydrogen below 1%, thereby minimizing the potential for a hydrogen burn .
- c. Operate at least one of the Hydrogen Recombiners, thereby minimizing the potential for a hydrogen burn.
- d. Energize Motor Control Center 9 to energize equipment for adequate mixing of Containment atmosphere.

QUESTION: 084 (1.00)

During a refueling outage, the operator using the Spent Fuel Handling Machine is lifting a fuel bundle for placement in the inspection elevator. After the bundle has been lifted approximately 20" the operator notes the following:

- Hoist upward motion has automatically stopped.
- The CRT screen for the Spent Fuel Handling Machine is displaying "Fuel Overload" in a red box.
- Hoist Load Readout indicates 1712 lbs.

The operator attempts to lower the bundle back into its storage rack, and is successful in doing so. What is the correct assessment of the Spent Fuel Handling Machine operation?

- a. The Hoist Emergency Up Limit functioned per design.
- b. The Hoist Underload interlock should have prevented lowering the bundle.
- c. The Hoist Overload interlock should have prevented any bundle movement.
- d. The Hoist Overload interlock functioned per design.

QUESTION: 085 (1.00)

Given the following conditions:

- The plant is in MODE 3 following a reactor trip from 100% power.
- PCS temperature is being controlled with the Turbine Bypass Valve in AUTO
- The Atmospheric Steam Dumps are closed with the control room C-02 panel Steam Dump Controller, HIC-0780A in AUTO
- The Average Temperature Display Select Switch is in the LOOP 2 position

Which of the following describes the effect of a loss of the Tave signal from TYT- 0200 (e.g., signal failed LOW) on the plant. (Assume NO operator action has been taken.)

- a. The only means of PCS heat removal with the secondary plant is via the Main Steam Code Safety valves.
- b. The Turbine Bypass Valve fails closed and will NOT open until the Average Temperature Display Select Switch is placed in LOOP 1 position.
- c. The Turbine Bypass Valve fails closed and will NOT open. The ADVs will open on a quick open signal.
- d. The TBV will modulate open/closed to maintain S/G pressures at setpoint. The ADVs will NOT modulate open.

QUESTION: 086 (1.00)

Assume the plant is on Shutdown Cooling when a complete loss of Instrument Air occurs.

Which of the following describes the effect on the Shutdown Cooling System and on the Primary Coolant System (PCS)?

- a. Since CV-3006, SDC Hx Bypass, fails CLOSED, the PCS will begin to heat up.
- b. Since CV-3025, SDC Hx Outlet, fails CLOSED, the PCS will begin to heat up.
- c. Since CV-3006, SDC Hx Bypass, fails OPEN, there is a concern for PCS overcooling.
- d. Since CV-3025, SDC Hx Outlet fails OPEN, there is a concern for PCS overcooling.

QUESTION: 087 (1.00)

Which one of the following describes interlock features on the Personnel Air Lock and Escape Air Lock doors which are designed to ensure Containment integrity?

- a. Personnel Air Lock doors cannot be opened at the same time as Escape Air Lock doors.
- b. Both doors on the Personnel Air Lock and the Escape Air Lock close and lock on a Containment High Pressure (CHP) or Containment High Radiation (CHR) condition.
- c. A timer ensures that the Personnel Air Lock and the Escape Air Lock inner and outer doors can be opened at the same time ONLY for a maximum of 30 seconds.
- d. The inner door cannot be opened at the same time as the outer door for the Personnel Air Lock and also for the Escape Air Lock.

## QUESTION: 088 (1.00)

During a Loss of Coolant Accident inside containment the operator notes that the Plant Process Computer (PPC) displayed value for containment pressure has changed color from MAGENTA to WHITE. How is this information obtained on the PPC and what is its significance?

- a. Depress "URGNT" hardkey. Containment pressure is now LESS THAN the alarm level setpoint.
- b. Depress "ALARM" hardkey. Containment pressure is now ABOVE the alarm level setpoint.
- c. Depress "EVENT" hardkey. A Containment High Pressure (CHP) has just actuated.
- d. Depress "UPDATE" hardkey. Criteria for resetting Containment High Pressure are now met.

## QUESTION: 089 (1.00)

Note Step 5.9 of the attached procedure excerpt from GOP-2. Reference will also be made to SOP-7, "Main Steam System".

To perform the operation of verifying that MSIV closure is UNBLOCKED, how are the above procedures to be implemented?

- a. You must EXIT GOP-2, and go to SOP-7 to perform the unblocking.
- b. You REMAIN in GOP-2 and refer to SOP-7 to perform the unblocking.
- c. Unblocking is performed per GOP-2 only. Use of SOP-7 is NOT required.
- d. Unblocking is performed per SOP-7 only. Use of GOP-2 is NOT required.

QUESTION: 090 (1.00)

During the performance of a system checklist the position of a valve is found OPEN when the valve is required to be CLOSED by the checklist. Which of the following describes the sequence of actions required to be taken by the operator?

- a.
  1. Record the valve's current position on the checklist.
  2. Continue and complete the checklist.
  3. Inform the Shift Supervisor.
  
- b.
  1. Obtain the Shift Supervisor's authorization to reposition the valve.
  2. Reposition the valve CLOSED.
  3. Record on the checklist the new position.
  
- c.
  1. Record the valve's current position on the checklist.
  2. Obtain the Shift Supervisor's authorization to reposition the valve.
  3. Position the valve CLOSED.
  
- d.
  1. Position the valve to the CLOSED position.
  2. Record valve's original position on the checklist.
  3. Inform the Shift Supervisor.

QUESTION: 091 (1.00)

During a plant startup, the following conditions exist:

- The crew has taken actions to change Plant mode to MODE 2.
- The NCO was directed to remove all channels of Zero Power Mode (ZPM) Bypass from operation, but has NOT taken any action.
- All keyswitches for ZPM Bypass are still in the enabled position (fully clockwise).
- Reactor power has risen to  $10^{-3}\%$  on all available indications.
- "A" Steam Generator (S/G) level has lowered to 24%.

What are the consequences of the above plant conditions?

- a. The Reactor has tripped since the ZPM Bypass was automatically removed when Reactor power reached  $10^{-4}\%$ .
- b. The Reactor has NOT tripped, but it would trip if the ZPM Bypass enable keyswitches were operated to the disable position (fully counterclockwise).
- c. The Reactor has NOT tripped, and it would NOT trip even if the ZPM enable keyswitches were operated to the disable position (fully counterclockwise).
- d. The Reactor has tripped since the ZPM Bypass was automatically removed when "A" S/G level lowered to 30%.

QUESTION: 092 (1.00)

Refer to the following list of valve operations:

1. Close discharge valve.
2. Close suction valve.
3. Open discharge valve.
4. Open suction valve.

Which of the following describes the required sequence of valve operations when tagging out and subsequently restoring to service of a centrifugal pump?

- |    | TAGOUT |      | RESTORE |
|----|--------|------|---------|
| a. | 1,2    | then | 4,3     |
| b. | 2,1    | then | 4,3     |
| c. | 1,2    | then | 3,4     |
| d. | 2,1    | then | 3,4     |

QUESTION: 093 (1.00)

During refueling operations, which one of the following Spent Fuel Pool water levels is the LOWEST level which allows irradiated fuel handling activities?

- a. 6" below skimmers
- b. 10" below skimmers
- c. 14" below skimmers
- d. 18" below skimmers

QUESTION: 094 (1.00)

Which one of the following describes the process of inverse multiplication plotting (1/M plot) during a reactor critical approach?

- a. After each rod withdrawal wait until the startup rate reduces to near "0" before obtaining 1/M count rates.
- b. Any of the available neutron flux instruments listed on the plot form may be used for any interval.
- c. To ensure consistency the same plot form must be used throughout the entire critical approach.
- d. 1/M plot data is obtained by dividing the SUBSEQUENT neutron flux reading by the INITIAL neutron flux readings.

QUESTION: 095 (1.00)

During a plant emergency an operator receives a radiation exposure of 7 REM to the lenses of both eyes.

Regarding 10 CFR 20, "Standards for Protection Against Radiation" and Palisades administrative radiation control limits, which, if any, of these limits have been exceeded?

- a. BOTH 10CFR20 AND plant admin. limits have been exceeded.
- b. NEITHER of the exposure limits listed have been exceeded.
- c. NEITHER of the exposure limits apply for the above situation.
- d. Plant admin. limits have been exceeded, but NOT 10CFR20 limits.

QUESTION: 096 (1.00)

All of the following are elements of the Palisades ALARA program EXCEPT:

- a. dose estimating.
- b. temporary shielding.
- c. Hot Spot Program.
- d. Consummables Control .

QUESTION: 097 (1.00)

A Waste Gas Decay Tank batch release is planned, but the Waste Gas Monitor, RE-1113 is INOPERABLE.

For this condition, ALL of the following are actions that would allow initiating the release EXCEPT:

- a. Setup local portable monitoring equipment at release point.
- b. Perform independent verification of the discharge flowpath lineup.
- c. Obtain an additional sample of the tank contents.
- d. Perform independent verification of the release rate calculations.

QUESTION: 098 (1.00)

Refer to the attached excerpt (page 8 of 40) from EOP-8.0.

Which of the following describes the type of step 7.a is, and the sequence of when it can be performed?

- a. Continuous Step - can be performed anytime during the event.
- b. Concurrent Step - must be performed at the same time as Step 6.1.
- c. Sequential Step - must be performed right after Step 6 is complete.
- d. Non-Sequential Step - can be performed when stated conditions exist.

QUESTION: 099 (1.00)

During a plant startup, the following conditions exist:

- The Main Generator has just been synchronized to the grid.
- A problem with CV-1359, Non-critical Service Water Isolation, occurs such that CV-1359 is failed partially closed an undetermined amount.
- The following alarm has annunciated:
  - EK-1165, NON CRITICAL SERV WATER LO PRESS
- No other alarms have annunciated.

Which one of the following actions is required?

- a. Trip the Reactor within 10 seconds.
- b. Trip the Reactor if Exciter Cooler Hi Temp alarm annunciates.
- c. Trip the Main Turbine within 10 seconds.
- d. Trip the Main Turbine if Exciter Cooler Hi Temp alarm annunciates.

QUESTION: 100 (1.00)

Note the following two alarms:

- EK-0552, DIESEL GENERATOR NUMBER 1-1 START SIGNAL BLOCKED
- EK-0742, PRESSURIZER HTR BUS GROUND/UNDERVOLTAGE

For a Loss of all Offsite Power event, which one of the following describes the significance of the alarm condition which results in a direct effect on the HIGHER priority safety function?

- a. D/G 1-1 will not start automatically, but can be started manually from the Control Room.
- b. D/G 1-1 will not start automatically, and cannot be started manually from the Control Room.
- c. ALL Pressurizer heaters are deenergized and will remain deenergized.
- d. SOME Pressurizer heaters will regain power after a load sequencing.

(\*\*\*\*\* END OF EXAMINATION \*\*\*\*\*)

ANSWER: 001 (1.00)  
 a.  
 REFERENCE:  
 EOP-1.0, 11. b.2., rev 12  
 HIGHER  
 NEW  
 000055 2.4.49 ..(KA's)

ANSWER: 006 (1.00)  
 c.  
 REFERENCE:  
 EOP-9.0 Basis for RC-1, p.  
 40 of 104, rev. 15  
 NEW  
 HIGHER  
 000033 2.4.6 ..(KA's)

ANSWER: 011 (1.00)  
 c.  
 REFERENCE:  
 SOP-2a, 7.5.4, rev 51  
 NEW  
 HIGHER  
 004 A2.27 ..(KA's)

ANSWER: 002 (1.00)  
 b.  
 REFERENCE:  
 EOP Supplement 26, and  
 Basis  
 BANK  
 HIGH  
 000074 2.4.31 ..(KA's)

ANSWER: 007 (1.00)  
 b.  
 REFERENCE:  
 ONP-2.3, 6.0.2 (NOTE prior  
 to), rev 12  
 BANK  
 HIGHER  
 000058 A2.02 ..(KA's)

ANSWER: 012 (1.00)  
 d.  
 REFERENCE:  
 SOP-38, Caution on page 16,  
 rev 16  
 BANK  
 MEMORY  
 013 2.1.23 ..(KA's)

ANSWER: 003 (1.00)  
 b.  
 REFERENCE:  
 EOP-2.0 Basis, page 2, 29,  
 and 30 rev 10  
 NEW  
 MEMORY  
 000007 A2.01 ..(KA's)

ANSWER: 008 (1.00)  
 a.  
 REFERENCE:  
 DBD-5.05, Table 3.1-4, Table  
 3.1-6, rev 6  
 NEW  
 MEMORY  
 000056 A2.20 ..(KA's)

ANSWER: 013 (1.00)  
 d.  
 REFERENCE:  
 EOP-4.0 Basis for Step 19,  
 p.65 of 310, rev. 13  
 NEW  
 HIGHER  
 017 A4.01 ..(KA's)

ANSWER: 004 (1.00)  
 a.  
 REFERENCE:  
 DBD 1.04, 3.3.8.4  
 BANK  
 HIGHER  
 00022 2.1.27 ..(KA's)

ANSWER: 009 (1.00)  
 b.  
 REFERENCE:  
 None Provided  
 NEW  
 HIGHER  
 001 K6.03 ..(KA's)

ANSWER: 014 (1.00)  
 d.  
 REFERENCE:  
 EOP Supp 5  
 BANK  
 MEMORY  
 022 A3.01 ..(KA's)

ANSWER: 005 (1.00)  
 c.  
 REFERENCE:  
 ARP-21, Rack A, window 2  
 ARP-21, Rack D, window 6  
 MODIFIED  
 HIGHER  
 000029 A2.01 ..(KA's)

ANSWER: 010 (1.00)  
 b.  
 REFERENCE:  
 ARP-5, window 27, rev 65  
 NEW  
 HIGHER  
 003 A2.30 ..(KA's)

ANSWER: 015 (1.00)  
 c.  
 REFERENCE:  
 GKatt Memo dated 2/3/98  
 (accessed via Lesson Plan  
 CDFW, rev 0) ARP-1, window  
 55 ONP-3, Rev 18  
 NEW  
 HIGHER  
 056 A2.04 ..(KA's)

ANSWER: 016 (1.00)  
 b.  
 REFERENCE:  
 ARP-5, window 70, rev 65  
 FSAR 7.5.1.3  
 BANK  
 MEMORY  
 059 K4.19 ..(KA's)

ANSWER: 020 (1.00)  
 c.  
 REFERENCE:  
 ONP-24.2, rev 21 ONP-24.3,  
 rev 20  
 BANK  
 MEMORY  
 012 K2.01 ..(KA's)

ANSWER: 024 (1.00)  
 b.  
 REFERENCE:  
 ARP-2, window 31, rev 41  
 BANK  
 HIGHER  
 062 K3.01 ..(KA's)

ANSWER: 017 (1.00)  
 c.  
 REFERENCE:  
 Tech. Spec. 3.7.5,  
 Amendment 200 3.7.6,  
 Amendment 189 SOP-12,  
 4.7.b  
 NEW  
 MEMORY  
 References Supplied to  
 Candidate: Tech. Spec.  
 3.7.5, 3.7.6  
 061 2.2.22 ..(KA's)

ANSWER: 021 (1.00)  
 d.  
 REFERENCE:  
 ARP-5, window 61, rev 65  
 FSAR 7.2 page 7.2-2, 7.2-8,  
 9, 7.5-8, 9  
 NEW  
 HIGHER  
 Reference Supplied to  
 Candidate: Panel Graphic of  
 Steam Generator level  
 instruments  
 016 K5.01 ..(KA's)

ANSWER: 025 (1.00)  
 c.  
 REFERENCE:  
 EK-1135 EK-1134  
 NEW  
 HIGHER  
 086 A2.01 ..(KA's)

ANSWER: 018 (1.00)  
 a.  
 REFERENCE:  
 SOP-18A, 4.2.1, 7.8, rev 33  
 NEW  
 MEMORY  
 071 K4.06 ..(KA's)

ANSWER: 022 (1.00)  
 c.  
 REFERENCE:  
 SOP-24, 7.2.2, rev 36  
 NEW  
 HIGHER  
 029 2.1.2 ..(KA's)

ANSWER: 026 (1.00)  
 b.  
 REFERENCE:  
 SOP-6, 4.1.8, rev 20 TS  
 3.1.4. Basis ONP-5.1, rev 20;  
 NEW  
 HIGHER  
 000005 K3.03 ..(KA's)

ANSWER: 019 (1.00)  
 b.  
 REFERENCE:  
 EM-04-17, Attachment 1, rev  
 20 FSAR Figure 4-9, rev 21  
 NEW  
 HIGHER  
 002 K5.10 ..(KA's)

ANSWER: 023 (1.00)  
 d.  
 REFERENCE:  
 SOP-12, 7.2.5, rev 42  
 ARP-36, #3-8, rev 4  
 MODIFIED  
 MEMORY  
 039 A4.04 ..(KA's)

ANSWER: 027 (1.00)  
 a.  
 REFERENCE:  
 ARP-5, window 1, rev 65  
 FSAR 14.7.2.1  
 NEW  
 HIGHER  
 000015/17 K2.10 ..(KA's)

ANSWER: 028 (1.00)  
 a.  
 REFERENCE:  
 LP-RHAA EOP-8.0 Basis,  
 page 48, rev 10  
 NEW  
 HIGHER  
 CE/A13 A1.02 ..(KA's)

ANSWER: 029 (1.00)  
 c.  
 REFERENCE:  
 DBD 1.04, page 49 SOP-2A,  
 7.5.2.b and Attachment 6,  
 2.2.3, rev 52  
 BANK  
 HIGHER  
 000024 K2.01 ..(KA's)

ANSWER: 030 (1.00)  
 a.  
 REFERENCE:  
 DBD 1.01, 3.2.1  
 NEW  
 HIGHER  
 000026 K3.02 ..(KA's)

ANSWER: 031 (1.00)  
 b.  
 REFERENCE:  
 EOP Supplement 1  
 Steam Tables  
 BANK  
 HIGH  
 000027 K1.01 ..(KA's)

ANSWER: 032 (1.00)  
 d.  
 REFERENCE:  
 EOP-1.0, BOP Operator Aid,  
 rev 12  
 BANK  
 MEMORY  
 000040 A1.01 ..(KA's)

ANSWER: 033 (1.00)  
 d.  
 REFERENCE:  
 EOP-6.0, Basis, step 16  
 BANK  
 MEMORY  
 CE/A11 K2.02 ..(KA's)

ANSWER: 034 (1.00)  
 b.  
 REFERENCE:  
 ONP-14, 2.0, and Table 4.3-1  
 BANK  
 HIGH  
 000051 A2.02 ..(KA's)

ANSWER: 035 (1.00)  
 d.  
 REFERENCE:  
 ONP-24.5, 2.0, and 4.3, rev  
 19  
 BANK  
 MEMORY  
 000057 K3.01 ..(KA's)

ANSWER: 036 (1.00)  
 c.  
 REFERENCE:  
 DBD 1.02, page 22 of 152  
 NEW  
 HIGH  
 References Supplied to  
 Candidate: Attached drawing  
 of CV- 0823, CV-0826  
 000062 K3.02 ..(KA's)

ANSWER: 037 (1.00)  
 c.  
 REFERENCE:  
 SOP-24, 7.7.7, rev 36  
 M-218 DBD 1.06  
 NEW  
 HIGH  
 000067 A2.06 ..(KA's)

ANSWER: 038 (1.00)  
 b.  
 REFERENCE:  
 EOP-1.0, Primary Operator  
 Aid  
 NEW  
 HIGH  
 000069 K1.01 ..(KA's)

ANSWER: 039 (1.00)  
 b.  
 REFERENCE:  
 ONP-11.1, rev 17  
 NEW  
 HIGH  
 000076 A2.02 ..(KA's)

ANSWER: 040 (1.00)  
 d.  
 REFERENCE:  
 DBD-2.06  
 NEW  
 HIGH  
 000001 A1.07 ..(KA's)

ANSWER: 041 (1.00)  
 d.  
 REFERENCE:  
 SOP-6, 7.8.b, rev 20 ARP-5,  
 windows 16, 17, rev 64  
 NEW  
 HIGH  
 000003 K2.05 ..(KA's)

ANSWER: 042 (1.00)  
 c.  
 REFERENCE:  
 Steam Tables, Mollier  
 diagram  
 BANK  
 HIGH  
 000008 K1.01 ..(KA's)

ANSWER: 043 (1.00)  
 d.  
 REFERENCE:  
 EOP-4.0 Basis, page 4, rev  
 13  
 Steam Tables  
 BANK  
 HIGH  
 000009 K1.01 ..(KA's)

ANSWER: 044 (1.00)  
 b.  
 REFERENCE:  
 ONP-17  
 NEW  
 MEMORY  
 000025 A1.09 ..(KA's)

ANSWER: 049 (1.00)  
 a.  
 REFERENCE:  
 COP-1, Att. 10, rev 50 FSAR  
 14.21, rev 23  
 NEW  
 MEMORY  
 000060 K1.01 ..(KA's)

ANSWER: 054 (1.00)  
 a.  
 REFERENCE:  
 EOP-1.0 Basis, page 4 of  
 103, rev 10  
 MODIFIED  
 MEMORY  
 001 K3.02 ..(KA's)

ANSWER: 045 (1.00)  
 b.  
 REFERENCE:  
 SOP-35, 7.1.2, rev 14  
 ARP-21, A-2, rev 48  
 BANK  
 MEMORY  
 000032 K2.01 ..(KA's)

ANSWER: 050 (1.00)  
 c.  
 REFERENCE:  
 SOP-24, 4.3.3, rev 36  
 MODIFIED  
 HIGHER  
 000061 K2.01 ..(KA's)

ANSWER: 055 (1.00)  
 d.  
 REFERENCE:  
 FSAR 14.7.1.1  
 MODIFIED  
 HIGH  
 003 K5.05 ..(KA's)

ANSWER: 046 (1.00)  
 c.  
 REFERENCE:  
 ARP-8, window 65, rev 62  
 EOP-5 Basis, page 28, rev 10  
 NEW  
 HIGH  
 000037 K3.10 ..(KA's)

ANSWER: 051 (1.00)  
 d.  
 REFERENCE:  
 None Provided  
 MEMORY  
 CE/E09 K1.02 ..(KA's)

ANSWER: 056 (1.00)  
 b.  
 REFERENCE:  
 EOP Supplement 37, 1.0.7  
 NOTE  
 NEW  
 HIGH  
 004 K1.17 ..(KA's)

ANSWER: 047 (1.00)  
 d.  
 REFERENCE:  
 EOP Supp 41  
 BANK  
 HIGH  
 References Supplied to  
 Candidate: EOP Supplement  
 41  
 000054 A2.05 ..(KA's)

ANSWER: 052 (1.00)  
 a.  
 REFERENCE:  
 DBD 1.04  
 BANK  
 HIGH  
 000028 K3.03 ..(KA's)

ANSWER: 057 (1.00)  
 a.  
 REFERENCE:  
 EOP-4.0 Basis, p. 75  
 NEW  
 HIGH  
 013 A1.10 ..(KA's)

ANSWER: 048 (1.00)  
 c.  
 REFERENCE:  
 COP-31, 33  
 NEW  
 MEMORY  
 000059 K1.01 ..(KA's)

ANSWER: 053 (1.00)  
 c.  
 REFERENCE:  
 ARP-7, windows 57 and 58,  
 rev 64 SOP-3, 5.2.3, rev 52  
 DBD 2.01, page 67, rev 7  
 BANK  
 HIGH  
 CE/A16 K2.02 ..(KA's)

ANSWER: 058 (1.00)  
 c.  
 REFERENCE:  
 SOP-35, Attachment 2, page  
 2 of 8, rev 14  
 BANK  
 MEMORY  
 015 K2.01 ..(KA's)

ANSWER: 059 (1.00)  
d.  
REFERENCE:  
FSAR 7.6 SOP-34, 4.2, rev  
16  
NEW  
MEMORY  
017 K1.01 ..(KA's)

ANSWER: 060 (1.00)  
a.  
REFERENCE:  
P& ID E-1, sh. 1, Rev BS  
BANK  
MEMORY  
022 K2.01 ..(KA's)

ANSWER: 061 (1.00)  
a.  
REFERENCE:  
ARP-1, window 55 and 60,  
rev 52 ONP-3, 1.0, 2.0, rev  
18  
MODIFIED  
MEMORY  
056 K1.03 ..(KA's)

ANSWER: 062 (1.00)  
d.  
REFERENCE:  
ARP-5, window 61, rev 65  
BANK  
HIGH  
059 K1.04 ..(KA's)

ANSWER: 063 (1.00)  
a.  
REFERENCE:  
DBD 1.03, page 50 of 124  
P&ID (Logic Diagram) E-17,  
sh. 21, 21A  
NEW  
MEMORY  
061 K4.12 ..(KA's)

ANSWER: 064 (1.00)  
d.  
REFERENCE:  
SOP-24, 7.2.2, rev 36  
NEW  
MEMORY  
068 K1.02 ..(KA's)

ANSWER: 065 (1.00)  
b.  
REFERENCE:  
SOP-18A, Source  
Documents section, rev 33  
FSAR 11.3  
BANK  
MEMORY  
071 K5.04 ..(KA's)

ANSWER: 066 (1.00)  
a.  
REFERENCE:  
SOP-39, 4.0.b, and 7.3.2.b,  
rev 11  
BANK  
MEMORY  
072 K1.03 ..(KA's)

ANSWER: 067 (1.00)  
c.  
REFERENCE:  
T.S. 3.5.1  
BANK  
MEMORY  
006 2.1.33 ..(KA's)

ANSWER: 068 (1.00)  
b.  
REFERENCE:  
ONP-18, 1.0.a, 2.0, 4.2.1.c.1,  
rev 16 ARP-4, window 53, rev  
56 ARP-21, C-1, rev 48  
MODIFIED  
HIGH  
010 K1.02 ..(KA's)

ANSWER: 069 (1.00)  
d.  
REFERENCE:  
ARP-4, windows 63, 64, rev  
56  
NEW  
MEMORY  
011 K6.03 ..(KA's)

ANSWER: 070 (1.00)  
a.  
REFERENCE:  
DBD 2.06, 3.3.4.1, rev 3  
NEW  
MEMORY  
014 A.101 ..(KA's)

ANSWER: 071 (1.00)  
a.  
REFERENCE:  
EOP Supp 42 Basis  
BANK  
HIGH  
026 K4.08 ..(KA's)

ANSWER: 072 (1.00)  
a.  
REFERENCE:  
SOP-27 P&ID M-221, sh.2  
MODIFIED  
References Supplied to  
Candidate: M-221, sh.2  
033 K1.05 ..(KA's)

ANSWER: 073 (1.00)  
d.  
REFERENCE:  
Provide ONP-23.2  
NEW  
HIGH  
References Supplied to  
Candidate: ONP-23.2  
(excerpt)  
035 A2.01 ..(KA's)

ANSWER: 074 (1.00)  
 c.  
 REFERENCE:  
 ONP-23.2 SOER-93-1,  
 Supplement KLO 9  
 BANK  
 HIGH  
 055 K1.06 ..(KA's)

ANSWER: 075 (1.00)  
 b.  
 REFERENCE:  
 ONP-2.3, Att. 1, rev 12  
 BANK  
 HIGH  
 References Supplied to  
 Candidate: ONP-2.3, Att. 1  
 063 K3.02 ..(KA's)

ANSWER: 076 (1.00)  
 d.  
 REFERENCE:  
 DBD 5.05, Drawing E-17, sh.  
 4  
 BANK  
 HIGH  
 References Supplied to  
 Candidate: Provide E-17, sh.  
 4  
 064 K3.03 ..(KA's)

ANSWER: 077 (1.00)  
 a.  
 REFERENCE:  
 SOP-37, 4.0.c, rev 15  
 NEW  
 HIGH  
 073 2.1.32 ..(KA's)

ANSWER: 078 (1.00)  
 b.  
 REFERENCE:  
 P&ID E-1, sh. 1, rev BS  
 BANK  
 MEMORY  
 075 K3.02 ..(KA's)

ANSWER: 079 (1.00)  
 c.  
 REFERENCE:  
 EOP Supplement 25  
 ONP-7.1  
 NEW  
 HIGH  
 079 A2.01 ..(KA's)

ANSWER: 080 (1.00)  
 a.  
 REFERENCE:  
 SOP-1, 4.5.3, rev 51  
 BANK  
 MEMORY  
 007 K5.02 ..(KA's)

ANSWER: 081 (1.00)  
 a.  
 REFERENCE:  
 SOP-16, 5.1.3, rev 23  
 MODIFIED  
 HIGH  
 008 2.1.32 ..(KA's)

ANSWER: 082 (1.00)  
 b.  
 REFERENCE:  
 GOP-8, 2.6.a, rev 19 GOP-5,  
 1.2, rev 28 SOP-24, 7.2.7,  
 rev 36 FSAR 9.8, page  
 9.8-13, rev 23  
 NEW  
 MEMORY  
 027 K5.01 ..(KA's)

ANSWER: 083 (1.00)  
 c.  
 REFERENCE:  
 EOP-4.0, step 58 and basis  
 NEW  
 HIGH  
 028 A2.03 ..(KA's)

ANSWER: 084 (1.00)  
 d.  
 REFERENCE:  
 SOP-28, Att. 7, Section 8.0,  
 rev 33 FSAR 9.11-20, rev. 23  
 SOP-28, Note prior to 7.2.5  
 NEW  
 HIGH  
 034 A3.02 ..(KA's)

ANSWER: 085 (1.00)  
 d.  
 REFERENCE:  
 ONP-13, rev 7 DBD 1.09,  
 3.2.2.2  
 BANK  
 HIGH  
 041 K6.03 ..(KA's)

ANSWER: 086 (1.00)  
 a.  
 REFERENCE:  
 ONP-7.1, 4.1, rev 13 M-204,  
 sh. 1  
 NEW  
 HIGH  
 078 K3.02 ..(KA's)

ANSWER: 087 (1.00)  
 d.  
 REFERENCE:  
 DBD 5.8.6.2.1, rev 23  
 BANK  
 MEMORY  
 103 K4.04 ..(KA's)

ANSWER: 088 (1.00)  
 a.  
 REFERENCE:  
 PPC User's Manual Operator  
 Aid 178  
 NEW  
 MEMORY  
 2.1.19 ..(KA's)

ANSWER: 092 (1.00)  
 a.  
 REFERENCE:  
 AP 4.10, Attachment 1, 3.8.a,  
 b, rev 13  
 NEW  
 MEMORY  
 2.2.13 ..(KA's)

ANSWER: 097 (1.00)  
 a.  
 REFERENCE:  
 SOP-18A, 7.5.c, rev 33  
 NEW  
 MEMORY  
 2.3.11 ..(KA's)

ANSWER: 089 (1.00)  
 c.  
 REFERENCE:  
 GOP-2, Att.1, step 5.9, rev 24  
 Admin 10.51, Att. 4, 5, and  
 19, rev 13  
 NEW  
 MEMORY  
 References Supplied to  
 Candidate: GOP-2, step 5.9  
 on page 15, rev. 24  
 2.1.23 ..(KA's)

ANSWER: 093 (1.00)  
 b.  
 REFERENCE:  
 GOP-11, Att. 2, 1.1.8, rev 35  
 BANK  
 MEMORY  
 2.2.27 ..(KA's)

ANSWER: 098 (1.00)  
 d.  
 REFERENCE:  
 AP 4.06, page 5 of 27, rev 12  
 NEW  
 MEMORY  
 References Supplied to  
 Candidate: EOP-8.0, page 8  
 (attached)  
 2.4.14 ..(KA's)

ANSWER: 090 (1.00)  
 b.  
 REFERENCE:  
 AP 4.02, 5.3.1.a, 7.3, rev 18  
 BANK  
 MEMORY  
 2.1.29 ..(KA's)

ANSWER: 094 (1.00)  
 a.  
 REFERENCE:  
 GOP-3, 5.1.1.b, Attachment  
 2, rev 18  
 NEW  
 MEMORY  
 2.2.34 ..(KA's)

ANSWER: 099 (1.00)  
 d.  
 REFERENCE:  
 ONP 6.1, rev 11  
 NEW  
 HIGH  
 2.4.24 ..(KA's)

ANSWER: 091 (1.00)  
 a.  
 REFERENCE:  
 SOP-36, 7.2.2.a, rev 8  
 BANK  
 HIGH  
 2.2.2 ..(KA's)

ANSWER: 095 (1.00)  
 d.  
 REFERENCE:  
 10 CFR 20.1201, item  
 (a)(2)(i) - 15R AP 7.04, Att. 1,  
 page 2, rev 19 - 6R  
 NEW  
 MEMORY  
 2.3.1 ..(KA's)

ANSWER: 100 (1.00)  
 b.  
 REFERENCE:  
 ARP-3, window 52, rev 58  
 ARP-4, window 42, rev 56  
 P&ID E-17, sh. 12  
 NEW  
 HIGH  
 2.4.45 ..(KA's)

ANSWER: 096 (1.00)  
 d.  
 REFERENCE:  
 AP 7.02, 6.2  
 NEW  
 MEMORY  
 2.3.2 ..(KA's)

(\* END OF EXAMINATION\*)

ANSWER KEY  
MULTIPLE CHOICE

001 a	021 d	041 d	061 a	081 a
002 b	022 c	042 c	062 d	082 b
003 b	023 d	043 d	063 a	083 c
004 a	024 b	044 b	064 d	084 d
005 c	025 c	045 b	065 b	085 d
006 c	026 b	046 c	066 a	086 a
007 b	027 a	047 d	067 c	087 d
008 a	028 a	048 c	068 b	088 a
009 b	029 c	049 a	069 d	089 c
010 b	030 a	050 c	070 a	090 b
011 c	031 b	051 d	071 a	091 a
012 d	032 d	052 a	072 a	092 a
013 d	033 d	053 c	073 d	093 b
014 d	034 b	054 a	074 c	094 a
015 c	035 d	055 d	075 b	095 d
016 b	036 c	056 b	076 d	096 d
017 c	037 c	057 a	077 a	097 a
018 a	038 b	058 c	078 b	098 d
019 b	039 b	059 d	079 c	099 d
020 c	040 d	060 a	080 a	100 b

(\*\*\*\*\* END OF EXAMINATION \*\*\*\*\*)