

MNGP 2003 RO NRC Exam

ES-401

Site-Specific Written Examination
Cover Sheet

Form ES-401-8 (R8, S1)

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

Applicant Information

Name: MASTER EXAMINATION

Region: I / II / **III** / IV

Date: SEPTEMBER 26, 2003

Facility/Unit: MONTICELLO

License Level: **RO** SRO

Reactor Type: W / CE / BW / **GE**

Start Time:

Finish Time:

Instructions

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

Applicant Certification

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

Applicant's Signature

Results

Examination Value _100_ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

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Question No. 1

The plant was operating at 100% power when a transient occurred. The following CRD Hydraulic System parameters now exist:

- Charging water pressure is 1200 psig.
- Drive water pressure is ~ 0 psid.
- Cooling water pressure is ~ 0 psid.
- Flow controller demand is 0 gpm.

Which of the following is the cause of the indications above?

- a. A reactor scram has occurred.
- b. The in-service CRD flow control valve has failed open.
- c. The operating CRD pump discharge valve has been throttled closed too far.
- d. A rupture has occurred between the CRD pump and FE-3-203 (CRD Hydraulic Flow Element).

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Question No. 2

Reactor power was reduced from 100% to 90% six hours ago in preparation for control rod sequence adjustment. The following control switch manipulation is then performed.

- 3A-S3, ROD OUT NOTCH OVERRIDE, switch is held in the NOTCH OVERRIDE position.
- 3A-S2, ROD MOVEMENT CONTROL, switch is held in the ROD OUT NOTCH position.

Which of the following correctly states the resultant Reactor power for the given control rod move and why?

- a. Reactor power will be 89% after moving control rod 26-27 from notch 30 to notch 48 because of increased void formation in the core.
- b. Reactor power will be 90% after moving control rod 18-31 from notch 20 to notch 28 because peak Xenon offsets the added reactivity from withdrawing the control rod.
- c. Reactor power will be 91% after moving control rod 22-35 from notch 28 to notch 44 because of decreased void formation in the core.
- d. Reactor power will be 92% after moving control rod 30-19 from notch 08 to notch 16 because of an axial increase in core neutron flux.

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Question No. 3

Given the following:

- The plant experienced a transient.
- C.4-F, RAPID POWER REDUCTION, was entered.
- Recirc flow was reduced to minimum.
- Control rods were being inserted using the Rapid Power Reduction mode of the RWM.
- An expected rod block then occurred.
- The plant has since stabilized.

Which of the following actions should be taken to allow insertion of control rods for continued shutdown?

- a. A manual reactor scram will need to be inserted because a control rod block is being enforced and will not be able to be cleared.
- b. Press the CONFIRM SHUTDOWN softkey and then the LIST RODS softkey to change the latched group indication to show only those rods that have not been fully inserted.
- c. Press the SEQUENCE ALIGNMENT softkey and then the ACCEPT softkey to switch the latched group indication from rapid power reduction to sequence alignment mode.
- d. Place the Keylock Mode Switch to the BYPASS position to remove the latched group indication from the RWM and allow control rod insertion to continue via the roller tape.

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Question No. 4

Given the following plant conditions:

- Plant startup is in progress.
- Recirc pumps are running at minimum speed.
- RPV water level is 35 inches and steady.
- No. 11 RFP is injecting 1 Mlbm/hr feedwater to the RPV.
- Feedwater Low Flow Control Valve is in AUTO.
- Turbine-Generator startup has just been completed.

Which of the following describes the expected plant response to adjusting the Recirc Flow Controller from minimum recirc pump speed to 100% demand?

- a. Recirc pump speed will increase to 30% and then stop due to a speed limit being active.
- b. RECIRC LOOP LOW FLOW annunciators will alarm on the C-04 Panel when pump speed increases to 30%.
- c. Recirc pump speed will continually increase to 100% without stopping as long as the Main FW Reg Valve is placed in service.
- d. Both recirc pump scoop tubes are locked out until feedwater flow increases above 20% therefore speed will not change.

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Question No. 5

An accident has occurred and ONLY the following sequence of events has resulted:

- Time 0 Accident begins
- Time +3 seconds PCIS Groups I, II & III isolations
- Time +15 seconds No. 12 RHR Pump auto starts
- Time +20 seconds No. 14 RHR Pump auto starts
- Time +25 seconds No. 12 Core Spray Pump auto starts
- Time +60 seconds All 4 Drywell cooling fans are manually started

Which of the following sets of conditions would have caused the above sequence of events?

1. Drywell pressure is 5 psig
 2. RPV level is minus 90 (-90) inches
 3. No. 15 Bus lockout
 4. Div I 125 VDC power failure
 5. Loss of all off-site power
-
- a. 2 and 5
 - b. 1 and 4
 - c. 2, 4 and 5
 - d. 1, 3 and 5

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Question No. 6

Of the following failures, which one could potentially affect the operability of LPCI and what action is required to correct the condition?

- a. No. 13 ESW Pump has been declared inoperable. Open ESW-11, SW TO ESW XTIE.
- b. PCV-2458 (A CORE SPRAY LINE PCV) has failed closed. Start a RHRSW pump on the 'A' side of RHRSW.
- c. PCV-2459 (B CORE SPRAY LINE PCV) has failed closed. Bypass PCV-2459 and start a RHRSW pump on the 'B' side of RHRSW.
- d. MO-2015, LPCI INBD INJECTION, is de-energized and manually seated closed for a work order isolation. Restore power to MO-2015.

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Question No. 7

Given the following conditions:

- Reactor pressure is < 70 psig.
- Shutdown cooling Loop 'A' is in service.
- Cooldown rate has been measured at 98°F/hr.
- RHR-4-1, INL TO 11 RHR HX, is OPEN 10 turns.
- CV-1728, RHR SW HX OUTLET, is set for 2500 gpm RHRSW flow.
- MO-2002, 11 RHR HX BYP VALVE, is full OPEN.
- MO-2014, 11 RHR LPCI INBD INJ VALVE, is throttled for RHR flow of 3300 gpm.

Which of the following valve manipulations correctly controls cooldown rate and maintains the system within its operational limits?

- a. Throttle RHR-4-1 until it is five (5) turns OPEN.
- b. Throttle MO-2014 to REDUCE system flow by 500 gpm.
- c. Throttle MO-2002 thirty (30) seconds in the CLOSED direction.
- d. Manually adjust CV-1728 controller to REDUCE system flow by 900 gpm.

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Question No. 8

A normal Reactor shutdown is in progress. 'A' loop of RHR is being placed in the SHUTDOWN COOLING mode of operation. The system is lined up to the point of opening MO-2029, RHR S/D COOLING SUCTION INDB ISOL. MO-2029 is opened and you notice that Reactor water level drops 2 inches and stabilizes.

Which of the following is a possible explanation for this indication?

- a. PC-18, FPCC RETURN FROM RHR HX, has been opened.
- b. RHR-81, RHR SDC SUCTION PRESSURE EQUALIZING CHECK VALVE, is leaking.
- c. 'B' loop of RHR is in Torus cooling and MO-1987, RHR DIV 2 TORUS SUCTION, is open.
- d. CST-183, SHUTDOWN CLG SUCT FILL ISOL, and RHR-62, SHUTDOWN COOLING SUCTION VENT, have not been properly operated.

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Question No. 9

The plant was operating at 100% power when an auto initiation signal for HPCI was received. As HPCI turbine speed reached 1500 rpm the following indications were observed:

- HPCI Aux Oil Pump red light turns OFF and green light is LIT.
- A few seconds, later annunciator 3-B-9, HPCI TURBINE BRG OIL LO PRESS, alarms.

Which of the following HPCI indications is correct for the current status of operation?

- a. CV-2065, MIN FLOW VALVE, green light is ON.
- b. HO-7, TURBINE STOP VALVE, green light is ON.
- c. AO-23-18, TESTABLE CHECK VALVE, red light is ON.
- d. MO-2036, TURBINE STEAM SUPPLY VALVE, green light is ON.

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Question No. 10

Which of the following describes the minimum flow protection for the Core Spray pumps?

- a. There is no minimum flow protection other than operator action.
- b. Protection is a restricting orifice that always allows up to 300 gpm of flow.
- c. Valves automatically open after 5 seconds if a minimum of 600 gpm is not sensed.
- d. With the pump handswitch in AUTO and the breaker closed, the min flow valve opens if flow is ≥ 300 gpm.

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Question No. 11

Given the following conditions:

- Reactor power is 100%.
- RPS Bus 'B' is on the alternate power supply.
- ACB-52-908 (109/102 Load Center X-tie) is closed.

A loss of Bus 13 then occurs.

Which of the following is correct?

	<u>RPS Bus 'A' scram lights</u>	<u>RPS Bus 'B' scram lights</u>
a.	ON	ON
b.	OFF	OFF
c.	ON	OFF
d.	OFF	ON

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Question No. 12

A TIP trace was in progress when a Group II isolation occurred.

Which of the following describes the expected indications on the TIP Valve Control Monitor?

- a. BALL VALVE OPEN red lamp is lit.
- b. SQUIB MONITOR amber lamp is lit.
- c. BALL VALVE CLOSED green lamp is lit.
- d. SHEAR VALVE MONITOR amber lamp is lit.

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Question No. 13

The plant is operating at 100% power when one of the electrical protection assemblies for the No. 12 RPS MG Set inadvertently trips open.

Which of the following states the expected plant response?

- a. Reactor power indication on APRMs 1,2,and 3 will be lost.
- b. Rod Block Monitor Channel 8 will automatically be bypassed.
- c. A half-scam will occur due to loss of power to IRMs 15, 16, 17 & 18.
- d. Reactor will scram due to the failure of the Scram Discharge Volume level switches.

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Question No. 14

Given the following condition:

- Total recirc flow is 61%.

Which of the following correctly describes the effect of the stated manipulation and what action should be taken to correct the condition?

- a. With Reactor power at 60%, raising recirc flow to a power level of 90% will result in annunciator 5-A-14, APRM HI, being in the alarm condition. Verify all automatic actions have been initiated.
- b. With Reactor power at 80%, raising recirc flow to a power level of 95% will result in the ROD OUT PERMIT light being extinguished. De-select and reselect the control rod; Nuclear Engineer's permission is not required.
- c. With Reactor power at 50%, withdrawing a control rod until average local power in the vicinity of the control rod increases to 118% of the LPRM average will result in annunciator 5-A-51, RBM HI/INOP, alarming. Verify automatic actions initiated.
- d. With Reactor power at 70%, withdrawing a control rod until average local power in the vicinity of the control rod increases to 117% of the LPRM average will result in a control rod block. De-select and reselect the control rod; Nuclear Engineer's permission is required.

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Question No. 15

A Reactor startup is in progress. The following conditions are present.

- The Reactor Mode Switch is in STARTUP-TO-HOT-STANDBY.
- All IRMs are reading 45 to 50 on range 9.

Before the Reactor mode switch is placed in the RUN position, the following indications associated with IRM Channel No. 12 occur:

- 5-A-21, IRM A HI-HI/INOP
- 5-A-3, ROD WITHDRAW BLOCK
- 5-B-4, REACTOR AUTO SCRAM CHANNEL A
- 5-A-5, IRM DOWNSCALE

Which of the following is required to continue the reactor startup?

- a. Place the range selector switch for IRM Channel No. 12 to range 8.
- b. Bypass IRM Channel No. 12 with the joystick on panel C-05.
- c. Place the range selector switch for IRM Channel No. 12 to range 10.
- d. Bypass all of the alarms by placing the Reactor mode switch in RUN.

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Question No. 16

The following plant conditions exist:

- A refuel outage is in progress.
- RPS shorting links are removed.
- A full core offload has just been completed.
- SRM Channel No. 21 loses its 24 VDC power supply.

Which of the following predicts the response of the Reactor Protection System?

- a. A half scram will occur from a SRM INOP trip signal.
- b. No effect since there is no longer any fuel in the core.
- c. A rod block will occur due to the SRM failing downscale.
- d. A SRM Channel No. 21 INOP trip will result in a full reactor scram.

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Question No. 17

Which of the following states when the SRM detectors should be withdrawn while performing a Reactor startup?

- a. After the Reactor is declared critical.
- b. To maintain a count rate of 10^2 to 10^5 cps.
- c. When the count rate exceeds 10^2 cps.
- d. When the count rate exceeds 10^5 cps.

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Question No. 18

During power operations annunciator 5-A-37, LPRM HI, alarms momentarily and then resets.

How can the operator determine which LPRM caused the alarm after the annunciator resets?

- a. Cannot be determined due to the condition clearing.
- b. Use the LPRM alarm indications on the 4-rod display.
- c. Use the LPRM alarm indications on the full core display.
- d. Use the LPRM indications on Panel C-37, Neutron Monitoring System Cabinet.

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Question No. 19

LPRM 3D-28-37, which inputs to APRM Channel No. 5, has failed. When the LPRM was bypassed the following annunciators were received:

- 5-A-30, APRM HI-HI/INOP CH 4, 5, 6
- 5-A-3, ROD WITHDRAWAL BLOCK
- 5-B-3, REACTOR NEUTRON MONITOR SCRAM TRIP
- 5-B-5, REACTOR AUTO SCRAM CHANNEL B

Which of the following is the cause of the alarms being received?

- a. LPRM 3D-28-37 was the sixth LPRM bypassed for APRM Channel No. 5.
- b. LPRM 3D-28-37 was the fifth level 'D' LPRM detector bypassed for APRM Channel No. 5.
- c. Bypassing LPRM 3D-28-37 resulted in 50% of the LPRM inputs for APRM Channel No. 5 in bypass.
- d. Bypassing LPRM 3D-28-37 resulted in 50% of the LPRM inputs for APRM Channel No. 5 being bypassed for fission detector level 'D'.

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Question No. 20

Given the following plant conditions:

- A break exists in the 'A' side reactor vessel reference leg.
- A loss of feedwater transient has occurred.
- HPCI is operating in the level control mode.
- RPV water level is steady at 25 inches.
- RPV pressure is steady at 950 psig.
- CST level is 3 feet 8 inches.

Which of the following will result in a loss of HPCI injection?

- a. HPCI suction has NOT transferred to the Torus.
- b. Break in the variable leg feeding the Safeguards level instruments.
- c. Supply breaker for the Auxiliary Oil Pump (AOP) trips open on overcurrent.
- d. Break in the 'B' side reactor vessel reference leg, which provides the ATWS Recirc pump trip.

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Question No. 21

Reactor cool down is in progress with the following conditions:

- Reactor coolant temperature is 433°F.
- Drywell Temperature is 115°F.
- Cool down rate is 70°F/hr.
- Reactor pressure is 400 psig.
- LI-2-3-85A, Safeguards RPV Level, indicates 32 inches.
- LI-2-3-86, Floodup RPV Level, indicates 20 inches.

Which of the following is an indication of excessive gasses coming out of solution during the cooldown that could eventually result in a loss of vital plant equipment?

- a. LI-2-3-86, Floodup RPV Level, indicates 0 inches.
- b. LI-2-3-86, Floodup RPV Level, indicates 24 inches.
- c. LI-2-3-85A, Safeguards RPV Level, indicates 38 inches.
- d. LI-2-3-85A, Safeguards RPV Level, indicates 26 inches.

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Question No. 22

RCIC was in operation for testing when a transient occurred.

Which of the following indications show that RCIC has tripped to prevent damage to the TURBINE?

- a. The GROUP V ISOLATION RESET light on the C-04 Panel is lit.
- b. Annunciator 3-B-56, HIGH AREA TEMP STEAM LEAK, is in alarm.
- c. MO-2078, RCIC TURBINE STEAM SUPPLY, green indicating light is lit.
- d. The MECHANICAL OVERSPEED TRIP light on the C-04 Panel is NOT lit.

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Question No. 23

Torus cooling is in service with No. 11 RHR and RHRSW Pumps and No. 12 RHR and RHRSW Pumps operating. A PCIS Group I isolation then occurs resulting in the following conditions:

- Drywell pressure is 3 psig.
- Torus water temperature is 115°F and rising.
- RPV level dropped to minus 35 (-35) inches and is now rising.
- RPV pressure is cycling due to low-low-set actuation.

Which of the following describes the status of Torus cooling operation?

- a. All of the Torus cooling isolation valves have closed from the low RPV water level signal.
- b. Torus cooling is no longer in operation because of an interlock with the LPCI automatic initiation signal.
- c. Torus cooling is still in operation because the Torus cooling isolation valves do not go closed until the LPCI injection valves open at ≤ 460 psig.
- d. Torus cooling is still in operation because the RHR CTMT SPRAY/COOLING LPCI INIT BYPASS switches were placed in BYPASS when Torus cooling was started.

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Question No. 24

Given the following plant conditions:

- 0255-04-IA-1, RHR QUARTERLY PUMP AND VALVE TESTS, is in progress.
- Div II is operating in the Torus Cooling mode.
- No. 12 RHR pump running with a system flow of 4200 gpm.

The No. 12 RHR Pump breaker overcurrent device trips high due to a breaker fault.

Which of the following describes the effect of this trip on the RHR system and what action is required to be taken?

- a. The RHR system will drain down to the Torus. Close MO-2007, 12 RHR DISCH TO TORUS, and fill and vent the system.
- b. Both divisions of RHR will begin to depressurize. Place control switch 10A-S3B, RHR DIV 2 14 RHR PUMP, in the START position.
- c. Both divisions of RHR will drain down to the Torus. Close MO-2033, RHR XTIE, to maintain Div I RHR and fill and vent Div II RHR.
- d. The RHR system will be unable to deliver designed full capacity LPCI flow. Replace breaker 152-604, NO 12 RHR PUMP BREAKER, within Tech Spec allowed time.

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Question No. 25

Given the following conditions:

- The primary containment is being inerted following plant startup from a refueling outage.
- Drywell pressure indicates 1.8 psig in the Control Room.

Which of the following components has failed to allow the above conditions to exist?

- a. AO-2381, DRYWELL PURGE SUPPLY INBD ISOLATION
- b. CV-3269, DRYWELL/TORUS NITROGEN VENT SUPPLY
- c. PCV-3281, NITROGEN PURGE PRESSURE CONTROL VALVE
- d. PCV-3450B, NITROGEN SUPPLY PRESSURE CONTROL (T-82)

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Question No. 26

The plant was operating at 100% power when the following indications were received:

- Annunciator 3-A-9, AUTO BLOWDOWN RELIEF VLV LEAKING, is in alarm.
- TR-2-166, TEMP RECORDER FOR SAFETY/RELIEF VALVE LEAKGE, shows tailpipe temperature for RV-2-71E, 10°F above the alarm setpoint.
- RV-2-71E amber and red indicating lights are NOT lit and green indicating light is lit.

Which of the following describes the impact of this condition on the plant and what action should be taken to correct it?

- a. The leaking SRV will cause high, localized suppression pool temperatures therefore Torus cooling should be placed in service.
- b. The stuck open SRV will cause high, localized suppression pool temperatures therefore Torus cooling should be placed in service.
- c. With SRV tailpipe temperature at 200°F, a spurious SRV lift could occur therefore a normal reactor shutdown should be immediately commenced.
- d. With SRV tailpipe temperature at 200°F, a spurious SRV lift could occur therefore a reactor scram should be inserted to minimize the heat addition to the Torus.

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Question No. 27

The plant was operating at 100% power when a transient resulted in the following:

- PCIS Groups I, II, and III isolation signals were generated 4 minutes ago.
- All containment isolation valves have reached their required positions except MO-2399, RWCU RETURN ISOL, which is in the intermediate position.

Which of the following describes the indication on SPDS for the above conditions?

- a. The "GP 1 VLV CLSD" indicator has a thick red border.
- b. The "GP 1 VLV CLSD" indicator has a thin green border.
- c. The "GP 2 – 5 ISLN CMD" indicator has a thick yellow border.
- d. The "GP 2 – 5 ISLN CMD" indicator has a thick yellow blinking border.

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Question No. 28

What design feature of the Reactor Water Cleanup System is used to ensure that a PCIS Group III isolation will occur with a single failure of the flow element sensing line on high system flow?

- a. A downscale trip on two of the four RWCU flow transmitters will initiate a Group 3 Isolation signal.
- b. A high Drywell pressure signal at 2 psig provides redundancy to the RWCU high system flow Group 3 Isolation signal.
- c. A negative differential pressure signal will initiate a Group 3 Isolation signal at an indicated flow of minus 200 (-200) gpm.
- d. A single instrument trip will initiate a high system flow Group 3 Isolation signal to ensure conservative automatic action is initiated.

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Question No. 29

Given the following plant conditions:

- Y-91 and it's associated distribution panels are de-energized.
- An ECCS initiation on high Drywell pressure has occurred.
- RHR/RHRSW has been aligned in the Torus Cooling/Torus Spray Mode.
- Reactor pressure is 950 psig and slowly decreasing.
- Reactor water level decreased to minus 37 (-37) inches and is now slowly increasing.
- An EOP entry condition for high Torus water level exists.
- Upstream river water temperature is 33.1°F.
- NO additional operator actions have occurred.

Which of the following would be the most conservative indication to use to determine if an EOP entry condition for high Torus water temperature exists?

- a. TI-13-86 (RCIC PUMP DISCHARGE TEMP)
- b. SPDS (SAFETY PARAMETER DISPLAY SYSTEM)
- c. TI-23-87 (HPCI PUMP DISCHARGE TEMPERATURE)
- d. TR-23-115 point #11 (A RHR HX PRIMARY WATER OUT)

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Question No. 30

The following conditions exist:

- RHR is in Torus Spray mode on 'A' loop.
- Power has been lost to LC-103.

Which of the following is a concern and why?

- a. Primary Containment integrity is being challenged due to loss of power to RHR Aux Air Compressor.
- b. Secondary Containment integrity is being challenged due to loss of power to RHR Aux Air Compressor.
- c. Primary Containment integrity is being challenged because MO-2010, RHR DIV 1 TORUS SPRAY INBD, will not auto close.
- d. Secondary Containment integrity is being challenged because MO-2010, RHR DIV 1 TORUS SPRAY INBD, will not auto close.

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Question No. 31

A control rod is being installed in the core during a refueling outage. The Control Rod Grapple is being used to move the control rod from the fuel pool to the core. As the control rod is being moved over the core the refueling platform air system fails causing a rapidly lowering air pressure.

Which of the following describes the expected results of the above stated failure?

- a. There is no way of releasing the control rod.
- b. The Control Rod Grapple will release the control rod dropping it on top of the core.
- c. A cross-tie from the Instrument Air System will automatically open to maintain system pressure.
- d. The control rod will need to be seated, to remove the weight from the Control Rod Grapple, and then manually unlatched.

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Question No. 32

The following plant conditions exist:

- A reactor scram occurred as a result of a PCIS Group 1 isolation.
- Reactor pressure peaked at 1150 psig during the transient.
- C.5-2007 (FAILURE TO SCRAM) has been entered.
- All relief valves are closed as reactor pressure lowers to 970 psig.

Immediately after the relief valves close Panel Y-10 loses power and within 5 seconds Reactor pressure has increased to 1075 psig.

When reactor pressure reached 1075 psig, which of the following describes the expected response of the Reactor Pressure Relief System and why?

- a. Relief valves E, G and H are open due to low-low set logic.
- b. None of the relief valves open because of low-low set logic.
- c. None of the relief valves open due to the loss of power to Panel Y-10.
- d. Only relief valves G and H automatically open due to pressure rising to their actuation setpoint.

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Question No. 33

The following conditions exist:

- A reactor scram occurred from a PCIS Group I isolation and control rods failed to insert.
- Reactor power remains at 15%.
- Control rods are being manually driven in with both CRD Pumps operating.
- RPV pressure is being maintained by low-low set.
- You are controlling RPV water level manually at minus 126 (-126) inches to minus 149 (-149) inches using feed and condensate.
- Water level is currently at minus 130 (-130) inches and steady.

Which of the following correctly describes a challenge to maintaining the given RPV water level band?

- a. Low-low set relief valves cycling initially causes RPV water level to drop due to shrink and then rise as the relief valves close.
- b. Relief valves cycling on low-low set initially cause RPV water level to rise due to swell and then drop as the relief valves close.
- c. At this power, level control would be with one of the Main FWRVs resulting in greater level fluctuations during injection.
- d. With both CRD pumps operating more water is being injected into the RPV than is being removed via the relief valves therefore level will continue to rise.

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Question No. 34

A plant startup is in progress with the following conditions:

- Reactor pressure is 916 psig.
- MPR setpoint is 920 psig.
- EPR setpoint is 910 psig.
- PRO setpoint is 0%.
- Turbine Generator startup is about to commence.

Assuming Reactor pressure does not change, what will be the final position of the Turbine Bypass valves if the EPR setpoint is lowered to 900 psig?

- a. 0%
- b. 7%
- c. 15%
- d. 37%

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Question No. 35

A loss of feedwater heating and a computer outage has occurred. Given the following plant conditions:

- Reactor power is 1775 Mwt
- Feedwater temperature is 200°F

Which of the following correctly states the differential pressure between the RPV and the Turbine Throttles and how far must pressure drop before a PCIS Group I isolation occurs? (assume calculated feedwater flow is equal to steam flow)

	<u>RPV to Turbine Throttle d/p</u>	<u>Pressure drop to PCIS Group I isolation</u>
a.	26 psid	111 psig
b.	26 psid	137 psig
c.	50 psid	120 psig
d.	50 psid	170 psig

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Question No. 36

Given the following plant conditions:

- Main Generator is on-line at 200 MWe.
- MNGP is delivering 40 MVAR to the grid.
- Machine gas pressure is 28 psig.

Which of the following states where the Control Room operator can monitor Main Generator hydrogen gas pressure and what is the maximum Reactor power at which the generator can be operated at?

- a. C-07 Panel; 100% power
- b. C-08 Panel; 90% power
- c. C-07 Panel; 90% power
- d. C-08 Panel; 100% power

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Question No. 37

The following plant conditions exist:

- The Reactor is operating at 100% power.
- A break occurs in the air line for CV-3489, 11 RFP RECIRC VALVE.

Which of the following describes the effect of the stated condition on the plant and what procedural action should be taken to correct this condition?

The 11 RFP Recirc valve will fail (1), requiring (2).

- | | (1) | (2) |
|----|--------|---------------------------------------|
| a. | Closed | reducing recirc to minimum. |
| b. | Open | reducing recirc to minimum. |
| c. | Closed | pushing the manual scram pushbuttons. |
| d. | Open | pushing the manual scram pushbuttons. |

MNGP 2003 RO NRC Exam

Question No. 38

Given the following initial plant conditions:

- Reactor at 100% power.
- Station power on the 2R Transformer.

Severe weather around the plant results in a loss of 345 KV Bus 1.

With no operator action, which of the following automatic actions will be expected to restore Reactor water level?

- a. Restart of No. 11 RFP
- b. ADS and LPCI initiation
- c. HPCI and RCIC initiation
- d. Restart of No. 11 and No. 12 RFP

MNGP 2003 RO NRC Exam

Question No. 39

The plant was operating at 100% power when a transient occurred. A rapid power reduction is in progress and recirc pumps are being reduced to minimum speed.

Which of the following annunciators, if alarmed while reducing recirc pumps to minimum speed, would be the priority concern and why?

- a. 4-A-2, OFFGAS TIMER ACTUATED, because this will result in a loss of condenser vacuum and trip of the main turbine.
- b. 5-A-43, RBM DOWNSCALE, because this will result in the inability to further reduce power once recirc pumps are at minimum speed.
- c. 5-B-24, REACTOR WATER LEVEL HI/LO, because the low RPV water level is a symptom of events, which may jeopardize adequate core cooling.
- d. 5-B-40, FW CONTROL VALVE LOCKED, because the inability to control Reactor water level will eventually result in the loss of high pressure injection sources.

MNGP 2003 RO NRC Exam

Question No. 40

A Loss of Coolant Accident resulting in significant core damage has occurred. The 'A' train of SBGT has been operating continuously for over 2 weeks filtering and ventilating Primary containment. A loss of off-site power then occurs and the No. 11 EDG fails to start and energize Bus 15.

Assuming no operator action, which of the following is a concern with regards to the SBGT system?

- a. No SBGT trains are running which may result in an unfiltered release.
- b. No Dilution Air fans are running which results in a high, localized release.
- c. 'A' train may over heat due to the decay heat of the fission products on the filters.
- d. Loss of power to SBGT Aux air compressor would cause the 'B' train valves to fail close.

MNGP 2003 RO NRC Exam

Question No. 41

A major electrical transient has occurred with the following conditions:

- Electrical system is in a SEBO.
- No. 11 EDG has failed to start.

The Transmission System Operator wishes to restore control power back to the 345 KV system for eventual switchyard restoration.

Which of the following actions correctly restores control power to the 345 KV switchyard?

- a. Energize Bus 16 from No. 12 EDG and restore power via X-31/XFMR.
- b. Energize LC-107 from No. 13 EDG and restore power via X-31/XFMR.
- c. Manually restore power to the #6 transformer and restore power via X-41/XFMR.
- d. Manually restore power to the #10 transformer and restore power via X-41/XFMR.

MNGP 2003 RO NRC Exam

Question No. 42

The following conditions exist:

- Plant is operating at full power during the summer.
- LC-101 and LC-102 are cross-tied.
- Annunciator 8-A-8, LOAD CENTER 109 FEEDER TRIP, alarms.

With no operator action, which of the following is correct?

- a. RPS 'A' half scram and partial PCIS Group II isolation will occur.
- b. An entry condition for C.5-1100, RPV CONTROL, will occur due to low RPV water level.
- c. The crosstie between LC-101 and LC-102 will trip and LC-109 will auto transfer to LC-102.
- d. Reactor scram on low condenser vacuum will occur due to a trip of the operating Off Gas recombiner.

MNGP 2003 RO NRC Exam

Question No. 43

Breaker 52-804, LC-108 TO UPS Y91 FEEDER BREAKER, has tripped open on overload.

Which of the following describes the response of UPS Y91 and what action should be taken?

- a. 250 VDC Battery #17 will automatically supply power to UPS Y91; the MANUAL BYPASS BREAKER should be closed.
- b. LC-107 feeder breaker will automatically close to supply power to UPS Y91; the MANUAL BYPASS BREAKER should be closed.
- c. 250 VDC Battery #17 will automatically supply power to UPS Y91; the TRANSFER CONTROL SWITCH should be placed in the MANUAL position.
- d. LC-107 feeder breaker will automatically close to supply power to UPS Y91; the TRANSFER CONTROL SWITCH should be placed in the MANUAL position.

MNGP 2003 RO NRC Exam

Question No. 44

One of the General Precautions of B.08.07-05, Heating and Ventilation, states that V-EF-34 or V-EF-35, BATTERY ROOM EXHAUST FANS, should be operating at all times.

Which of the following describes the basis of this precaution?

- a. Exhaust fan operation ensures Battery Room temperature is maintained above 50°F even during winter months.
- b. Operation of the exhaust fans prevents the buildup of hydrogen gas, which is generated as the batteries are charged.
- c. Operation of the exhaust fans prevents room temperature from exceeding 104°F with normal heat load from switchgear loads.
- d. Exhaust fan operation ensures that the Battery Rooms are maintained at a negative 1/4 (-1/4) inch differential pressure as required for secondary containment integrity.

MNGP 2003 RO NRC Exam

Question No. 45

The Control Room operator records the following Drywell Equipment and Floor Drain Sump pumping integrator data:

- Present Reading
 - Drywell Floor Drain Sump integrator reading is 160,235 gallons.
 - Drywell Equipment Drain Sump integrator reading is 247,082 gallons.
 - Present Time is 0645 (9/19/03)
- Previous Reading
 - Drywell Floor Drain Sump integrator reading is 158,885 gallons.
 - Drywell Equipment Drain Sump integrator reading is 245,432 gallons.
 - Previous Time was 0245 (9/19/03)

Which of the following states the correct Reactor Coolant System Unidentified leakage rate?

- a. 2.70 gpm
- b. 4.17 gpm
- c. 5.63 gpm
- d. 6.88 gpm

MNGP 2003 RO NRC Exam

Question No. 46

The Off Gas Recombiner Trains are in operation. Due to a power failure AT-7731A, TRAIN 'A' OUTLET HYDROGEN ANALYZER, becomes inoperable and annunciator 252-A-28, TRAIN A OUTLET H₂ ANALYZER HIGH/INOP, alarms.

Which of the following describes the effect of this trip on the Off Gas System?

- a. Analyzer logic circuit shifts to a one-out-of-two-twice matrix.
- b. The recombiner train's outlet valve will automatically close.
- c. Analyzer logic circuit shifts to a one-out-of-two-once matrix.
- d. The associated Off Gas Compressor will automatically shutdown.

MNGP 2003 RO NRC Exam

Question No. 47

The plant is operating at 100% power. The No. 12 Off Gas Storage Tank has just been filled and was removed from service. Due to an error, the No. 12 Off Gas Storage Tank has been lined-up and is discharging offsite.

Which of the following describes the effect of this malfunction and the interlock that failed to prevent it?

- a. An increased release will occur that should have been prevented by a timed interlock on SV-7642, 12 OFF GAS STORAGE TANK OUTLET VALVE.
- b. An increased release will NOT occur because FCV-7676, OGHU OG TO STACK FLOW CNTRL, will automatically close on high stack effluent radiation.
- c. An increased release will NOT occur because FO-7674, OG DISCHARGE FLOW LIMITING NOZZLE, is sized to prevent the uncontrolled release from the Off Gas Storage System.
- d. An increased release will cause annunciator 259-A-5, STACK EFFLUENT HIGH RADIATION, to alarm which results in SV-7677, COMPRESSED GAS STORAGE TO STACK VALVE, automatically closing.

MNGP 2003 RO NRC Exam

Question No. 48

Which of the following Secondary Containment design features is used for the floor drains in the Standby Gas Treatment Rooms?

The SGBT Floor drains...

- a. contain a water loop seal which is required to be filled periodically.
- b. contain two valves which open automatically when water is sensed.
- c. discharge to the Turbine Building Floor Sump therefore no design feature is needed.
- d. contain two manual valves which have to be opened on the Reactor Side Weekly Checklist procedure.

MNGP 2003 RO NRC Exam

Question No. 49

The plant is in a normal HVAC ventilation lineup with the following fans running:

- V-AC-10A, Reactor Building Supply Fan
- V-EF-24A, Reactor Building Exhaust Fan
- V-AH-4A, Refuel Floor Air Handling Unit
- V-EF-28, Refuel Floor Exhaust Fan

The inlet damper for V-EF-24A fails full closed.

Which of the following describes the effect this condition will have on the plant ventilation system?

- a. V-AC-10A, Reactor Building Supply Fan, will continue to operate.
- b. V-EF-28, Refuel Floor Exhaust Fan, will trip to restore pressure.
- c. V-FU-5, RWCU Pump Room Filter Unit, trips if pressure reaches 0.3 inches water column.
- d. V-AH-4A, Refuel Floor Ventilation Unit, trips if pressure reaches 0.3 inches water column.

MNGP 2003 RO NRC Exam

Question No. 50

Which of the following statements describes how the reactor vessel steam separator works?

- a. A water-steam mixture passes upward through several standpipes arranged in series creating a torturous path, which removes the moisture.
- b. A water-steam mixture passes upward through a series of horizontally mounted chevron plates, which strip the moisture as the mixture passes by.
- c. A water-steam mixture passes over vanes, which impart a rotational motion. Centrifugal forces separate the high mass liquid from the low mass steam.
- d. 16 vane-type assemblies, each resembling an accordion, are vertically mounted. Steam passes over the vanes at an angle between horizontal and vertical.

MNGP 2003 RO NRC Exam

Question No. 51

The plant was operating at 100% power when the following annunciators were received:

- 4-C-31, RECIRC DRIVE MOTOR A TRIP
- 4-C-32, RECIRC DRIVE MOTOR B TRIP

Immediately after the above annunciators were received an operator notices Main Turbine Control Valve oscillations between 25% and 35% valve position.

Which of the following actions should be taken?

- a. Insert a manual reactor scram.
- b. Restart one of the tripped Recirc pumps.
- c. Perform B.05.09-05.H.1, CONTROL VALVE OSCILLATIONS.
- d. Enter C.4-F, RAPID POWER REDUCTION, and insert control rods.

MNGP 2003 RO NRC Exam

Question No. 52

The plant was operating at full power when a transient occurred. The following conditions now exist:

- Main condenser pressure is indicating 8 inches of Mercury absolute.
- Numerous annunciators are in alarm.

Which of the following is correct for the above stated conditions?

- a. Perform scram actions because the reactor has scrammed on low vacuum.
- b. Insert a manual reactor scram because the Main Turbine has tripped.
- c. Start the Mechanical Vacuum Pump to help restore condenser vacuum.
- d. Reduce reactor power in an attempt to maintain condenser vacuum.

MNGP 2003 RO NRC Exam

Question No. 53

A plant transient occurred resulting in the following timeline (with no operator action):

- 0700:00 Reactor scram.
- 0700:05 RPV water level goes below 9 inches.
- 0700:12 RPV water level reaches minus 41 (-41) inches and immediately starts to rise.
- 0701:10 RPV water level is above 9 inches.
- 0701:35 Both main FWRVs are closed.
- 0702:20 RPV water level reaches 48 inches.

Which of the following states the time that a Reactor Recirc Pump runback is initiated?

- a. 0700:15
- b. 0700:20
- c. 0701:50
- d. 0702:35

MNGP 2003 RO NRC Exam

Question No. 54

A plant startup was in progress. Reactor level control had just been transferred from the Low Flow Control Valve to the 'A' Main FW Reg Valve. A transient then occurred resulting in a reactor scram.

Which of the following is the cause of the reactor scram?

- a. No. 11 RFP suction pressure of 50 psig
- b. Moisture Separator Tank level of 928 feet
- c. Generator load reject causing TCV fast closure
- d. RPV pressure rises to 1036 psig during the transient

MNGP 2003 RO NRC Exam

Question No. 55

The plant is operating at 100% power.

Which of the following correctly describes the effect on reactor power for the stated action?

- a. Closing TSVs 10% may result in a full reactor scram.
- b. Fully closing one MSIV may result in a full reactor scram.
- c. Initiation of Head Spray will result in a significant power rise due to the addition of large amounts of cold water.
- d. Fully opening one Safety Relief Valve will result in a corresponding power rise due to pulling off additional steam flow from the RPV.

MNGP 2003 RO NRC Exam

Question No. 56

A small break LOCA has occurred in the drywell and the following conditions exist:

- Drywell pressure is 7.5 psig and slowly rising.
- Reactor water level lowered to minus 24 (-24) inches and is now steady on the Low Flow FW Reg. Valve at 15 inches.
- Reactor pressure is at 550 psig and slowly lowering.

Which of the following is the status of the RHR system and why?

- a. A LPCI injection signal is present but no RHR pumps are running due to reactor pressure being above the interlock setpoint.
- b. A LPCI injection signal is NOT present therefore no RHR pumps are running due to reactor pressure being above the interlock setpoint.
- c. A LPCI injection signal is present and all RHR pumps are running, but no water is being injected into the vessel because the LPCI outboard injection valves are still closed.
- d. A LPCI injection signal is present and all RHR pumps are running, but no water is being injected into the vessel because the LPCI inboard injection valves are still closed.

MNGP 2003 RO NRC Exam

Question No. 57

With the plant operating at 100% power a loss of condensate/feedwater event occurs. A time vs. LI-2-3-86, Floodup RPV Level, plot shows the following:

- 1300 indicated level is 20 inches
- 1303 indicated level is 0 inches
- 1306 indicated level is minus 40 (-40) inches
- 1309 indicated level is 30 inches
- 1310 indicated level is 48 inches
- 1315 indicated level is 80 inches

Assuming decay heat and the turbine control system maintain Reactor pressure constant, which of the following is correct?

- a. All steam driven turbines tripped at 1310.
- b. ECCS systems automatically initiated at 1306.
- c. 5-B-24 (REACTOR LEVEL HI/LO) annunciated at 1303.
- d. 3-B-10 (HPCI TURB INLET HI DRAIN POT LEVEL) annunciated at 1315.

MNGP 2003 RO NRC Exam

Question No. 58

The plant was operating at 100% power when a feedwater transient occurred. During the transient the following alarms came in and then cleared after 5 seconds.

- 5-A-9, REACTOR VESSEL L/L WTR LEVEL CH A.
- 5-A-10, REACTOR VESSEL L/L WTR LEVEL CH B.

What is the status of the Reactor Recirculation MG Sets two minutes after the above transient, and what is the configuration of their breakers?

- | | |
|------------|--|
| a. Running | Generator Drive Motor Breaker CLOSED, and Field Breaker CLOSED |
| b. Running | Generator Drive Motor Breaker CLOSED, and Field Breaker OPEN |
| c. Stopped | Generator Drive Motor Breaker OPEN, and Field Breaker CLOSED |
| d. Stopped | Generator Drive Motor Breaker OPEN, and Field Breaker OPEN |

MNGP 2003 RO NRC Exam

Question No. 59

Which of the following correctly completes the statement below?

The Drywell to Torus vacuum breakers are set to maintain the Drywell to Torus differential pressure within set limits to...

- a. prevent expansive failure of the downcomer between the Drywell and Torus.
- b. prevent exceeding the design differential pressure between primary and secondary containment.
- c. minimize the amount of water drawn back into the downcomers during a LOCA as Drywell pressure drops.
- d. minimize the pump head differential for the RHR pumps taking suction from the Torus and discharging through the Torus and Drywell spray headers.

MNGP 2003 RO NRC Exam

Question No. 60

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

- The Primary Containment is being vented to Standby Gas Treatment with the following valves OPEN:
 - CV-2385, DW VENT TO STBY GAS
 - AO-2387, DW OTBD VENT

Which of the following statements is correct for the above stated conditions?

If a PCIS Group II isolation were to occur, the vent valves will _____ (1) _____, Standby Gas Treatment will _____ (2) _____.

- | | (1) | (2) |
|----|-------------|---------------------|
| a. | isolate | continue to operate |
| b. | remain open | continue to operate |
| c. | isolate | trip |
| d. | remain open | trip |

MNGP 2003 RO NRC Exam

Question No. 61

The plant is operating at 100% power. The Drywell Atmosphere Cooling System has malfunctioned. Due to a loss of cooling, average Drywell air temperature has risen from 115°F to 127°F and is rising 1°F every 5 minutes.

Which of the following describes the concern, if this trend is continued for another 30 minutes without change?

- a. A reactor scram may occur from 2 psig Drywell pressure.
- b. RPV water level instruments will start to become unreliable.
- c. The EOPs will need to be entered from high Drywell temperature.
- d. Environmental qualification of equipment in the Drywell will no longer be maintained.

MNGP 2003 RO NRC Exam

Question No. 62

The plant is performing a startup with HPCI testing in progress. RCIC testing is scheduled to follow HPCI testing. Plant parameters are as follows:

- Reactor temperature is 350°F.
- Reactor pressure is 140 psig.
- Reactor level is 38 inches.
- Drywell temperature is 120°F.
- Drywell pressure is 0.8 psig.
- Torus level is 1.0 inches.
- Torus temperature is 83°F.

Which mode of operation should the RHR System be in and why?

- a. LPCI Standby mode because all ECCS is required to be operable with the given conditions.
- b. Torus cooling is required to be in operation to ensure adequate mixing of Torus water.
- c. Shutdown Cooling is required when the reactor is shutdown to control Reactor water temperature.
- d. Torus Drain to Radwaste is required to return Torus level to the normal operating band for containment integrity.

MNGP 2003 RO NRC Exam

Question No. 63

Given the following plant condition:

- Torus temperature is at the minimum recommended temperature.

If 1 open SRV will increase Torus temperature by 1°F/minute, which of the following states the maximum amount of time available for testing before the Torus temperature reaches the limit for testing allowed by Tech Specs?

- a. 28 minutes
- b. 32 minutes
- c. 36 minutes
- d. 40 minutes

MNGP 2003 RO NRC Exam

Question No. 64

A fire has been burning in the Cable Spreading Room for 10 minutes. The decision has been made to evacuate the Control Room in accordance with C.4-C, SHUTDOWN OUTSIDE CONTROL ROOM.

Which of the following describes why the operators should "proceed expeditiously" to the ASDS Panel and transfer control of associated systems from the Control Room?

- a. This will minimize the potential for spurious operation of the associated equipment prior to transfer.
- b. Transfer of the 12 EDG should occur as early as possible to ensure an emergency source of power is available.
- c. This will minimize the amount of time that a critical reactor is unmonitored prior to scramming from the ASDS Panel.
- d. EFT Building 3rd floor has its own HVAC System, therefore transition should be quick to minimize exposure to toxic gases from the fire.

MNGP 2003 RO NRC Exam

Question No. 65

Due to a fire in the plant, Control Room operations have been transferred to ASDS Panel C-292. All TRANSFER switches have been placed in the TRANSFER position. The NO. 12 DIESEL GEN TRANSFER SWITCH red indicating lamp will NOT light. Grid voltage has dropped to 3950 volts on all buses.

Which of the following is correct with regards to restoring power to Bus 16?

- a. No. 12 EDG will automatically start and load onto Bus 16 in 9 seconds.
- b. An automatic transfer of power from the 1AR Transformer to Bus 16 will occur in 5 seconds.
- c. Hold the NO. 12 DIESEL GEN CONTROL switch in the START position at the ASDS Panel until adequate voltage and frequency is verified.
- d. A local manual start of the No. 12 EDG will be required at the No. 12 EDG Control Panel since the ASDS transfer of the No. 12 EDG failed.

MNGP 2003 RO NRC Exam

Question No. 66

A transient has occurred from 100% power resulting in the following conditions:

- All control rods have inserted.
- A reactor coolant leak exists in the Reactor Building and cannot be isolated.
- Reactor Building Ventilation (RBV) Exh Plenum Rad Monitor A indicates 28 mr/hr.
- Reactor Building Ventilation (RBV) Exh Plenum Rad Monitor B is bypassed for testing.

Which of the following is correct for the above stated conditions?

- a. Secondary Containment should isolate and SBGT should start to filter the radioactivity prior to discharge out the Reactor Building Vent.
- b. A Secondary Containment isolation should occur and SBGT should start to reduce the radioactivity discharged from the Off Gas Stack.
- c. A manual secondary containment isolation and start of SBGT will be necessary since one RBV Exh Plenum Rad Monitor is bypassed for testing.
- d. A manual secondary containment isolation and start of SBGT should be initiated since RBV Exh Plenum Rad Monitor A has not reached its trip setpoint.

MNGP 2003 RO NRC Exam

Question No. 67

The plant is operating at full power with the No. 12 Service Water Pump out of service for bearing replacement. A transient then occurs resulting in the following indications:

- Annunciator 6-B-22, SERVICE WATER HDR LOW PRESSURE, is in alarm.
- Red and Green indicating lights for the No. 13 Service Water Pump are NOT lit.
- Annunciator 8-B-27, NO. 103 TRANS 480V BKR TRIP, is in alarm.

Which of the following describes the action that should be taken?

- a. Manually start the No. 11 Service Water Pump.
- b. Reduce Recirc pumps to minimum and scram the reactor.
- c. Verify both Emergency Service Water Pumps auto started.
- d. Break Main Condenser vacuum and secure feed pumps.

MNGP 2003 RO NRC Exam

Question No. 68

The plant is operating at 100% power. Service Water flow has been reduced through one RBCCW Heat Exchanger due to fouling. RBCCW Temperature is 110°F and rising.

Which of the following describes the reason that a standby RBCCW Heat Exchanger must be placed in service?

- a. RBCCW temperature will rise and eventually the RWCU system will isolate and trip the RWCU pumps.
- b. RWCU Pump Room Temperatures will rise and eventually cause RWCU to isolate and trip the RWCU pumps.
- c. RWCU will operate normally due to the minimal heat load from the RWCU Non-Regenerative Heat Exchangers.
- d. RWCU F/Ds will automatically go into hold and bypass the filter demineralizers upon receipt of a High RBCCW temperature signal.

MNGP 2003 RO NRC Exam

Question No. 69

The No. 11 Instrument Air Compressor is isolated for maintenance. A plant transient occurs resulting in the following annunciators alarming:

- 8-C-34, NO. 104 480V LDCTR MCC FEEDER TRIP
- 7-B-15, EPR TROUBLE
- 6-B-32, RBCCW LOW DISCH PRESS
- 6-B-33, RBCCW STANDBY PUMP START

Which of the following power supplies, if locked-out due to overcurrent in conjunction with the above stated conditions, would lead to a reactor scram?

- a. Bus 13
- b. LC-108
- c. MCC-134
- d. 1R Transformer

MNGP 2003 RO NRC Exam

Question No. 70

Which of the following describes why Primary Containment should be vented prior to exceeding the Drywell Pressure Limit? Assume normal Torus water level.

- a. At the Drywell Pressure Limit, there is no assurance that SRVs can be opened or will remain open.
- b. Vent valves used to vent the RPV during drywell flooding may not be able to be opened above this pressure.
- c. Exceeding the design pressure limit of 58 psig could result in structural failure of the primary containment.
- d. If the Drywell Pressure Limit is exceeded prior to the start of containment venting then the vent valves may not open.

MNGP 2003 RO NRC Exam

Question No. 71

A transient is in progress at full power with the following indications:

- Annunciator 5-B-16, REACTOR PRESS HI/LO, is in alarm.
- PI-6-90A, REACTOR PRESSURE A, indicates 1030 psig and rising.
- PI-6-90B, REACTOR PRESSURE B, indicates 1032 psig and rising.

Which of the following actions should be taken for the stated transient?

- a. Push the EPR STOP pushbutton.
- b. Depress both manual scram pushbuttons.
- c. Reduce both Recirc pumps to minimum speed.
- d. Fully open bypass valves with the Pressure Regulator Override.

MNGP 2003 RO NRC Exam

Question No. 72

Given the following information:

- CRS has directed a Reactor water level control band of minus 126 (-126) inches to minus 149 (-149) inches.
- Torus temperature is 112°F and increasing.
- 66 control rods failed to insert on the scram.
- APRM's currently indicate 8% power.

Which of the following is correct?

- a. SBLC injection is required to prevent an RPV blowdown from exceeding the Heat Capacity Temperature Limit.
- b. SBLC injection is required to reduce Reactor power to the APRM downscale setpoint and allow exiting the power leg.
- c. SBLC injection is required at this time per Detail Q (ALTERNATE INJECTION SYSTEMS) to restore RPV water level.
- d. SBLC injection is required to ensure that hot shutdown boron is injected prior to exceeding the Heat Capacity Temperature Limit.

MNGP 2003 RO NRC Exam

Question No. 73

A plant transient occurred, conditions are as follows:

- Reactor Pressure is 450 psig.
- Drywell Temperature is 295°F and rising at 1°F per minute.
- Drywell Spray is NOT able to be placed in service.

Which of the following actions will protect the containment?

- a. Flood the containment to remove heat via convection.
- b. Start all available Torus Sprays for evaporative cooling.
- c. Place all Torus Cooling in service to allow maximum heat removal.
- d. Initiate Automatic Depressurization System to stop heat input to the Drywell.

MNGP 2003 RO NRC Exam

Question No. 74

Emergency Depressurization is required due to Low Torus Water Level.

The reason that Torus Water Level is required to be above minus 5.9 (-5.9) feet is to ensure that ____ (1) ____ remain submerged to prevent ____ (2) ____ from exceeding limits.

- | (1) | (2) |
|----------------------------------|-------------------------|
| a. Downcomers | Torus Water Temperature |
| b. Safety Relief Valve Tailpipes | Torus Water Temperature |
| c. Downcomers | Containment Pressure |
| d. Safety Relief Valve Tailpipes | Containment Pressure |

MNGP 2003 RO NRC Exam

Question No. 75

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

- A rupture in the bottom of the Torus has occurred.
- A manual reactor scram was initiated.
- The Control Room Supervisor has given the order to open 3 ADS valves.
- HPCI is operating to control RPV water level due to a feed system malfunction.
- Torus temperature is 83°F.

Prior to opening the ADS valves, Torus air space pressure begins to rise at 1.0 psig per minute.

Which of the following actions should be completed?

- a. Trip the HPCI turbine.
- b. Do not open the 3 ADS valves.
- c. Start all available Torus cooling.
- d. Immediately place Torus spray in service.

MNGP 2003 RO NRC Exam

Question No. 76

A Loss of Coolant Accident (LOCA) has occurred in the RWCU Room; the system has failed to isolate.

At 09:00:00 RPV Water Level is minus 47 (-47) inches, lowering at 2 inches per minute. HPCI automatically started, immediately tripped and will NOT restart. NO other High Pressure injection systems are available.

Which of the following states the time at which the ADS valves will open and what is the basis for that automatic action?

- | Time | <u>Basis</u> |
|-------------|---|
| a. 09:21:47 | To prevent fuel clad melting during a small break LOCA. |
| b. 09:01:47 | To prevent fuel clad melting during a small break LOCA. |
| c. 09:21:47 | To prevent fuel clad melting during a large break LOCA. |
| d. 09:01:47 | To prevent fuel clad melting during a large break LOCA. |

MNGP 2003 RO NRC Exam

Question No. 77

Which of the following is correct?

While injecting CRD per C.5-3204, RPV MAKEUP WITH CRD, the _____ flowpaths ONLY are injecting water into the reactor.

- a. Cooling Water, Drive Water, and Test
- b. Charging Water, Drive Water, and Test
- c. Charging Water, Cooling Water, and Test
- d. Charging Water, Drive Water, and Cooling Water

MNGP 2003 RO NRC Exam

Question No. 78

A Reactor coolant leak in the HPCI Room has occurred resulting in room temperature reaching max safe value.

If the Torus Room temperature reaches max safe value, what action will be required to protect the plant and what is the max safe value based on?

- a. Open 3 ADS valves because habitability of the associated room is no longer allowed after temperature has reached max safe.
- b. Open 3 ADS valves because environmental qualification of the instrumentation in the associated rooms will be exceeded at max safe
- c. Shutdown the Reactor because habitability of the associated room is no longer allowed after temperature has reached max safe.
- d. Shutdown the Reactor because environmental qualification of the instrumentation in the associated rooms will be exceeded at the elevated temperatures.

MNGP 2003 RO NRC Exam

Question No. 79

The plant is operating at full power with the following conditions:

- Annunciator 4-A-11, REACTOR BUILDING HI RADIATION, is in alarm.
- Area Radiation Monitor, RCIC EQUIPMENT AREA (896), amber HI light is lit.
- Annunciator 259-A-6, RBV EFFLUENT HIGH RADIATION, is in alarm.
- The mid range detector for Reactor Building Vent WRGM is now providing the input for calculating effluent release.

Which of the following actions is immediately required by procedure for the stated conditions?

- a. Scram the reactor.
- b. Commence a normal reactor shutdown.
- c. Evacuate all personnel from the Reactor Building.
- d. Dispatch the Turbine Building operator to investigate.

MNGP 2003 RO NRC Exam

Question No. 80

Given the following:

- A high radiation condition exists in the Reactor Building plenum.
- A Reactor scram has occurred due to low Reactor water level.
- Annunciator 3-B-55, REACTOR BLDG EXH PLENUM HI RAD, is in alarm.
- Annunciator 259-A-6, RBV EFFLUENT HIGH RADIATION, is in alarm.
- EOP-1300, SECONDARY CONTAINMENT CONTROL, has been entered.

Which of the following actions should be taken for the above stated conditions and why?

- a. Restart secondary containment ventilation because both trains of SBGT have failed to start.
- b. Restart secondary containment ventilation to ensure that a negative pressure exists relative to atmosphere.
- c. Depress both TEST pushbuttons on C-24A and C-24B Panels because SBGT failed to automatically initiate.
- d. Depress both TEST pushbuttons on C-24A and C-24B Panels to ensure a filtered exhaust is discharged from the Reactor Building.

MNGP 2003 RO NRC Exam

Question No. 81

Following a transient, the SCTMT isolated and the SBGT system initiated. The reading for DPI-4424, CONTROL ROOM C24 MANOMETER, is found to be negative 0.02 (-0.02) inches of water.

Which of the following could be a possible cause for this condition?

- a. The Turbine Building Supply fan, V-MZ-1, failed to trip.
- b. V-D-36, REFUELING POOL EXHAUST, damper is found to be open.
- c. The operating Reactor Building Exhaust fan, V-EF-24A/B, failed to trip.
- d. Inlet isolation dampers for V-AC-10A and V-AC-10B are found to be open.

MNGP 2003 RO NRC Exam

Question No. 82

Which of the following statements is correct?

The reason for the action required when a primary system is discharging into the Reactor Building and two areas have reached MAX SAFE WATER LEVEL is to:

- a. avoid unnecessary transients on the Reactor.
- b. reduce the rate of heat generation by the reactor.
- c. ensure that decay heat is sent to the Main Condenser.
- d. reduce the rate of discharge into the Reactor Building.

MNGP 2003 RO NRC Exam

Question No. 83

An earthquake has occurred at MNGP causing Torus water level to drop 5 inches in the last few minutes. In addition, a report of a fire at the 935 foot elevation of the Reactor Building in the SW corner has come in to the Control Room. The Fire Brigade is fighting the fire with fire hoses.

Indications now exist that the Torus Area and the 'B' RHR Area water levels are above max safe.

Which of the following correctly completes the statement below?

A blowdown _____ (1) _____ be conducted per C.5-1300, SECONDARY CONTAINMENT CONTROL, because _____ (2) _____.

- | | (1) | (2) |
|----|------------|---|
| a. | should | two water levels are above max safe. |
| b. | should NOT | there are no indications of a primary system rupture. |
| c. | should | indications exist of a primary system rupture from the Torus. |
| d. | should NOT | fire fighting can be secured to allow 'B' RHR Area water level to return to normal. |

MNGP 2003 RO NRC Exam

Question No. 84

The plant was operating at 100% power when a transient occurred. The following indications exist after the transient:

- Annunciator 5-B-16, REACTOR PRESS HI/LO, is in alarm.
- Annunciator 5-B-11, REACTOR VESSEL HI PRESS SCRAM TRIP, is in alarm.
- ATWS trip activated.
- SRVs remain open.

Which of the following states the lowest reactor pressure that could have caused the above stated indications?

- a. 1056 psig
- b. 1072 psig
- c. 1109 psig
- d. 1135 psig

MNGP 2003 RO NRC Exam

Question No. 85

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

- V-EAC-14A (AIR CONDITIONING UNIT) is in service.
- V-ERF-14A (EXHAUST/RECIRC FAN) is in service.
- V-EF-40A (BATTERY ROOM EXHAUST FAN) is in service.
- V-AC-11 (ADMIN BLDG SUPPLY FAN) is in service.

A transient then occurs and air samples taken by a survey team indicate 5-10 mr/hr throughout the protected area.

Which of the following is correct for the above stated conditions?

- a. V-AC-11 and V-ERF-14A will trip.
- b. V-EF-40A and V-ERF-14A will trip.
- c. V-EF-40A and V-AC-11 remain in service.
- d. V-EAC-14A and V-ERF-14A remain in service.

MNGP 2003 RO NRC Exam

Question No. 86

The plant is operating at 100% power when the following occur:

- Annunciator 6-B-32, RBCCW LOW DISCH PRESS, is in alarm.
- RBCCW Pressure indicates 0 psig.
- Annunciator 4-B-26, CLEAN UP DEMIN TEMP HI, is in alarm.
- NO RBCCW Pumps will start.

Which of the following actions is required within one minute?

- a. Trip both Recirc Pumps.
- b. Vent the Containment to stay below 2 psig.
- c. Trip and Isolate the Reactor Water Cleanup System.
- d. Reduce recirc pumps to minimum speed and scram the Reactor.

MNGP 2003 RO NRC Exam

Question No. 87

Which of the following statements is correct?

The primary purpose of starting CGCS after a Loss of Coolant Accident with degraded ECCS operation is to _____.

- a. preserve containment integrity by limiting Oxygen concentration.
- b. protect containment integrity by limiting Hydrogen concentration.
- c. reduce radioactivity release rates by returning exhaust to the Torus.
- d. lower containment pressure by combining Hydrogen and Oxygen into water vapor.

MNGP 2003 RO NRC Exam

Question No. 88

The No. 12 Reactor Feedwater Pump is required to be isolated while at 50% power.

Which of the following is the proper sequence for closing and opening the discharge and suction valves and why?

- a. Close the suction valve and then the discharge valve on isolation; open the discharge valve and then the suction valve on restoration; relieves isolated pressure back to the suction.
- b. Close the discharge valve and then the suction valve on isolation; open the discharge valve and then the suction valve on restoration; prevents over pressurization of the suction piping.
- c. Close the suction valve and then the discharge valve on isolation; open the suction valve and then the discharge valve on restoration; relieves isolated pressure back to the suction.
- d. Close the discharge valve and then the suction valve on isolation; open the suction valve and then the discharge valve on restoration; prevents over pressurization of the suction piping.

MNGP 2003 RO NRC Exam

Question No. 89

The reactor is operating at 100% power when the following occur:

- Annunciator 8-A-17, NO.1 GENERATOR COOLING WATER FAILURE, alarms.
- Speed/Load Changer on C-07 is intermittently decreasing.
- Immediate actions have been taken.
- The second Main Turbine bypass valve is fully open.

Given the above conditions, which of the following actions should be taken?

- a. Manually trip the Main Turbine.
- b. Lower the Speed/Load Changer.
- c. Push both scram pushbuttons.
- d. Reduce recirc pumps to minimum speed.

MNGP 2003 RO NRC Exam

Question No. 90

An event occurred at MNGP resulting in the following plant conditions:

- An ATWS condition exists.
- RPV water level was being controlled between minus 126 (-126) inches and minus 149 (-149) inches.
- RPV pressure was being maintained by Lo-Lo Set relief valves.
- SBLC is being injected.

A RPV Emergency Depressurization was then conducted. C.5-2007, FAILURE TO SCRAM, level leg was re-entered following the blowdown.

Which of the following sets of plant conditions will ensure that the hottest fuel rod's cladding temperature does not exceed 1500°F?

- a. 4 ADS valves open
RPV pressure 575 psig
RPV water level minus 174 (-174) inches
- b. 3 ADS valves open
RPV pressure 256 psig
RPV water level minus 126 (-126) inches
- c. 2 ADS valves open
RPV pressure 405 psig
RPV water level minus 174 (-174) inches
- d. 1 ADS valve open
RPV pressure 850 psig
RPV water level minus 126 (-126) inches

MNGP 2003 RO NRC Exam

Question No. 91

The plant is operating at full power with the following conditions:

- Annunciator 5-B-17, CHARGING WATER LO PRESS, is in alarm.
- CRD Charging Water Header pressure indicates 1050 psig on the C-05 panel.
- The No. 11 CRD Pump is operating normally.
- The Reactor Building operator has been dispatched to the No. 11 CRD Pump to investigate per ARP 5-B-17.

One minute later:

- The Reactor Building operator reports that there is a rupture in the charging water header.
- Annunciator 5-B-38 (ACCUMULATOR LOW/PRESS HI/LEVEL) alarms.

Which of the following states the actions that should be taken by Control Room operators?

- a. Perform the actions of C.4-B.01.03.A, LOSS OF CRD FLOW, and start the No. 12 CRD Pump.
- b. Continue to perform the actions of ARP 5-B-17 and throttle open CRD 3-1, 11 CRD PUMP DISCH VALVE.
- c. Perform actions of C.4-K, IMMEDIATE REACTOR SHUTDOWN, and then enter C.5-1100, RPV CONTROL.
- d. Perform the actions of C.4-I, PLANT FLOODING, and then enter C.5-1300, SECONDARY CONTAINMENT CONTROL.

MNGP 2003 RO NRC Exam

Question No. 92

The following plant conditions exist:

- The plant has scrammed from 100% power.
- A Loss of Coolant Accident has occurred.
- Attempts at Drywell sprays have failed.
- Primary containment pressure is 52 psig and slowly rising.
- Torus level is 10.3 feet and steady.
- Determination has been made to vent the containment.

Which of the following is the best flowpath for venting the primary containment and why?

- a. Vent from the Drywell through the 2 inch line to SBGT to minimize the potential for damage to SBGT duct work.
- b. Vent from the Torus through the Hard Pipe Vent because Torus level precludes using the normal vent flowpaths.
- c. Vent from the Drywell through the Reactor Building Exhaust Plenum to ensure that an elevated release path is used.
- d. Vent from the Torus through the 18 inch line to SBGT so that the containment atmosphere is scrubbed by the suppression pool.

MNGP 2003 RO NRC Exam

Question No. 93

Given the following plant conditions:

- Plant startup from cold shutdown has begun.
- Reactor coolant temperature is 190°F.
- Primary containment venting is in progress.
- V-EF-25, DRYWELL PURGE FAN, is running.

Which of the following actions must be completed prior to reactor coolant temperature reaching 200°F and why?

- a. Begin inerting the primary containment with Nitrogen to meet the 24 hour Tech Spec requirement.
- b. Stop venting primary containment to SBGT to protect the SBGT duct work in the event a LOCA occurs while venting.
- c. Stop V-EF-25, DRYWELL PURGE FAN, and secure the line-up to ensure primary containment integrity is maintained.
- d. Start venting the primary containment to the Reactor Building Exhaust Plenum to allow monitoring of the effluent activity by the Reactor Building Vent WRGMs.

MNGP 2003 RO NRC Exam

Question No. 94

The Reactor is operating at 30% power with the 'A' Recirc pump secured and concerns now exist of possible stratification in the idle loop.

Which of the following actions would be a correct method to avoid or correct the loop stratification in the idle loop?

- a. Secure all seal injection to the idle recirc pump to minimize excessive cooldown.
- b. Re-open the 'A' Recirc loop suction valve to provide some flow through the loop.
- c. Maintain the running Recirc pump at as high a speed as allowed with the idle loop discharge valve open.
- d. Ensure the RHR Intertie Line is in use, with the appropriate valves open, to provide maximum flow to the idle loop.

MNGP 2003 RO NRC Exam

Question No. 95

A NLO has a SOMS clearance order that requires independent verification.

For which of the following conditions can the Control Room Supervisor waive independent verification?

Clearance of a tag on...

- a. PC-26, REACTOR WELL DRN TO PUMP SUCT, at the start of a refuel outage.
- b. MO-1615, FW FROM HP HTRS BLOCK, while the plant is at full power.
- c. CV-1729, 12 RHR HX RHRSW OUTLET, for setting the neutral position.
- d. B3348, SCTMT DIV 1 ISOL & SBT "A" TRAIN CONTROL PWR, following filter replacement.

MNGP 2003 RO NRC Exam

Question No. 96

Which of the following describes one of the Control Room Operator's responsibilities in the Control Room during refueling operations?

- a. Enter the time and date for completion of each fuel move on the Procedure Checklist Data File.
- b. Verify that the Area Radiation Monitors for fuel handling areas have been calibrated, checked and are operable.
- c. Move the tag, representing the component in transit, from the tagboard and place it in its new location on the tagboard.
- d. Log the time and date on the Verification Checklist Data File after verifying the component was latched in the proper location.

MNGP 2003 RO NRC Exam

Question No. 97

A reactor startup is in progress at 15% power with the following conditions:

- A breaker fault results in a loss of power to MO-2398, RWCU INLET OUTBOARD ISOLATION VALVE.
- One minute later a loss of power to MCC-133A occurs.
- Core Spray is lined up with MO-1751, CS INJECTION OUTBOARD, OPEN.

Which of the following correctly describes the most time restrictive Tech Spec required action based on the above stated conditions?

- a. Within 1 hour restore primary containment integrity by manually closing the MO-2398, RWCU INLET OUTBOARD ISOLATION VALVE.
- b. Within 1 hour reduce reactor power and return the Reactor Mode Switch to the STARTUP TO HOT STANDBY position.
- c. Within 1 hour restore primary containment integrity by manually closing the MO-2397, RWCU INLET INBOARD ISOLATION VALVE.
- d. Within 1 hour restore primary containment integrity by manually isolating Div I of Core Spray per B.03.01-05.E.2, 11 CORE SPRAY LOOP ISOLATION.

MNGP 2003 RO NRC Exam

Question No. 98

Which of the following combinations of plant conditions defines the MODE known as 'Cold Shutdown'?

- a. Reactor water temperature is 112°F and steady with shutdown cooling in service. A fuel assembly is being removed from the core.
- b. Reactor water temperature is 200°F and lowering with shutdown cooling in service. A control rod is being withdrawn for refuel interlock testing.
- c. Reactor water temperature is 221°F and lowering with shutdown cooling in service. A control rod is being withdrawn for refuel interlock testing.
- d. Reactor water temperature is 100°F and steady with shutdown cooling in service. Reactor Building overhead crane is removing the steam dryer from the Reactor vessel.

MNGP 2003 RO NRC Exam

Question No. 99

Which of the following statements is correct?

At the beginning of each shift, a Control Room Operator SHALL make an electronic log entry in SOMS which includes the following:

1. status of off-site power
 2. line-up of the ECCS systems
 3. availability of the Fire Brigade
 4. Reactor Mode Switch position
-
- a. 1, 2 & 3
 - b. 2, 3 & 4
 - c. 1, 3 & 4
 - d. 1, 2 & 4

MNGP 2003 RO NRC Exam

Question No. 100

An operator has been assigned to perform a task in a controlled room. The following conditions exist in the room:

- Radiation levels in the vicinity of the equipment being worked on exceed 1000 mr/hr at 30 centimeters.
- Airborne radioactivity exists at 20% of the derived air concentration (DAC) specified in 10 CFR 20.
- Loose surface contamination levels in the room are 1500 dpm/100 cm² (beta-gamma).

Which of the following states all of the signs that would be posted by Radiation Protection on the entrance door to the room?

- a. "CAUTION, CONTAMINATED AREA"
"DANGER, LOCKED HIGH RADIATION AREA"
- b. "CAUTION, RADIOACTIVE MATERIALS AREA"
"DANGER, HIGH RADIATION AREA"
- c. "CAUTION, RADIOACTIVE MATERIALS AREA"
"CAUTION, AIRBORNE RADIOACTIVITY AREA"
"DANGER, HIGH RADIATION AREA"
- d. "CAUTION, CONTAMINATED AREA"
"CAUTION, AIRBORNE RADIOACTIVITY AREA"
"DANGER, LOCKED HIGH RADIATION AREA"

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RO Answer Key

#	Ans	Reference
1	A	K/A: Reference: B.01.03-01 pages 20 & 21
2	A	K/A: Reference: C.2-01 page 9
3	C	K/A: Reference: B.05.02-02 page 18
4	A	K/A: Reference: B.01.04-01 page 4; C006-4-C-3
5	C	K/A: Reference: B.03.04-02 page 8
6	C	K/A: Reference: B.03.04-05.H.7 pages 8, 80 & 81
7	A	K/A: Reference: B.3.4-05 pages 13 and 20; B.08.01.03-05 page 4
8	D	K/A: Reference: B.03.04-05.D.1 page 22
9	B	K/A: Reference: B.03.02-02 page 6; B.03.02-05 page 5
10	B	K/A: Reference: B.03.01-01 page 4
11	B	K/A: Reference: B.09.12-06 Figure 1
12	C	K/A: Reference: B.05.03-03.C page 3; C.4-B.04.01.B page 5
13	B	K/A: Reference: B.05.01.02-02 page 17
14	D	K/A: Reference: B.05.01.02-02 page 15; B.05.01.02-06 Figure 9
15	B	K/A: Reference: C006-5-A-21
16	D	K/A: Reference: B.05.06-02 page 4
17	B	K/A: Reference: C.1 step V.A.4.g page 20
18	D	K/A: Reference: B.5.1.2-02 paragraph A.3.a on page 4
19	A	K/A: Reference: B.05.01.02-02 page 7
20	D	K/A: Reference: B.03.02-01 page 4; B.01.01-01 page 14
21	C	K/A: Reference: C.4-B.05.07.B page 2
22	C	K/A: Reference: B.02.03-01 page 4
23	B	K/A: Reference: B.03.04-02 pages 11 & 12
24	A	K/A: Reference: B.03.04-05 page 7
25	C	K/A: Reference: B.04.01-02 pages 28 & 29
26	A	K/A: Reference: C.4-B.03.03.B pages 2 & 3
27	B	K/A: Reference: Process Computer Tech Manual
28	C	K/A: Reference: B.5.6-02.B.1.j page 18
29	C	K/A: Reference: B.03.02-03 page 10
30	C	K/A: Reference: C.4-B.09.07.C page 7
31	D	K/A: Reference: D.2-02 page 9
32	B	K/A: Reference: B.03.03-01 page 11; B.03.03-05 page 5
33	B	K/A: Reference: C.5.1-2007 page 46
34	D	K/A: Reference: B.05.09-06 Figure 1
35	A	K/A: Reference: B.05.09-06 Figure 2; C.2-06 Figure 3
36	B	K/A: Reference: B.09.02-06 Figure 2; B.06.02.02-03.C page 6
37	B	K/A: Reference: B.06-05-02 page 9
38	A	K/A: Reference: C.4-B.09.06.A page 3; B.09.06-01 page 5
39	D	K/A: Reference: C.4-B.05.07.A page 4
40	C	K/A: Reference: B.04.02-05.F.5 page 49
41	B	K/A: Reference: E.5 page 4

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42	B	K/A:	Reference:	C.4-B.09.07.G page 7; B.09.07-02 page 3
43	C	K/A:	Reference:	B.09.13-05.G.4 page 39; B.09.13-06 Figure 2
44	B	K/A:	Reference:	B.08.07-05.01 page 4
45	C	K/A:	Reference:	0000-J Step 12 page 10
46	C	K/A:	Reference:	B.07.02.01-01 page 6
47	A	K/A:	Reference:	B.07.02.02-02 page 21
48	A	K/A:	Reference:	1047-03 page 9
49	C	K/A:	Reference:	B.08.07-03 page 7
50	C	K/A:	Reference:	B.01.01-01 page 37
51	A	K/A:	Reference:	C.4-B.05.01.02.A page 2
52	A	K/A:	Reference:	C.4-B.06.03.A page 2
53	C	K/A:	Reference:	C006-4-C-3
54	A	K/A:	Reference:	B.06.05-02 pages 9 & 10
55	A&B	K/A:	Reference:	Procedure 0255-07-IA-1
56	D	K/A:	Reference:	B.03.04-01 pages 5 & 6
57	D	K/A:	Reference:	B.01.01-06 Figure 31
58	D	K/A:	Reference:	B.01.04-02 pages 12 & 13; B.03.04-02 page 7
59	C	K/A:	Reference:	B.04.01-01 page 3
60	A	K/A:	Reference:	B.04.01-05.G.4 page 27; C.4-B.04.01.B page 7
61	A	K/A:	Reference:	C.4-B.02.05.A page 3
62	B	K/A:	Reference:	B.03.02-05 page 3
63	B	K/A:	Reference:	Tech Spec 3.7.A.1.b; B.04.01-02 page 6
64	A	K/A:	Reference:	C.4-C page 2
65	D	K/A:	Reference:	B.5.17-02 pages 6 & 7
66	B	K/A:	Reference:	B.05.11-01 page 10
67	B	K/A:	Reference:	C.4-B.08.01.01.A page 2
68	A	K/A:	Reference:	B.02.02-01 page 4
69	B	K/A:	Reference:	B.08.04.01-05 page 4
70	D	K/A:	Reference:	C.5.1-1000 page 51
71	B	K/A:	Reference:	C.4-B.05.09.B page 2; OWI-01.01 page 8
72	D	K/A:	Reference:	C.5-2007; C.5.1-2007 page 61
73	D	K/A:	Reference:	C.5-1200; C.5.1-1200 page 26
74	D	K/A:	Reference:	C.5-2002; C.5.1-2002 page 16
75	A	K/A:	Reference:	C.5-1200; C.5.1-1200 page 22
76	A	K/A:	Reference:	B.03.03-01 page 7
77	C	K/A:	Reference:	C.5-3204 page 2
78	B	K/A:	Reference:	C.5-1300; C.5.1-1300 page 7
79	C	K/A:	Reference:	C.4-B.02.04.A page 2
80	D	K/A:	Reference:	C.4-B.02.04-A page 2; B.04.02-05 pages 20 & 21
81	D	K/A:	Reference:	P&ID M-155 (NH-36267) Rev T
82	D	K/A:	Reference:	C.5-2002; C.5.1-2002 page 5
83	B	K/A:	Reference:	C.5-1300; C.5.1-1300 page 16
84	D	K/A:	Reference:	B.05.06-02 page 22

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85	D	K/A:	Reference:	B.08.13-06 Figure 6
86	A	K/A:	Reference:	C.4-B.2.5.A page 2
87	A	K/A:	Reference:	B.04.03.02-01 page 3
88	D	K/A:	Reference:	AWI-04.04.01, EQUIPMENT ISOLATION, para 4.1.1.K, General Requirements for Tagging
89	C	K/A:	Reference:	C.4-B.06.02.04A page 2
90	D	K/A:	Reference:	C.5-1000 page 37, 38 & 47; C.5-2007
91	C	K/A:	Reference:	C.4-K page 2
92	D	K/A:	Reference:	C.5-3505 page 7; C.5.1-1200 page 41
93	C	K/A:	Reference:	B.04.01-05.G.4 page 27
94	C	K/A:	Reference:	B.01.04-05 page 10
95	B	K/A:	Reference:	4 AWI-04.04.02 page 5
96	A	K/A:	Reference:	D.1-05.B page 4
97	A	K/A:	Reference:	Tech Spec 3.7.D.2
98	D	K/A:	Reference:	Tech Spec Section 1.0 pages 1 & 5
99	C	K/A:	Reference:	OWI-02.02 page 5
100	A	K/A:	Reference:	4 AWI-08.04.01 pages 9-15