

FERMI 2008 Written Exam Answer Key

RO			SRO	
	1. A	41. C		76. B
	2. D	42. B		77. C
	3. D	43. D		78. A
	4. D	44. A		79. B
	5. B	45. D		80. B
	6. D	46. B		81. C
	7. B	47. B		82. D
	8. D	48. A		83. A
	9. C	49. C AND D		84. D
	10. C	50. A		85. B
	11. C	51. A		86. C
	12. A	52. C		87. B
	13. D	53. D		88. C
	14. B	54. A		89. C
	15. B	55. C		90. C
	16. B	56. D		91. C
	17. A	57. B		92. D
	18. D	58. C		93. A
	19. D	59. A		94. C
	20. A	60. A		95. B
	21. B	61. C		96. A
	22. C	62. A		97. B
	23. B	63. D		98. D
	24. D	64. C		99. D
	25. D	65. B		100. D
	26. A	66. B		
	27. A	67. D		
	28. B	68. C		
	29. B	69. D		
	30. B	70. B		
	31. C	71. B		
	32. D	72. D		
	33. C	73. D		
	34. B	74. B		
	35. A	75. C		
	36. A			
	37. D			
	38. A			
	39. B			
	40. D			

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QUESTION 1

Following a Loss of Coolant Accident, plant conditions are as follows:

- RPV Water Level is -25 inches.
- Reactor Pressure is 50 psig.
- The Reactor Building is **NOT** accessible due to High Radiation Levels.

Which **ONE** of the following paths can be used to inject from the Condensate Storage Tank (CST) into the reactor, using **ONLY Main Control Room** manipulations?

The CST can be injected by using the:

- _____ A. Residual Heat Removal System with suction aligned from the Torus.
- _____ B. Standby Liquid Control System with suction aligned from the Test Tank.
- _____ C. Core Spray System with suction aligned from the Condensate Storage Tank.
- _____ D. High Pressure Coolant Injection System with suction aligned from the Condensate Storage Tank.

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QUESTION 2

The plant is in MODE 4, COLD SHUTDOWN, conditions are as follows:

- RPV Water Level is 230 inches.
- Reactor Coolant Temperature is 175°F.
- RHR Loop B is operating in Shutdown Cooling Mode at 10,000 gpm.
- Reactor Coolant System cooldown rate is 50°F per hour.
- E1150-F003B, Div 2 RHR Hx Outlet Vlv is **THROTTLED OPEN 60 SECONDS**.
- E1150-F048B, Div 2 RHR Hx Bypass Vlv is **OPEN**.

Which **ONE** of the following will **REDUCE** cooldown rate?

- _____ A. **FULLY OPEN** E1150-F003B, Div 2 RHR Hx Outlet Valve.
- _____ B. **FULLY SHUT** E1150-F048B, Div 2 RHR Hx Bypass Valve.
- _____ C. **THROTTLE SHUT** E1150-F048B, Div 2 RHR Hx Bypass Valve.
- _____ D. **THROTTLE CLOSED** E1150-F003B, Div 2 RHR Hx Outlet Valve.

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QUESTION 3

Following a transient, HPCI is being used to maintain RPV Water Level per 29.100.01 Sheet 1, RPV Control. Alarm 2D54, HPCI INVERTER CIRCUIT FAILURE actuates with the following indications failing **DOWNSCALE**:

- E41-R609, HPCI Pump Suction/Discharge Pressure.
- E41-R608, HPCI Turbine Steam Inlet/Exhaust Pressure.
- E41-R613, HPCI Pump Flow Indicator.
- E41-K615, HPCI Flow Controller.

With these indications, which **ONE** of the following caused the loss of the HPCI Inverter and what actions are required?

Loss of the HPCI Inverter was produced by a **LOSS** of:

- _____ A. Division 1 130 VDC power to the inverter, it is required to **OPERATE** HPCI to maintain RPV Water Level.
- _____ B. Division 1 130 VDC power to the inverter, it is required to **SHUTDOWN** HPCI and use RCIC to maintain RPV Water Level.
- _____ C. Division 2 130 VDC power to the inverter, it is required to **OPERATE** HPCI to maintain RPV Water Level.
- _____ D. Division 2 130 VDC power to the inverter, it is required to **SHUTDOWN** HPCI and use RCIC to maintain RPV Water Level.

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QUESTION 4

With the plant operating at full power, a relay malfunction resulted in the following annunciators:

- 1D1, DIV I CSS ACTUATED.
- 1D48, ADS ECCS PUMP CH A PERMISSIVE.

What will be the affect, if any, of this failure on Emergency Diesel Generators?

- _____ A. Emergency Diesel Generators 11 and 12 will remain in **STANDBY**.
- _____ B. Emergency Diesel Generators 11 and 12 will **START** and **LOAD** with **ALL** trips active.
- _____ C. Emergency Diesel Generators 11 and 12 will **START** and **LOAD** with **ONLY** essential trips active.
- _____ D. Emergency Diesel Generators 11 and 12 will **START AND OPERATE UNLOADED** with **ONLY** essential trips active.

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QUESTION 5

Which **ONE** of the following Reactor Pressure Vessel piping taps is **SHARED** by the Standby Liquid Control System Injection Line?

- _____ A. Jet Pump Differential Pressure tap
- _____ B. Core Plate Differential Pressure tap
- _____ C. Core Spray Line Break Detection tap
- _____ D. Control Rod Drive Water Differential Pressure tap

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QUESTION 6

Following a manual reactor scram the following occurred:

- The Reactor Mode Switch was placed in **SHUTDOWN**.
- Scram Reset Switch, C7100-M605 was turned to the GP 1/4 AND GP 2/3 positions and released.
- SRM and IRM detectors were selected and the **DRIVE IN** pushbutton was depressed.
- A few minutes later a **SECOND** automatic scram signal was received.
- **ALL** RPV and Containment parameters remained constant prior to the second scram.

What was the cause of the **SECOND** scram and why did it occur?

- _____ A. Alarm 3D51, SRM PERIOD SHORT, was received due to driving in SRM and IRM detectors and an automatic scram resulted.
- _____ B. Alarm 3D97, APRM NEUTRON FLUX UPSCALE TRIP, was received due to the production of delayed neutrons from delayed neutron precursors.
- _____ C. Alarm 3D86, MN STM LINE ISO VALVE CLOSURE CHANNEL TRIP, was received due to the failure to adjust Gland Seal Pressure resulting in an MSIV isolation on loss of vacuum and the subsequent scram.
- _____ D. Alarm 3D94, DISCH WATER VOL HI LEVEL CHANNEL TRIP, was received and the reactor scram occurred because the SDV High Level Bypass Switch was not placed in BYPASS and the SDV filled faster than it drained after the first scram was reset.

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QUESTION 7

A reactor startup is in progress. The reactor has been declared critical and the operator has established a 150 sec period. **ALL** IRMs are on ~ 50 range 4. The following indications are observed:

- 3D63, IRM UPSCALE alarms.
- 3D59, IRM CH A/E/C/G UPSCALE TRIP/INOP alarms.
- 3D73, TRIP ACTUATORS A1/A2 TRIPPED alarms.
- 3D113, CONTROL ROD WITHDRAWAL BLOCK alarm

These indications were **CAUSED** by:

- _____ A. IRM E power supply failure.
- _____ B. IRM E being ranged to range 3.
- _____ C. IRM E being ranged to range 5.
- _____ D. IRM E being withdrawn from the core.

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QUESTION 8

Which **ONE** of the following **PROVIDES POWER** for the Intermediate Range Channel B instrument drawer?

- _____ A. 120/208 VAC Cabinet 72E-2B-1
- _____ B. 120 VAC UPS Distribution Cabinet B
- _____ C. 48/24 VDC DC Distribution Cabinet 2IA1-3
- _____ D. 48/24 VDC DC Distribution Cabinet 2IB1-3

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QUESTION 9

A reactor startup is in progress, the following conditions exist.

- The Mode Switch is in the START & HOT STBY position.
- **NO** SRMs are bypassed.
- The SRM detectors are **PARTIALLY WITHDRAWN**.

Which **ONE** of the following sets of conditions will **RESULT** in a rod withdrawal block?

- _____ A. IRMs on range 3. **ALL** SRMs indicating 90 cps.
- _____ B. IRMs on range 1. **ALL** SRMs indicating 120 cps.
- _____ C. IRMs on range 2. SRM "A" indicating 90 cps, **ALL OTHER SRMs** indicating 150 cps.
- _____ D. IRMs on range 4. SRM "A" indicating 90 cps, **ALL OTHER SRMs** indicating 120 cps.

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QUESTION 10

Plant shutdown is in progress. A control rod is being inserted from position 48 to position 00.

The “B” Level LPRM readings will most **SIGNIFICANTLY DECREASE** as the rod passes through positions _____.

_____ A. 08 to 04

_____ B. 20 to 16

_____ C. 32 to 28

_____ D. 44 to 40

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QUESTION 11

Reactor Core Isolation Cooling (RCIC) is operating in the **TEST MODE** with the following conditions:

- E51-R614, RCIC Pump Flow Controller is in "**AUTOMATIC**".
- RCIC Turbine Speed is 2950 rpm.
- P1100-F606, CST Common Return Isolation Valve is **OPEN**.
- E41-K820, Test Isolation/PCV E41-F011 Controller, is in **MANUAL at 20% OPEN**.

Which **ONE** of the following describes the **STABILIZED** response of RCIC Turbine Speed **AND** system flow **AFTER** PCV E41-F011 is **THROTTLED** an **ADDITIONAL 5%** in the **CLOSED** direction?

- _____ A. RCIC Turbine **SPEED** will be **HIGHER**.
System indicated **FLOW** will be **HIGHER**.
- _____ B. RCIC Turbine **SPEED** will be **LOWER**.
System indicated **FLOW** will be **LOWER**.
- _____ C. RCIC Turbine **SPEED** will be **HIGHER**.
System indicated **FLOW** will be **AT THE INITIAL VALUE**.
- _____ D. RCIC Turbine **SPEED** will be **LOWER**.
System indicated **FLOW** will be **AT THE INITIAL VALUE**.

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QUESTION 12

With Primary Containment Pneumatic Supply System DIV I Inboard and Outboard Isolation Valves, T4901-F601 **AND** F465 **SHUT**, how are the Automatic Depressurization System Valves affected?

- _____ A. ADS Valves **WILL** operate if the logic is actuated, **WITHOUT** any further operator action.
- _____ B. ADS Valves **WILL NOT** operate if the logic is actuated. Operators **MUST** use Alternate Depressurization systems.
- _____ C. ADS Valves **WILL** operate if the logic is actuated. NIAS automatically aligns, **WITHOUT** any further operator action.
- _____ D. ADS Valves **WILL NOT** operate if the logic is actuated. Operators **MUST** clear and reset isolations and realign Nitrogen to the Drywell.

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QUESTION 13

While monitoring the Primary Containment Isolation System (PCIS) Group Isolation mimic (ISO MIMIC) on P601, an Isolation signal is received.

For the statements below, which **ONE** is correct for valve groups that have received an isolation signal and have correctly completed their response to that signal.

When the Isolation signal has initiated, for a group of valves that are **NOT** wired in series, a:

- _____ A. **GREY** ISO SIG PRESENT message is displayed, on the P601 PCIS mimic, to indicate an isolation signal is present **AND** when **ALL** isolation valves in that PCIS Group are **CLOSED**, they indicate **RED**.
- _____ B. **GREY** ISO SIG PRESENT message is displayed, on the P601 PCIS mimic, to indicate an isolation signal is present, **AND** when **ALL** isolation valves in that PCIS Group are **CLOSED**, they indicate **GREEN**.
- _____ C. **YELLOW** ISO SIG PRESENT message is displayed, on the P601 PCIS mimic, to indicate an isolation signal is present **AND** when **ALL** isolation valves in that PCIS Group are **CLOSED**, they indicate **RED**.
- _____ D. **YELLOW** ISO SIG PRESENT message is displayed, on the P601 PCIS mimic, to indicate an isolation signal is present, **AND** when **ALL** isolation valves in that PCIS Group are **CLOSED**, they indicate **GREEN**.

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QUESTION 14

Safety Relief Valve G Tailpipe Vacuum Breaker is **STUCK OPEN**.

Which **ONE** of the following affects will result from this condition?

- _____ A. Steam will be released to the **TORUS** when SRV G is **OPEN**.
- _____ B. Steam will be released to the **DRYWELL** when SRV G is **OPEN**.
- _____ C. Damage may occur to the SRV **TAILPIPE** when SRV G is **OPEN**.
- _____ D. Water will be drawn up the SRV **TAILPIPE** after SRV G is **SHUT**.

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QUESTION 15

Which **ONE** of the following indicates an **OPEN** Safety Relief Valve?

- _____ A. Reactor Thermal Power **LOWERING** from 3430 Mwt to 3258 Mwt.
- _____ B. Safety Relief Valve Tailpipe **SLOWLY RISING** from 170°F to 221°F.
- _____ C. Total Indicated Steam Flow **RISING** from 13.4 Mlbm/hr to 14.1 Mlbm/hr.
- _____ D. Total Feed Flow at 14.1 Mlbm/hr **WITH** Total Steam Flow at 13.4 Mlbm/hr.

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QUESTION 16

The plant is operating at **10% POWER** with the Reactor Mode Switch in RUN. The following conditions exist:

- The North Reactor Feed Pump Turbine is in service.
- SULCV is 25% **OPEN**.
- SULCV M/A Station is in **AUTO**.
- Interruptible Air Supply (IAS) to N21-F400A, N RFP Min Flow Line FCV has **CRACKED AND** is **SEPARATING**.
- N RFP Suction Flow is **RIISING**.
- N RFP Suction Pressure has **LOWERED** to 550 psig and **STABILIZED**.

What will be the **EFFECT** of this failure on the Feedwater Level Control System, and what actions are **REQUIRED**?

With air pressure **SLOWLY LOWERING**, N21-F400A, N RFP Min Flow Line FCV will:

- _____ A. **OPEN**, which will cause RPV Water Level to **LOWER**. It is required to **INITIATE** Standby Feedwater to maintain RPV Water Level.
- _____ B. **SHUT**, which will cause RPV Water Level to **RISE**. It is required to **LOWER** the setpoint of C32-R620, STARTUP LCV CONTROLLER to maintain RPV Water Level.
- _____ C. **OPEN**, which will **NOT AFFECT** RPV Water Level due to response of C32-R620, STARTUP LCV CONTROLLER. It is required **OPERATE** N21-F400A, N RFP Min Flow Line FCV using local manual handwheel operation to regulate minimum flow.
- _____ D. **SHUT**, which will **NOT AFFECT** RPV Water Level due to response of C32-R620, STARTUP LCV CONTROLLER. It is required **OPERATE** N21-F400A, N RFP Min Flow Line FCV using local manual handwheel operation to regulate minimum flow.

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QUESTION 17

The plant is in the process of a plant startup after a refueling outage. Containment inerting is in progress with Oxygen content at 20% and going down slowly. In support of this evolution, Division 2 Standby Gas Treatment (SGTS) is running and is aligned to the Drywell.

A malfunction in the initiation logic causes a **FALSE** Low Reactor Water Level 2 signal to be initiated.

Based on this malfunction, what is the resultant effect on the Oxygen concentration in Drywell?

The Drywell Oxygen concentration will:

- _____ A. **LOWER** at a faster rate due to the resulting automatic **RISE** in SGTS flow.
- _____ B. **REMAIN THE SAME** because T4600-F402, DW 24" PURGE ISO VLV **CLOSED**.
- _____ C. **LOWER** at a slower rate because T4600-F407, RBHVAC TO SGTS ISO VLV **OPENED**.
- _____ D. **RISE** due to the increased flow from SGTS **OPENING** the Reactor Building to Torus Vacuum Breakers.

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QUESTION 18

The plant is operating at full power with Div 2 SGTS OUT OF SERVICE for maintenance. The following indications occur:

- 3D85, PRIMARY CONTAINMENT HIGH PRESS CHANNEL TRIP, alarms.
- 8D35, DIV I SGTS AIR FLOW STOPPED, alarms
- T4600-F004A, Div 1 SGTS Exhaust Fan Inlet Isolation Damper, is CLOSED.

Which **ONE** of the following describes the affect of these conditions, if any, and the Emergency Operating Procedure Leg required to mitigate the condition, if any?

- _____ A. NO CHANGE IN DIFFERENTIAL PRESSURE between the Reactor Building and the environs, **NO** EOP usage is required.
- _____ B. INCREASING DIFFERENTIAL PRESSURE between the Reactor Building and the environs, which would **FIRST** result in an Entry Condition for the Secondary Containment Control EOP Leg.
- _____ C. DECREASING DIFFERENTIAL PRESSURE between the Reactor Building and the environs, which would **FIRST** result in an Entry Condition for the Radiation Release Control EOP Leg.
- _____ D. DECREASING DIFFERENTIAL PRESSURE between the Reactor Building and the environs, which would **FIRST** result in an Entry Condition for the Secondary Containment Control EOP Leg.

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QUESTION 19

When operating the 480V ESF Bus Tie Breakers for Live Bus Transfer, the 4160V ESF Buses are verified powered from their normal offsite power source.

Attempting to manually close these breakers with either bus powered from an EDG will result in _____.

- _____ A. an overspeed trip of an EDG
- _____ B. a sustained overload condition of the EDG
- _____ C. no breaker closure due to a protective interlock
- _____ D. equipment damage from paralleling out of phase

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QUESTION 20

Reactor Pressure is 900 psig and RHR Loop B is running in response to a valid LPCI initiation signal.

Which **ONE** of the following is the **INDICATED** flow on the Division II RHR System Flow Recorder?

- _____ A. 0 gpm
- _____ B. 3,000 gpm
- _____ C. 10,000 gpm
- _____ D. 20,000 gpm

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QUESTION 21

With a **LOSS** of Division 2 ESF 260/130 VDC Batteries **AND** Chargers, which **ONE** of the following will result?

- _____ A. Breakers on 4160V Busses 65E and 13EC will lose control power.
- _____ B. C11-F110B, Scram Pilot Air Header Backup Scram Valve, will actuate.
- _____ C. MCC 72CF Feed will auto throw-over from 72C Pos 3C to 72F Pos 5C.
- _____ D. Breakers CM and CF will not open on generator relaying or with the manual control switches on COP H11-P804.

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QUESTION 22

With the plant operating at full power, 10D72, BOP 260/130V BATTERY 2PC TROUBLE alarms. A **COMPLETE LOSS** of BOP DC has occurred.

IF operation of main turbine generator components is desired, which **ONE** of the following operator actions is **REQUIRED** under this condition?

- _____ A. **TRIP** Breakers CM and CF using COP H11-P804 control switches.
- _____ B. **TRIP** the Generator Field Breaker using COP H11-P804 control switch.
- _____ C. **TRIP** Breakers CM and CF using **LOCAL** Emergency Trip pushbuttons.
- _____ D. **TRIP** the Turbine Generator by **ARMING AND DEPRESSING** the Turbine Trip pushbutton on COP H11-P804.

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QUESTION 23

Following a Loss of Offsite Power, the grid has been restored, conditions are as follows:

- EDG 11 is supplying ESF Bus 64B by way of EDG Bus 11EA and ESF-EDG Bus Tie Breaker B8.
- Synchroscope Switch for ESF Bus 64B Normal Feeder Breaker B6 is ON.
- ALL conditions are met for paralleling the EDG with Offsite Power.

When the B6 Breaker is **CLOSED**, the operating mode of EDG 11 will shift to the _____(1)_____ mode.

Following breaker closure, the EDG 11 Governor must be immediately adjusted to **PREVENT** a(n) _____(2)_____ condition.

- _____ A. (1) Speed Droop
 (2) overload
- _____ B. (1) Speed Droop
 (2) reverse power
- _____ C. (1) Isochronous
 (2) overload
- _____ D. (1) Isochronous
 (2) reverse power

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QUESTION 24

Which **ONE** of the following Air Compressors will **DIRECTLY TRIP** due to a Low Cooling Water Flow signal? (**NOT** a High Temperature signal.)

- _____ A. D001, Control Air Compressor
- _____ B. D002, Control Air Compressor
- _____ C. D001, East Station Air Compressor
- _____ D. D002, Center Station Air Compressor

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QUESTION 25

Interruptible Air System (IAS) Air Header Pressure supplied to the RBCCW Temperature Control Valve and Differential Pressure Control Valve is **LOWERING** due to an Air Header leak causing RBCCW Air Operated Valves to move towards their **FAIL** position.

How will Non Interruptible Air System (NIAS) Aftercooler Air Temperature be affected by this condition?

Aftercooler Air Temperature will:

- _____ A. **RISE** due to Differential Pressure Control Valve failing **SHUT**.
- _____ B. **LOWER** due to Differential Pressure Control Valve failing **OPEN**.
- _____ C. **RISE** due to RBCCW Temperature Control Valve failing **SHUT**.
- _____ D. **LOWER** due RBCCW Temperature Control Valve failing **OPEN**.

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QUESTION 26

With the plant operating at 100% power, when the following occurs:

- 9D10, DIV 1 480 V ESS BUS 72C BKR TRIPPED, alarms.
- CMC Switch for BUS 64C POS C11, 4160V FEED TO BUS 72C, indicates **TRIPPED**.

Given these indications, which **ONE** of the following correctly describes the impact on the Reactor Building Closed Cooling Water (RBCCW) Pumps?

- _____ A. **ONLY** P4200-C001, North RBCCW Pump, has lost power.
- _____ B. **ONLY** P4200-C003, South RBCCW Pump, has lost power.
- _____ C. **BOTH** P4200-C001 **AND** P4200-C002, North and Center RBCCW Pumps, have lost power.
- _____ D. **BOTH** P4200-C003 **AND** P4200-C002, South and Center RBCCW Pumps, have lost power.

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QUESTION 27

The reactor is at 5% power during a plant startup. While a control rod is being withdrawn, Rod Select Power is **LOST**.

Which **ONE** of the following describes the affect of this loss?

When Rod Select Power is **LOST**, the control rod is de-selected, and rod motion will:

- _____ A. **STOP**, the control rod may eventually settle due to leakage but **NO** settle function will occur.
- _____ B. **STOP**, the control rod settles to the next notch as the Settle Bus is automatically energized for 4.4 seconds.
- _____ C. **CONTINUE UNTIL** the Rod Movement Control Switch is released; the control rod settles to the next notch as the Settle Bus is automatically energized for 4.4 seconds.
- _____ D. **CONTINUE ONLY** if the Rod Out Notch Override Switch is positioned to Emergency In; the control rod may eventually settle due to leakage but **NO** settle function will occur.

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QUESTION 28

Following a transient, the following conditions exist:

- RPV Water Level is 92 inches.
- Reactor Pressure is 1000 psig.
- Blowdown Mode of RWCU is being used as an Alternate Pressure Control System per EOP-1 RPV Control.
- Pressure on the Blowdown Line between RWCU and the Main Condenser is **RISING**.

Which **ONE** of the following describes the **FIRST AUTOMATIC** response of RWCU valves to this condition?

- _____ A. **BEFORE** piping failure occurs, the G3300-F033, RWCU Blowdown FCV will automatically close due to **LOW** Upstream Pressure.
- _____ B. **BEFORE** piping failure occurs, the G3300-F033, RWCU Blowdown FCV will automatically close due to **HIGH** Downstream Pressure.
- _____ C. **AFTER** piping failure occurs, G3352-F001 and G3352-F004, RWCU Containment Isolation Valves will automatically close due to **HIGH** Differential Flow.
- _____ D. **AFTER** piping failure occurs, G3352-F001 and G3352-F004, RWCU Containment Isolation Valves will automatically close due to **HIGH** Area Temperature.

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QUESTION 29

The plant was operating at rated power when a manual reactor scram was inserted. The following conditions exist:

- **ALL** control rods have fully inserted.
- The Reactor Mode Switch has been placed in **SHUTDOWN**.
- The scram has **NOT** been reset.

What are the **MINIMUM** actions necessary to reset the Control Rod Drift indications on the Full Core Display (vertical section of panel H11-P603)?

(NOTE: The choices are arranged in MINIMUM to MAXIMUM order.)

- _____ A. **MOMENTARILY** rotate ROD DRIFT ALARM Switch to RESET.
- _____ B. **RESET** the reactor scram. After Control Rods have settled at position 00, **MOMENTARILY** rotate ROD DRIFT ALARM Switch to RESET.
- _____ C. **RESET** the reactor scram. **SELECT** each Control Rod with a drift alarm. After Control Rod has settled at position 00, **MOMENTARILY** rotate ROD DRIFT ALARM Switch to RESET. **REPEAT** for each Control Rod with a drift alarm.
- _____ D. **SELECT** each Control Rod with a drift alarm. **MOMENTARILY** place ROD MOVEMENT CONTROL Switch to OUT NOTCH. After Control Rod has settled at position 00, **MOMENTARILY** rotate ROD DRIFT ALARM Switch to RESET. **REPEAT** for each Control Rod with a drift alarm.

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QUESTION 30

Traversing In-core Probe (TIP) Channel A is **INSERTED INTO THE CORE** for calibration of Local Power Range Monitors (LPRMs). A **TRIP** of **ONE** Reactor Feed Pump occurs and RPV Water Level lowers to 160 inches before recovering to 195 inches.

Which of the following describes the **AUTOMATIC** TIP response?

- _____ A. C51F001A, TIP Channel A Shear Valve **FIRES, ISOLATING** the drive mechanism.
- _____ B. The **INSERTED** TIP detector **WITHDRAWS** into the shield chamber, **AND** C51F002A, TIP Channel A Ball Valve, **CLOSES**.
- _____ C. The **INSERTED** TIP detector **WITHDRAWS AND STOPS** outboard of the Indexer, **AND** C51F002A, TIP Channel A Ball Valve, **CLOSES**.
- _____ D. The TIP drive **CONTINUES TO INSERT** the detector to the Core Top Limit **AND COMPLETES** the TIP trace. The detector then **WITHDRAWS** into the shield chamber **AND** C51F002A, TIP Channel A Ball Valve, **CLOSES**

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QUESTION 31

With Reactor Power at 65%, a Control Rod is being **WITHDRAWN**.
Alarm 3D109, RBM UPSCALE/INOP alarms.

Which **ONE** of the following describes the **TRIP SETPOINT** of the Rod Block Monitor **AND** the **EFFECT** of this condition at this power level?

Considering the **CURRENT** Reactor Power, the **TRIP SETPOINT** of the Rod Block Monitor is:

- _____ A. 107.2 %; a Control Rod Block **WILL** result.
- _____ B. 107.2%; a Control Rod Block **WILL NOT** result.
- _____ C. 112.2 %; a Control Rod Block **WILL** result.
- _____ D. 112.2 %; a Control Rod Block **WILL NOT** result.

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QUESTION 32

While hoisting an irradiated fuel assembly, the **SLACK CABLE** indicator energizes and the fuel assembly **FALLS** to the Top Guide. Bubbles rise to the surface of the Reactor Cavity.

Based on the **CURRENT** conditions **AND** a single instruments condition, which **ONE** of the following alarms will **ACTUATE AND INITIATE AUTOMATIC** actions which limit the release of Airborne Radioactivity?

- _____ A. 3D32, DIV I/II RB VENT EXH RADN MONITOR UPSCALE
- _____ B. 3D31, DIV I / II FP VENT EXH RADN MONITOR UPSCALE
- _____ C. 3D27, DIV I / II FP VENT EXH RADN MONITOR DNSCL / INOP
- _____ D. 3D36, DIV I/II RB VENT EXH RADN MONITOR UPSCALE TRIP

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QUESTION 33

How are RPV Water Level Instruments affected by **ISOLATING** the Reference Leg Keep Fill supply from the Control Rod Drive System?

The concern associated with **ISOLATING** the Reference Leg Keep Fill supply is that **INDICATED** RPV Water Level:

- _____ A. will be **HIGHER** than actual, due to Reference Leg Temperature **RISING**.
- _____ B. will be **HIGHER** than actual, due to Reference Leg Pressure **LOWERING**.
- _____ C. may be **INACCURATE** during depressurization due to gas accumulation in the Reference Leg.
- _____ D. may be **INACCURATE** during accident conditions due to steam displacing water from the Reference Leg.

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QUESTION 34

With the plant operating at full power, when the following occurs:

- 4D97, GENERATOR BUS COOLING TEMPERATURE HIGH alarms.
- GENERATOR BUS CLG FAN DISCHARGE PRESSURE Red Light is ON.

Which **ONE** of the following failures is **INDICATED** by these conditions?

- _____ A. 480 VAC Bus 72R has **TRIPPED**.
- _____ B. ALL TBCCW Pumps have **TRIPPED**.
- _____ C. Iso Phase Bus South Cooling Fan, S1200-C002, has **TRIPPED**.
- _____ D. TBCCW Cooling Water Valve, P43-F209 has **LOST** Instrument Air.

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QUESTION 35

With the plant in **COLD SHUTDOWN**, the following conditions exist:

- Control Rods are being exercised.
- Control Rod Drive is providing RPV Makeup.
- Reactor Water Cleanup Blowdown Valve is throttled 30%.
- RPV Water Level is 197 inches, **STABLE**.

Which **ONE** of the following describes the **EXPECTED** effect, if any, on RPV Water Level when the **LAST** operating Condenser Pump **TRIPS**?

- _____ A. RPV Water Level will **NOT CHANGE**, due to a redundant suction supply.
- _____ B. RPV Water Level will **LOWER**, due a Low Suction Pressure **TRIP** of the operating CRD Pump.
- _____ C. RPV Water Level will **LOWER THEN RISE**, due the effect of suction transfer on the operating CRD Pump.
- _____ D. RPV Water Level will **LOWER THEN RISE**, due a Low Suction Pressure **TRIP** of the operating CRD Pump followed by a Reactor Scram.

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QUESTION 36

With the plant operating at full power, the following alarms and indications exist:

- 6D21, E/W OFF GAS RECOMBINER TEMPERATURE HIGH/LOW alarms.
- The West Off Gas Recombiner is in service and is indicating 805°F on N62-R815, Off Gas Components Temperature Recorder.

Which **ONE** of the following should be performed to control Off Gas Recombiner Temperature?

- _____ A. **VERIFY** N62-F400, 18" Manifold Steam Supply TCV, is **OPEN**.
- _____ B. **VERIFY** N62-F400, 18" Manifold Steam Supply TCV, is **SHUT**.
- _____ C. **VERIFY** P73-P100, HWC Hydrogen Injection Rack is **ISOLATED**.
- _____ D. **VERIFY** N62-N013A, Thermostatic Controlled Electric Heaters, **at 600°F**.

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QUESTION 37

Which **ONE** of the following is the power source for D11-K609A, Fuel Pool (EAST) Vent Exhaust Duct Radiation Monitor?

- ☐ A. Modular Power Unit 1
- ☐ B. Modular Power Unit 3
- ☐ C. Modular Power Unit 5
- ☐ D. Reactor Protection System Div 1

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QUESTION 38

The plant is in **MODE 5** with movement of **RECENTLY** irradiated fuel in progress. Due to a damper malfunction, Reactor Building Vacuum is 0 inches water gauge.

Which **ONE** of the following actions is **REQUIRED** by Technical Specifications?

- _____ A. Suspend fuel movement **IMMEDIATELY**.
- _____ B. Restore Secondary Containment Pressure **WITHIN ONE HOUR**.
- _____ C. Start BOTH Divisions of Standby Gas Treatment System **IMMEDIATELY**.
- _____ D. Verify at least **ONE** door is closed at each Reactor Building access **WITHIN ONE HOUR**.

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QUESTION 39

Following a trip of **ONE** Reactor Recirculation Pump, why is it necessary to limit operating Recirculation Pump Speed to 75%?

- _____ A. To **PREVENT** Recirculation Pump runout due to reduced backpressure.
- _____ B. To **PREVENT** excessive vibration of Reactor Vessel internal components.
- _____ C. To **REDUCE** Reactor Power to within the Technical Specification Limit for Single Loop Operation.
- _____ D. To **REDUCE** APRM Simulated Thermal Power Trip Setpoints until the setpoints are adjusted for Single Loop Operation.

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QUESTION 40

The reactor has scrammed due to a **LOSS** of Offsite Power.
ONLY EDGs 13 & 14 have started and loaded.

What is the **SOURCE** of power to the station DC loads?

- _____ A. Div 1 Chargers are supplying Div 1 DC loads.
Div 2 Chargers are supplying Div 2 DC loads.
- _____ B. Div 1 Batteries are supplying Div 1 DC loads.
Div 2 Chargers are supplying Div 2 DC loads.
- _____ C. Div 1 Chargers are supplying Div 1 DC loads.
Div 2 Batteries are supplying Div 2 DC loads.
- _____ D. Div 1 Batteries are supplying Div 1 DC loads.
Div 2 Batteries are supplying Div 2 DC loads.

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QUESTION 41

The plant is operating at full power when the following annunciators and indications are received:

- 9D17, DIV I ESS 130 V BATTERY 2PA TROUBLE
- 9D21, DIV I EDG SEQUENCER TROUBLE
- 1D6, DIV I CSS LOGIC POWER FAILURE
- 1D8, RHR LOGIC A 125 VDC BUS POWER FAILURE
- 1D62, STM LK DET HPCI LOGIC POWER FAILURE
- Loss of valve position indications for **ALMOST** all RCIC Valves
- Loss of breaker control switch indications for **ALL** Div 1 ESF Bus breakers

Based on **THESE** alarms and indications, select the correct **DIAGNOSIS AND EFFECT**, if any, on Division I EDGs ability to mitigate a Loss of Offsite Power.

- _____ A. **ONLY** the Division I Batteries have been lost. Division I EDGs **WILL NOT START** if Offsite Power is **LOST**.
- _____ B. **ONLY** the Division I Batteries have been lost. Division I EDGs **WILL AUTO START** if Offsite Power is **LOST**.
- _____ C. **BOTH** Division I Battery Chargers **AND BOTH** Division I Batteries have been lost. Division I EDGs **WILL NOT START** if Offsite Power is **LOST**.
- _____ D. **BOTH** Division I Battery Chargers **AND BOTH** Division I Batteries have been lost. Division I EDGs **WILL AUTO START** if Offsite Power is **LOST**.

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QUESTION 42

The plant is at 35% power when the turbine trips. The reactor will _____.

- _____ A. **SCRAM AND** reactor pressure will **INCREASE** due to decay heat
- _____ B. **SCRAM AND** reactor pressure will **REMAIN CONSTANT** due to BPV operation
- _____ C. **REMAIN OPERATING AND** reactor power will **INCREASE** due to Feedwater Temperature change
- _____ D. **REMAIN OPERATING AND** reactor power will **DECREASE** due to Feedwater Temperature change

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QUESTION 43

With the plant operating at 85% power, the in-service 52 inch Manifold Pressure Transmitter fails **HIGH**.

Which **ONE** of the following describes the affect of this failure, with no operator actions?

Reactor Pressure will:

- _____ A. **RISE** until an automatic Reactor Scram occurs. Pressure will then be controlled by **MANUAL** operation of the Bypass Valves.
- _____ B. **RISE** until an automatic Reactor Scram occurs. Pressure will then be controlled by **AUTOMATIC** operation of the Bypass Valves.
- _____ C. **LOWER** until an automatic Reactor Scram occurs. Pressure will then be controlled by **AUTOMATIC** operation of the Bypass Valves.
- _____ D. **LOWER** until an automatic Reactor Scram occurs. Pressure will then be controlled by **AUTOMATIC** operation of the Safety Relief Valves.

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QUESTION 44

The Control Room (CR) has become **UNINHABITABLE**. As a result, the plant has entered 20.000.19, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM.

The transfer of certain CR controls to **OUTSIDE** the CR is needed to:

- _____ A. allow rapid re-entry into the CR.
- _____ B. preclude the effects of hot shorts.
- _____ C. continue shutdown and cooldown.
- _____ D. allow proper fire fighting response.

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QUESTION 45

Foreign material has partially covered the tube sheet at the inlet to the Stator Cooling Water Heat Exchanger.

Which **ONE** of the following describes the **AUTOMATIC** response of the system?

The Temperature Control Valve, throttling:

- _____ A. Stator Water, will reposition to permit more flow to **BYPASS** the Heat Exchanger.
- _____ B. Stator Water, will reposition to permit more flow **THROUGH** the Heat Exchanger.
- _____ C. Turbine Building Closed Cooling Water, will reposition to permit more flow to **BYPASS** the Heat Exchanger.
- _____ D. Turbine Building Closed Cooling Water, will reposition to permit more flow **THROUGH** the Heat Exchanger.

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QUESTION 46

The plant is operating at 100% power.

- 7D53, STATION AIR HEADER PRESSURE LOW, alarms.
- P50-R802, Station Air Header Pressure is 90 psig (lowering).

Which **ONE** of the following is the **FIRST REQUIRED** action per 20.129.01, “Loss of Station and / or Control Air” and the **REASON** for that action?

It is **REQUIRED** to start:

- _____ A. **ANY** available Station Air Compressors to prevent the **INBOARD** Main Steam Isolation Valves from drifting shut.
- _____ B. Div 1 **AND** Div 2 Control Air Compressors to prevent the **INBOARD** Main Steam Isolation Valves from drifting shut.
- _____ C. **ANY** available Station Air Compressors to prevent the **OUTBOARD** Main Steam Isolation Valves from drifting shut.
- _____ D. Div 1 **AND** Div 2 Control Air Compressors to prevent the **OUTBOARD** Main Steam Isolation Valves from drifting shut.

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QUESTION 47

The plant is in **MODE 4**, with the following conditions:

- RHR Pump A is operating in Shutdown Cooling Mode.
- Reactor Coolant Temperature is 175°F.
- **BOTH** Reactor Recirculation Pumps are shutdown.

Due to a leak **BETWEEN** E1150-F008, RHR SDC Outboard Isolation Valve **AND** E1150-F009, RHR SDC Inboard Suction Isolation Valve, RPV Water Level lowered to 170 inches.

Why does 20.205.01, “Loss of Shutdown Cooling”, **REQUIRE** starting a Recirculation Pump?

While aligning:

- _____ A. RHR Loop B for Shutdown Cooling operation, it is required to provide forced circulation through the core.
- _____ B. RHR Loop B for Shutdown Cooling operation, it is required to remove decay heat to prevent an inadvertent mode change.
- _____ C. Alternate Reactor Coolant Circulation and Decay Heat Removal, it is required to provide forced circulation through the core.
- _____ D. Alternate Reactor Coolant Circulation and Decay Heat Removal, it is required to remove decay heat to prevent an inadvertent mode change.

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QUESTION 48

With the plant in MODE 5, **REFUELING**.

Which **ONE** of the following is the **MINIMUM** acceptable Water Level above the Reactor Vessel Flange, **AND** the reason for that limit?

- _____ A. 20.5 feet provides adequate Iodine absorption following an accident.
- _____ B. 20.5 feet provides adequate shielding of personnel during core alterations.
- _____ C. 26.5 feet provides adequate Iodine absorption following an accident.
- _____ D. 26.5 feet provides adequate shielding of personnel during core alterations.

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QUESTION 49

Which malfunction below, were it to occur during a LOCA, would be **MOST LIKELY** to cause the Primary Containment to exceed a Design Limit?

Consider each malfunction, independently, as the **ONLY** malfunction.
Assume that **NO** operator action is taken in response to the malfunction.

- _____ A. Safety Relief Valve B2104-F013H has a break in its Tailpipe.
- _____ B. SST 65 TRIPS and Emergency Diesel Generator 13 FAILS TO START.
- _____ C. **ALL** Drywell Spray Valves FAIL TO OPEN when attempting to initiate Drywell Spray.
- _____ D. **ALL** Torus to Drywell Vacuum Breaker Check Valves FAIL TO OPEN when Drywell Spray is in operation.

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QUESTION 50

Following a Main Steam Line Break, outside of containment, **AND** an automatic reactor scram, the following conditions exist:

- **ALL** Control Rods inserted.
- Reactor Pressure is 1115 psig, **LOWERING**.
- RPV Water Level lowered to 150 inches **AND** recovered.

Which **ONE** of the following describes how Decay Heat will be removed from the reactor **WITHOUT** operator action?

- _____ A. Safety Relief Valves will **AUTOMATICALLY OPEN**.
- _____ B. Main Turbine Bypass Valves will **AUTOMATICALLY OPEN**.
- _____ C. Reactor Core Isolation Cooling (RCIC) will **AUTOMATICALLY START**.
- _____ D. Reactor Feedwater Pump Turbines will **OPERATE** on **MINIMUM FLOW**.

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QUESTION 51

Following a plant transient and a reactor scram, the following conditions exist:

- RHR Pump A is injecting with **ONE** Pump at 13,500 gpm.
- Div 1 Core Spray is injecting with **TWO** Pumps at 7,750 gpm.
- Torus Pressure is 5.5 psig.
- Torus Level is -60 inches.
- Torus Temperature is 205°F.
- RPV Pressure is 85 psig (steady).
- RPV Water Level is -10 inches (rising).

The Nuclear Operator in the reactor building calls to report the RHR and Core Spray Pumps are rattling.

To maintain long term injection capability, which of the following is the **MAXIMUM** injection permissible?

- _____ A. Core Spray Div 1 Flow – 7,000 gpm
RHR Flow - 11,000 gpm
- _____ B. Core Spray Div 1 Flow - 7,000 gpm
RHR Flow - 12,500 gpm
- _____ C. Core Spray Div 1 Flow - 8,000 gpm
RHR Flow - 11,000 gpm
- _____ D. Core Spray Div 1 Flow – 8,000 gpm
RHR Flow - 12,500 gpm

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QUESTION 52

E2101-C001A, Div 1 Core Spray Pump is being operated in Full Flow Test, when a transient occurs resulting in the following plant conditions:

- Drywell Pressure is 1.48 psig.
- RPV Water Level is 30 inches.
- Reactor Pressure is 520 psig.

Which **ONE** of the following describes the status of the **OTHER** Division 1 Core Spray Pump, E2101-C001C?

Core Spray Pump C:

- _____ A. **REMAINS** in standby, because it has **NOT** received a start signal.
- _____ B. has **STARTED** and **IS NOT** injecting because a common Full Flow Test Valve is **OPEN**.
- _____ C. has **STARTED** and **IS NOT** injecting because a permissive condition has **NOT** been satisfied.
- _____ D. has **STARTED** and **IS INJECTING** because **ALL** permissive conditions **HAVE BEEN** satisfied.

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QUESTION 53

The plant is in an emergency condition and the following Primary Containment parameters exist:

- Torus Water Level is 0 inches.
- Drywell Temperature is 275°F.
- Drywell Pressure is 4 psig.
- Torus Pressure is 3 psig.

NOTE: See attached reference.

If Drywell Sprays were **INITIATED**, which **ONE** of the following will occur?

- _____ A. The Torus to Drywell Vacuum Breakers will **NOT** operate due to low Differential Pressure.
- _____ B. Convective Cooling **WILL RESULT** in Nitrogen being drawn into the Drywell by operation of the Torus to Drywell Vacuum Breakers.
- _____ C. The Torus to Drywell Vacuum Breakers capacity **WILL BE EXCEEDED** and damage to the Primary Containment Vent system will occur.
- _____ D. Evaporative Cooling **WILL RESULT** in Oxygen being drawn in to the Torus by operation of the Reactor Building to Torus Vacuum Breakers.

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QUESTION 54

RCIC is being used to control RPV Water Level with its suction aligned to the Torus when a leak in the Torus occurs.

Which **ONE** of the following will occur **FIRST** as Torus Level continues to lower?

- _____ A. RCIC will **TRIP** due to Low Suction Pressure.
- _____ B. RCIC will **TRIP** due to Low Cooling Water Flow.
- _____ C. RCIC suction will **AUTO TRANSFER** to the CST due to Low Suction Pressure.
- _____ D. RCIC suction will **AUTO TRANSFER** to the CST due to Low Torus Water Level.

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QUESTION 55

Per the Emergency Operating Procedure Bases, what is the significance of Torus Water Temperature reaching 120°F while Reactor Power is 10 % ?

NOTE: See attached reference

- _____ A. If Emergency Depressurization is conducted at this point, the Heat Capacity Limit will **NOT** be exceeded.
- _____ B. If Torus Water Temperature continues to increase **AND** is being used as the injection source, Reactor Power will **LOWER**.
- _____ C. If Standby Liquid is injected at this point, Hot Shutdown Boron Weight will be injected **BEFORE** the Heat Capacity Limit is reached.
- _____ D. If **ALL** injection to the RPV is Terminated and Prevented at this point, RPV Water Level will remain **ABOVE** TAF when Reactor Power reaches 3%.

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QUESTION 56

Why does 29.100.01, Radioactivity Release Control, Sheet 5, permit restarting isolated HVAC systems outside Secondary Containment?

Restarting HVAC Systems:

- _____ A. provides **DILUTION** to lower the radioactivity concentration being released.
- _____ B. ensures **ACCESSIBILITY** is maintained inside the Secondary Containment.
- _____ C. provides **FILTRATION AND ADSORPTION** of radioactivity and an elevated release path.
- _____ D. preserves building accessibility **AND** discharges radioactivity through an elevated, monitored release point.

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QUESTION 57

Following a Loss of Offsite Power, a fire is in progress.
RCIC has started **WITHOUT** an initiation signal.

Which **ONE** of the following actions is **REQUIRED** and **WHY**?

Complete the plant shutdown using:

- _____ A. RCIC; because **NO** operator action is required to achieve injection.
- _____ B. Standby Feedwater; because RCIC **CANNOT** be relied upon as a makeup source and is required to be disabled.
- _____ C. HPCI; because RCIC **CANNOT** be relied upon as a makeup source and is required to remain running as a backup source.
- _____ D. HPCI; because RCIC **AND** Standby Feedwater **CANNOT** be relied upon as a makeup source and are required to remain running as a backup source.

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QUESTION 58

Following a Grid Disturbance, conditions are as follows:

- Generator Power is 1160 Mwe.
- Reactive Power is 360 MVAR (LAG).
- Generator Hydrogen Pressure is 75 psig.

The System Dispatcher has requested additional reactive load support to maintain grid voltage.

Considering the Enrico Fermi Generator 2 Capability Curve, which **ONE** of the following actions is **REQUIRED**?

- _____ A. **RAISE** Recirculation Flow to increase the Reactive Load on the Generator.
- _____ B. **LOWER** Recirculation Flow, because Generator Load limits have been **EXCEEDED**.
- _____ C. **MANUALLY RAISE** the Voltage Regulator setting, to increase the Reactive Load on the Generator.
- _____ D. **MANUALLY LOWER** the Voltage Regulator setting, because Reactive Load limits have been **EXCEEDED**.

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QUESTION 59

The plant is at 100% when a Main Turbine Trip occurred.

Which **ONE** of the following describes the plant conditions that will **CAUSE** a Main Turbine Trip **AND** the **BASIS** for that trip?

The Main Turbine has tripped due to:

- _____ A. **TWO** of the Narrow Range Level instruments having a level of 214". This will prevent the erosion of the Main Turbine Blades.
- _____ B. the **SELECTED** Narrow Range Level instrument having a level of 214". This will prevent the erosion of the Main Turbine Blades.
- _____ C. **TWO** of the Narrow Range Level instruments having a level of 214". This will prevent the erosion of the Main Steam piping and Main Control Valve seats.
- _____ D. the **SELECTED** Narrow Range Level instrument having a level of 214". This will prevent the erosion of the Main Steam piping and Main Control Valve seats.

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QUESTION 60

With the plant operating at full power, the following conditions exist:

- A Nitrogen Regulator failure caused Drywell Pressure to rise to 1.75 psig.
- **NO** RPS actuation occurred.

Assuming **ONLY** these conditions, which **ONE** of the following describes the resulting trend of Drywell Temperature?

Drywell Temperature will:

- _____ A. **REMAIN CONSTANT** because **ALL** Drywell Cooling Fans are unaffected.
- _____ B. **RISE** due to the Two Speed Drywell Cooling Fans shifting from **FAST** to **OFF**.
- _____ C. **RISE** due to the Two Speed Drywell Cooling Fans shifting from **FAST** to **SLOW** speed.
- _____ D. **LOWER** due to the Two Speed Drywell Cooling Fans shifting from **SLOW** to **FAST** speed.

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QUESTION 61

The plant is operating at full power and the following conditions exist:

- 8D41, Div 1 DW Temperature High alarms.
- 14 DW Cooling Fans are operating.
- T47-R803A, point 16 indicates $> 185^{\circ}\text{F}$.
- P42-K803, RBCCW to TCV P42-F400 CTRLR, valve position indicates 100%.
- Lake Temperature is 71°F .

The **AVERAGE** Drywell Temperature has risen from 132°F to 135°F during the last 8 hours.

Which **ONE** of the following actions is appropriate?

- _____ A. Place RBCCW Supplemental Cooling in service.
- _____ B. **SHIFT** DW Cooling Fans 1, 2, 3, and 4 to **LOW** speed per 23.415, Drywell Cooling System.
- _____ C. Operate **ALL** available Drywell Cooling per 29.100.01, Sheet 2, Primary Containment Control.
- _____ D. Manually **INITIATE** EECW and EESW Systems per 20.127.01, Loss of Reactor Building Closed Cooling Water System.

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QUESTION 62

The reactor is in **MODE 2**, with Reactor Pressure at 800 psig, when the following occurs:

- The operating CRD pump **TRIPS**.
- 3D10, CRD ACCUMULATOR TROUBLE, alarms for Control Rod 30-27.
- Control Rod 30-27 is at position 48.

What action is **REQUIRED** in accordance with procedure 20.106.01, CRD Hydraulic System Failure?

- _____ A. **PLACE** the Mode Switch in **SHUTDOWN**.

- _____ B. **IMMEDIATELY START** the standby CRD pump.

- _____ C. Within 20 minutes, **CLOSE** C1100-F034, CRD Charging Water Header Isolation Valve.

- _____ D. Within 20 minutes, **START** at least one CRD pump **AND FULLY INSERT** Control Rod 30-27.

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QUESTION 63

Which **ONE** of the following is the **BASIS** for the Main Steam Tunnel **HIGH** Temperature Isolation?

The Main Steam Tunnel High Temperature Isolation will:

- _____ A. **LIMIT** the escape of radioactivity from the MSL Tunnel to the Reactor Building HVAC system.
- _____ B. **PREVENT** exceeding the Environmental Qualification temperature limits on the MSIV control solenoids.
- _____ C. **PROTECT** the integrity of the Secondary Containment **AND** ensure the continued operability of safe shutdown equipment.
- _____ D. **MINIMIZE** radioactive releases to the environment **AND** limit the inventory loss from the reactor under all accident conditions.

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QUESTION 64

The plant is operating at 100% power, when the following alarms and indications occur:

- 16D6, REAC/AUX BLDG FIRST FLOOR HIGH RADN alarms.
- H11-P816 panel indicates an **ALARM** on Channel 12, First Floor RB Neutron Monitoring Equipment Room

Which **ONE** of the following plant **CONDITIONS** would be **CONSISTENT** with **THESE INDICATIONS**?

- _____ A. A steam leak has developed in RCIC piping.
- _____ B. Spent Fuel Handling operations are in progress.
- _____ C. Traversing In-core Probe movement is in progress.
- _____ D. SRM detectors are being withdrawn for post maintenance testing.

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QUESTION 65

29.100.01, Sheet 5, Secondary Containment and Rad Release, directs operating available sump pumps whenever Secondary Containment area or sump levels exceed their Max Normal Operating levels.

What is the **BASIS** for this action?

This action is **BASED** on:

- _____ A. **MINIMIZING** the spread of contamination within the Secondary Containment.
- _____ B. **MAINTAINING** water levels below the point at which equipment required for safe shutdown will fail.
- _____ C. **PREVENTING** the uncontrolled release of liquid radioactive effluents from the Secondary Containment.
- _____ D. **CONTAINING** leakage from a primary system within systems design for storage of radioactive liquids.

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QUESTION 66

During a Refuel Outage, with the Reactor Mode Switch in **REFUEL**, the following conditions exist:

- 3D113, CONTROL ROD WITHDRAWAL BLOCK alarms.
- **ONE** Control Rod is **SELECTED**.
- **ALL** Control Rods are **INSERTED** to position 00.

Which **ONE** of the following conditions caused the alarm?

The Refuel Bridge is:

- _____ A. over the core with the Grapple FULL UP and the Trolley Hoist is **NOT** LOADED.
- _____ B. over the core with the Grapple FULL DOWN and the Trolley Hoist is **NOT** LOADED.
- _____ C. **NOT** over the core with the Grapple FULL UP and the Trolley Hoist is LOADED.
- _____ D. **NOT** over the core with the Grapple FULL DOWN and the Trolley Hoist is LOADED.

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QUESTION 67

After a **ONE WEEK VACATION**, a Nuclear Station Operator is scheduled to work the following schedule:

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
OFF	12 hrs	12 hrs	12 hrs	12 hrs	8 hrs	OFF

Per MGA 17, Working Hour Limits, which **ONE** of the following is the **ADDITIONAL** hours this person can be scheduled to work **WITHOUT** exceeding any administrative limits?

- _____ A. 4 hours on Tuesday
- _____ B. 8 hours on Thursday
- _____ C. 10 hours on Friday
- _____ D. 12 hours on Sunday

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QUESTION 68

The plant is operating at 50% power. What is the MAXIMUM amount of TOTAL Reactor Coolant System Leakage allowed for continued plant operation?

_____ A. 2 gpm

_____ B. 5 gpm

_____ C. 25 gpm

_____ D. 50 gpm

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QUESTION 69

Which **ONE** of the following is required when a visible break **CANNOT** be used to disconnect a piece of equipment from its power supply?

- _____ A. Independent verification of the danger tag.
- _____ B. An approved grounding device installed on the load side.
- _____ C. A safety observer is stationed for all work performed on the equipment.
- _____ D. An approved blocking device and a method for determining that power is removed.

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QUESTION 70

With the plant operating at 80% power, at 0800 on February 8, 2008. EDG 11 is discovered INOPERABLE.

Which **ONE** of the following describes **LATEST TIME** that SR 3.8.1.1, Verification of Offsite Circuits, must be completed, after the EDG is initially discovered inoperable, **WITHOUT** entering into a condition which requires a unit shutdown?

- _____ A. 0900 on February 8, 2008
- _____ B. 1600 on February 8, 2008
- _____ C. 1800 on February 8, 2008
- _____ D. 0800 on February 9, 2008

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QUESTION 71

With core alterations in progress, a fuel assembly contacts the core top guide, resulting in 16D1, RB REFUELING AREA FIFTH FLOOR HIGH RADN alarm.

Indications are as follows:

- **ARM 15**, RB5 Spent Fuel Pool Area Radiation Monitor indicates 25 mr/hr, **RISING**.
- **ARM 17**, RB5 Refuel Floor Lo Range Area Radiation Monitor indicates 30 mr/hr, **RISING**.

Which **ONE** of the following is the **FIRST** Control Room action required?

- _____ A. Sound the Plant Area alarm.
- _____ B. Verify a complete PCIS Group 3 Isolation.
- _____ C. Verify the Standby Gas Treatment System starts.
- _____ D. Shutdown the Emergency Makeup Fan of the non-operating CCHVAC division.

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QUESTION 72

Which **ONE** of the following conditions will cause the Division 1 AXM to **AUTOMATICALLY SHIFT** from **STANDBY** to **OPERATE**?

- _____ A. Automatic start of Division 1 SGTS.
- _____ B. Automatic shift of CCHVAC to the Recirc Mode.
- _____ C. High Radiation Trip of Div 1 or 2 Containment High Range Radiation Monitors.
- _____ D. High Radiation Alarm on the Div 1 SGTS SPING Medium Range Noble Gas Channel.

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QUESTION 73

With the plant operating at 100% power, the following conditions exist:

- Drywell Pressure increased to 1.75 psig.
- **NO** actuations occurred.

With these conditions, which **ONE** of the following actions is **REQUIRED**?

It is **REQUIRED** to:

- _____ A. Place the Reactor Mode Switch in SHUTDOWN **AND** enter Sheet 1, RPV Control **ONLY**.
- _____ B. Initiate Standby Liquid Control **AND** enter Sheet 1A, RPV Control- ATWS **AND** Sheet 2, Primary Containment Control.
- _____ C. Place the Reactor Mode Switch in SHUTDOWN **AND** enter Sheet 1, RPV Control **AND** Sheet 2, Primary Containment Control.
- _____ D. Place the Reactor Mode Switch in SHUTDOWN **AND** enter Sheet 1A, RPV Control- ATWS **AND** Sheet 2, Primary Containment Control.

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QUESTION 74

Which **ONE** of the following is an **IMMEDIATE** Action for a **CONFIRMED** fire in accordance with 20.000.22, Plant Fires?

- _____ A. Identify the type or class of fire.
- _____ B. Announce the fire alarm over the Hi-Com system.
- _____ C. Dispatch an operator to verify the magnitude and location of the fire.
- _____ D. Establish communications between the Control Room and the Fire Brigade.

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QUESTION 75

Per EP-290, Emergency Notifications, when the State Emergency Operations Center (SEOC) is functional, how are Emergency Communications affected?

After the State Emergency Operations Center is **FUNCTIONAL**, the Fermi 2 Communicator is:

- _____ A. **NO LONGER** required to make notifications to Canada.
- _____ B. **NO LONGER** required to make notifications to Monroe and Wayne counties.
- _____ C. **NO LONGER** required to make notifications to the Nuclear Regulatory Commission.
- _____ D. **STILL REQUIRED** to notify Monroe and Wayne counties, the State of Michigan, and Canada.

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QUESTION 76

With the plant in **MODE 4**, Cold Shutdown, which **ONE** of the following describes the **MINIMUM** DC Sources **REQUIRED OPERABLE** and the reason for that requirement?

- _____ A. **ONE** subsystem consisting of **TWO** 130 VDC Batteries **AND TWO** Chargers. This will provide power necessary to mitigate a Design Basis Loss of Coolant Accident.
- _____ B. **ONE** subsystem consisting of **TWO** 130 VDC Batteries **AND TWO** Chargers. This will provide power necessary to mitigate an inadvertent Reactor Vessel Drindown.
- _____ C. **TWO** subsystems consisting of **TWO** 130 VDC Batteries **AND TWO** Chargers. This will provide power necessary to mitigate a Design Basis Loss of Coolant Accident.
- _____ D. **TWO** subsystems consisting of **TWO** 130 VDC Batteries **AND TWO** Chargers. This will provide power necessary to mitigate an inadvertent Reactor Vessel Drindown.

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QUESTION 77

- The plant was operating at full power when a fire in the Cable Spreading Room (Zone 11) occurred.
- A Loss of Offsite Power has occurred resulting in an EOP entry condition due to RPV Water Level.
- This transient has been complicated by the spurious operation of numerous components and smoke in the control room.

Which **ONE** of the following procedures contains measures which will **MOST EFFECTIVELY** mitigate the effects of **SPURIOUS** operation of components?

- _____ A. 29.100.01, Sheet 1, RPV CONTROL
- _____ B. 20.300.OFFSITE, LOSS OF OFFSITE POWER
- _____ C. 20.000.19, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM
- _____ D. 20.000.18, SHUTDOWN FROM THE DEDICATED SHUTDOWN PANEL

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QUESTION 78

During an accident condition **AFTER** Emergency RPV Depressurization, the following conditions exist:

- RPV Pressure is 50 psig.
- Drywell Temperature is 250°F, **RISING**.
- Drywell Pressure is 42 psig, **RISING**.
- Torus Pressure is 42.5 psig, **RISING**.
- Primary Containment Water Level is 580 ft, **RISING**.

Which **ONE** of the following actions is **REQUIRED**?

- _____ A. **INITIATE** Drywell Sprays per 29.100.01 Sheet 2, PRIMARY CONTAINMENT CONTROL.
- _____ B. **VENT** the Drywell **IRRESPECTIVE** of offsite radioactivity release limits per 29.ESP.07 Section 3.0.
- _____ C. **VENT** the Torus **REMAINING WITHIN** offsite radioactivity release limits per 29.ESP.07 Section 2.0.
- _____ D. **EXIT** 29.100.01 Sheet 2, PRIMARY CONTAINMENT CONTROL **AND** enter the RPV Flooding Procedure.

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QUESTION 79

An ATWS is in progress following a condenser boot rupture, with plant conditions as follows:

- Reactor Power is 8%.
- RPV Water Level is 150 inches.
- APRM DOWNSCALE Lights are **NOT** lit.
- Suppression Pool Temperature is 118°F.
- Low-Low Set is controlling reactor pressure at 1020 psig.

If the above parameters remain **CONSTANT**, which **ONE** of the following is the **HIGHEST** RPV Water Level that may be **MAINTAINED**?

- _____ A. +214 inches
- _____ B. +114 inches
- _____ C. 0 inches
- _____ D. -25 (minus 25) inches

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QUESTION 80

Following a transient, the following conditions exist:

- **ONLY** HPCI and RCIC are injecting.
- RPV Water Level is 16 inches, **LOWERING** 2 inches per minute.
- Reactor Pressure is 1000 psig.
- **ALL** Control Rods are fully inserted.
- Torus Water Level is -38 inches, **LOWERING** 2 inches per minute.

Which **ONE** of the following actions should be ordered **FIRST**?

- _____ A. **DEPRESSURIZE** the reactor by opening Turbine Bypass Valves.
- _____ B. **DEPRESSURIZE** the reactor by opening **FIVE** Safety Relief Valves.
- _____ C. **SHUTDOWN** the HPCI Turbine to prevent direct pressurization of the Torus.
- _____ D. **PREVENT** Core Spray **AND** LPCI Pump Injection, because injection is **NOT** needed.

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QUESTION 81

While operating the reactor in **MODE 1**, a restriction of cooling water flow through a fuel bundle causes fuel clad overheating and fission product release into the reactor coolant. The following plant conditions exist:

- Reactor Power is 18%.
- Reactor Pressure is 940 psig.
- RPV Water Level is 100 inches.
- Main Steam Line B Inboard **AND** Outboard MSIVs have failed **OPEN**.
- Main Turbine is **TRIPPED**.
- Site Boundary Release corresponds to 4.90 REM to an Adult's Thyroid **AND** is **RISING**.

Given these conditions, which **ONE** of the following actions is **REQUIRED**?

- _____ A. Use the Safety Relief Valves to perform a reactor cool down at **LESS THAN** a 90°F/hr rate.
- _____ B. Use HPCI and RCIC in the Test Mode to perform a reactor cool down at **LESS THAN** a 90°F/hr rate.
- _____ C. Use the Safety Relief Valves to perform a reactor cool down at **GREATER THAN** a 90°F/hr rate.
- _____ D. Use Main Turbine Bypass Valves to perform a reactor cool down at **GREATER THAN** a 90°F/hr rate.

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QUESTION 82

At time 1200, a fire was reported in Bus 64B, position B10, the power supply breaker for E2101-C001A Division 1 Core Spray Pump A. At time 1215, the Fire Brigade has requested that the Bus be de-energized prior to attempting extinguishment.

Which **ONE** of the following Emergency Action Levels (EAL) is **REQUIRED**, and what is the **CRITERIA** for that EAL?

It is **REQUIRED** to **DECLARE** an:

- _____ A. **ALERT**, due a fire inside the PROTECTED AREA for 15 minutes.
- _____ B. **ALERT**, due to a fire involving SAFE SHUTDOWN EQUIPMENT.
- _____ C. **UNUSUAL EVENT**, due a fire inside the PROTECTED AREA for 15 minutes.
- _____ D. **UNUSUAL EVENT**, due to a fire involving SAFE SHUTDOWN EQUIPMENT.

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QUESTION 83

The plant is operating at full power. RPV Water Level is 196 inches. Flow Input from the B Feedwater Line has **FAILED LOW**.

Which **ONE** of the conditions will **RESULT**, and what action will be **REQUIRED**?

ACTUAL RPV Water Level **WILL**:

- _____ A. **LOWER** until a Reactor Scram occurs. It is required to enter 29.100.01 Sheet 1, RPV Control and restore RPV Water Level.
- _____ B. **RISE** until **BOTH** Reactor Feedwater Pump Turbines **TRIP**. It is required to enter 23.107.01, Loss of Feedwater or Feedwater Control.
- _____ C. **STABILIZE** at a **HIGHER LEVEL**. It is required to restore RPV Water Level **MANUALLY** per 23.107.01, Loss of Feedwater or Feedwater Control.
- _____ D. **REMAIN UNCHANGED** in Forced Single Element control. It is required to place the Level Control Mode Switch in 1 ELEM per 23.107, Reactor Feedwater and Condensate Systems.

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QUESTION 84

Fermi-2 is starting up following a Refueling Outage. HPCI **TESTING** is in progress.

- Reactor Power is 16%.
- Drywell Pressure is 1.25 psig.
- Torus Pressure is 0.10 psig.
- Torus Water Average Temperature is 98°F.
- Drywell Average Air Temperature is 155°F.

Based upon the **ABOVE** conditions, which parameter listed **BELOW REQUIRES** a Technical Specification Action Statement to be **ENTERED**?

- _____ A. Torus Pressure
- _____ B. Drywell Pressure
- _____ C. Drywell Temperature
- _____ D. Torus Water Temperature

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QUESTION 85

During the execution of 29.100.01 Sheet 5, Secondary Containment and Radiation Release, the operability of equipment required to perform a safe shutdown is assured by which **ONE** of the following?

IF the Radiation Level(s) is(are) increasing in the Reactor Building SE Quad, Emergency Depressurization is **REQUIRED** when the:

- _____ A. Radiation Level in any **ONE AREA EXCEEDS** the **MAX NORMAL** value.
- _____ B. Radiation Levels in **MORE THAN ONE AREA EXCEED** the **MAX SAFE** value.
- _____ C. Radiation Levels in **MORE THAN ONE AREA EXCEED** the **MAX NORMAL** value.
- _____ D. Radiation Level in any **ONE AREA** is **CONFIRMED** by a **MAX SAFE** Area Temperature **OR MAX SAFE** Water Level in the **SAME AREA**.

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QUESTION 86

The plant is in **MODE 2, STARTUP**, following a Refueling Outage. Engineering has determined that **ALL** the MSIVs have had unqualified valve control manifolds installed during outage maintenance which will cause **LONGER** stroke times over the cycle.

Which **ONE** of the following is the **MINIMUM** Required Action **AND** the **REASON** for that action, according to Technical Specifications?

- _____ A. **NO ACTIONS** are required, because Primary Containment Isolation capability is **NOT REQUIRED OPERABLE** in **MODE 2**.
- _____ B. It is **REQUIRED** to **SHUT ONLY ONE** MSIV in each Main Steam Line. The basis for this action is to limit the severity of the **MAXIMUM** Reactor Pressure spike following a spurious MSIV closure at power.
- _____ C. It is **REQUIRED** to **SHUT ONLY ONE** MSIV in **EACH** Main Steam Line. The basis for this action is to limit the **MAXIMUM** Radiological Release following a Design Basis Accident.
- _____ D. It is **REQUIRED** to **SHUT BOTH** MSIVs in **ALL** Main Steam Lines. The basis for this action is to limit the **MAXIMUM** Radiological Release following a Design Basis Accident.

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QUESTION 87

Following a Loss of Offsite Power, the following conditions occur at the listed time:

- 12:00 Reactor Scram occurred, **ALL** Control Rods are inserted.
- 12:01 **ONLY** EDG 14 has started and loaded.
- 12:05 Drywell Pressure is 1.0 psig and **STABLE**.
- 12:10 RPV Water Level is 64 inches, **LOWERING** 4 inches per minute.

Given these conditions, which **ONE** of the following describes the **RESPONSE** of the Automatic Depressurization System (ADS), **AND** the operator **ACTIONS** which should be ordered?

ADS WILL OPEN Safety Relief Valves at:

- _____ A. 12:20. It is required to **INHIBIT ADS PRIOR** to automatic actuation **AND MANUALLY** Emergency Depressurize the reactor at a specified RPV Water Level.
- _____ B. 12:27. It is required to **INHIBIT ADS PRIOR** to automatic actuation **AND MANUALLY** Emergency Depressurize the reactor at a specified RPV Water Level.
- _____ C. 12:20. It is required to **VERIFY** ADS automatically **ACTUATES AND MAXIMIZE** Injection with Low Pressure ECCS Pumps and restore RPV Water Level to a specified Water Level Band.
- _____ D. 12:27. It is required to **VERIFY** ADS automatically **ACTUATES AND MAXIMIZE** Injection with Low Pressure ECCS Pumps and restore RPV Water Level to a specified Water Level Band.

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QUESTION 88

A reactor startup is in progress using GOP 22.000.02, PLANT STARTUP TO 25% POWER. The following plant conditions exist:

- Power has risen on Intermediate Range Monitor Channel A from mid range on Range 3 to mid range on Range 4 in 40 seconds.
- **NO** Control Rod motion is in progress.
- 3D63, IRM UPSCALE has alarmed on IRMs which are still on Range 3.

Which **ONE** of the following actions **SHOULD** be directed?

- _____ A. Up-range the remaining IRMs to clear the ROD BLOCK so rod withdrawal can resume.
- _____ B. Up-range remaining IRMs to Range 4 **AND** allow the power rise to continue at the current rate.
- _____ C. Insert rods **AND** lower power below the ROD BLOCK setpoint for the remaining IRM Channels.
- _____ D. Up-range remaining IRMs to Range 4, **THEN IMMEDIATELY** Insert rods, to slow down the power rise.

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QUESTION 89

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

- 4D91, ELECTRIC GOVERNOR TROUBLE Alarms.
- Generator Power is 1150 Mwe, **RISING**.
- Reactor Pressure is 1005 psig, **LOWERING**.

With **THESE** conditions, Average Power Range Monitors **WILL BE**:

- _____ A. **RISING**; it is required to **MANUALLY SCRAM** the reactor to avoid an APRM Simulated Thermal Power scram.
- _____ B. **RISING**; it is required to **LOWER BOTH** RR MG Set Speeds to avoid an APRM Simulated Thermal Power scram.
- _____ C. **LOWERING**; it is required to **VERIFY** a successful transfer to the standby Pressure Regulator **AND RAISE** Pressure Setpoint by 3.5 psig.
- _____ D. **LOWERING**; it is required to **PLACE** the Reactor Mode Switch in SHUTDOWN to avoid a Main Steam Isolation Valve Closure scram.

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QUESTION 90

Following a Loss of Coolant Accident (LOCA) with an electrical plant malfunction, plant conditions are as follows:

- RPV Water Level is 35 inches, **LOWERING**.
- Reactor Pressure is 250 psig, **LOWERING**.
- 345 kV Mat Power Indicating Lights are **OFF**.
- EDG 13 is **LOADED** carrying Bus 65E.
- Bus 65F and Bus 14ED Power Indicating Lights are **OFF**.
- Bus 72F and Bus 72ED Power Indicating Lights are **OFF**.
- 65F-F6 Breaker is **TRIPPED**.
- 65F-F8 Breaker is **CLOSED**.

Which **ONE** of the following lists the electrical procedure which **SHOULD** be executed to provide **MAXIMUM** Low Pressure ECCS Injection to support 29.100.01, Sheet 1, RPV Control actions?

- _____ A. 20.300.65F, Loss of Bus 65F, due to Bus 65F being LOCKED OUT.
- _____ B. 20.300.72F, Loss of Bus 72F, due to Bus 72F being LOCKED OUT.
- _____ C. 20.307.01, Emergency Diesel Generator Failure, due to EDG 14 failing to start.
- _____ D. 20.300.SBO, Loss of Offsite and Onsite Power, due to a combination of electrical malfunctions.

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QUESTION 91

With the plant operating at full power, the following conditions exist:

- **ONE** Safety Relief Valve **OPENED**.
- **ALL** available Torus Cooling was initiated.

Which **ONE** of the following describes how Torus Cooling operation will affect Torus Temperature?

Operating **ALL** available Torus Cooling with **ONE FULLY OPEN** Safety Relief Valve will:

- _____ A. **LOWER** Torus Water Temperature below the **LOWEST** Technical Specification LCO value.
- _____ B. **MAINTAIN** Torus Water Temperature at a **CONSTANT** temperature until the Safety Relief Valve is successfully **CLOSED**.
- _____ C. **NOT MAINTAIN** Torus Water Temperature **BELOW** the Technical Specification LCO value which requires a Reactor Shutdown.
- _____ D. **MAINTAIN** Torus Water Temperature **BELOW** the Technical Specification LCO value applicable when testing which adds heat to the Torus is in progress.

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QUESTION 92

The plant is operating at full power.

The following Drywell Floor and Equipment Drain Sump Effluent Integrator readings (total gallons pumped) have been noted for the past 24 hours:

Time	Floor Drain Integrator	Equipment Drain Integrator	Leak Rate Floor (gpm)	Leak Rate Equipment (gpm)
0000	89321	27861	2.3	16.4
0800	90543	35805	2.54	16.55
1600	92079	44181	3.2	17.45
0000	94383	52821	4.8	18.0

With these conditions, which **ONE** of the following is **CORRECT**?

- _____ A. **NO** Drywell Leakage limit has been exceeded.
- _____ B. **TOTAL LEAKAGE** has exceeded the leakage limit.
- _____ C. **IDENTIFIED LEAKAGE** has exceeded the leakage limit.
- _____ D. **UNIDENTIFIED LEAKAGE INCREASE** has exceeded limits within a 24 hour period.

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QUESTION 93

During a reactor startup, Control Rod withdrawal is in progress at 20% power. The following indications are received:

- 3D8, DIV I/II OFF GAS RADN MONITOR UPSCALE alarms.
- 3D12, DIV I/II OFF GAS RADN MONITOR HIGH-HIGH alarms.
- D11-K601A and B Off Gas Radiation Monitors indicate 1200 mr/hr, **RISING**.
- At H21-P275A, Hydrogen Analyzer Panel, **BOTH** Channels indicate 0.1% H₂.
- Main Condenser Vacuum is 1.0 psia.
- Off Gas Flow is 15 cfm.

Which **ONE** of the following **CAUSED** these indications, and what action is **REQUIRED**?

These indications are **CAUSED** by:

- _____ A. a fuel cladding failure. It is required to enter 20.000.07, Fuel Cladding Failure.
- _____ B. increased Main Condenser air inleakage. It is required to enter 20.125.01, Loss of Main Condenser Vacuum.
- _____ C. an Off Gas Recombiner malfunction. It is required to enter 20.712.01, High Hydrogen Concentration / Explosion in the Off-Gas System.
- _____ D. an expected increase in Nitrogen-16 (N¹⁶) production from the reactor. It is required to notify Chemistry of the power increase and obtain samples per 74.000.19, Chemistry Routine Surveillances.

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QUESTION 94

With the plant in end of cycle coast down, all Control Rods are at position 48 and Reactor Power is 97%. Preparations are being made to shutdown for a Refuel Outage.

Which **ONE** of the following is an **APPROVED** method of adding positive reactivity **AND** obtaining additional energy from the core?

- _____ A. **SHUTDOWN** Heater Drain Pumps per 23.108, Extraction Steam and Heater Drains.
- _____ B. **RAISE** Core Flow to 110 Mlbm/hr per 22.000.03, Power Operation 25% to 100% to 25%.
- _____ C. **RAISE** the Pressure Regulator setting per 22.000.03, Power Operation 25% to 100% to 25%.
- _____ D. **BYPASS** Feedwater Heater #6 North and South by opening N2100-F603, #6 FW Heaters Bypass Valve per 23.108, Extraction Steam and Heater Drains.

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QUESTION 95

A Work Request has been released to replace the Div 1 RHRSW Radiation Monitor Sample Pump. Due to parts difficulties, the work group is requesting that the Work Request be **DEACTIVATED**.

Per MOP05, Control of Equipment, which **ONE** of the following describes when the Shift Manager **MAY** deactivate the package?

The Shift Manager **MAY** deactivate the package:

- _____ A. once the protection has been released **AND** the existing configuration has been evaluated per ODE 6, Operator Challenges.
- _____ B. once the existing configuration has been evaluated and controlled by MES12, Performing Temporary Modifications, then protection can be released.
- _____ C. after noting the deactivation on the Safety Tagging Record **AND** the existing configuration has been evaluated per ODE 6, Operator Challenges.
- _____ D. after noting the deactivation on the Safety Tagging Record **AND** the existing configuration has been evaluated per MES12, Performing Temporary Modifications

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QUESTION 96

Following a Refueling Outage, the following conditions exist:

- **ALL** RPV Head Closure Bolts are **FULLY TENSIONED**.
- Reactor Coolant System Temperature is 185°F.
- The Reactor Mode Switch is in **REFUEL** and Control Rod exercising is in progress.

NOTE: For this particular instance, Special Operations TS 3.10.4 does not apply.

Which **ONE** of the following is the correct **MODE** of operation, based on these conditions?

- _____ A. MODE 2, STARTUP
- _____ B. MODE 3, HOT SHUTDOWN
- _____ C. MODE 4, COLD SHUTDOWN
- _____ D. MODE 5, REFUEL

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QUESTION 97

Following an accident, it is required to estimate Core / Fuel Damage using the following Containment High Range Radiation Monitor (CHRRM) readings and conditions:

- Reactor was **SHUTDOWN** at 1200.
- CHRRM Readings were taken at 1300.
- DIV 1 CHRRM indicates 2.0×10^4 R/hr.
- DIV 2 CHRRM indicates 1.5×10^4 R/hr.

NOTE: See attached references.

Which **ONE** of the following is the **CORRECT** Core / Fuel Damage calculation, based on these readings?

	% Gap Release (H)	% of Fermi-2 Upper Bound LOCA (J)	% of Regulatory Guide 1.3 LOCA (K)
_____ A.	21.4	5.0	1.9
_____ B.	28.6	6.7	2.5
_____ C.	115.4	30.0	8.8
_____ D.	153.8	40.0	11.8

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QUESTION 98

During a **DECLARED EMERGENCY**, a leak develops in an area that is accessible, but now radiologically contaminated. The Shift Manager has directed that an investigation be performed **IMMEDIATELY**.

In accordance with MRP05, ALARA / RWPs, what are the **RWP REQUIREMENTS** for entry into the area for investigation?

- _____ A. A written Specific RWP must be issued.
- _____ B. A General RWP already exists for this type of event.
- _____ C. A revision to the General RWP for that area must be issued.
- _____ D. A verbally issued RWP may be used for timely plant response.

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QUESTION 99

While executing 29.100.01 Sheet 1A, ATWS RPV Control, Emergency Depressurization is **REQUIRED**. Conditions are as follows:

- Standby Liquid Injection has been **INITIATED**.
- Injection has been Terminated and Prevented as required.
- **FIVE** Safety Relief Valves have been **OPENED**.
- Reactor Pressure is 850 psig **LOWERING**.
- RPV Water Level is -30 inches **LOWERING**.

Which **ONE** of the following actions is **REQUIRED** to be ordered?

- _____ A. **RAISE** RPV Water Level above -25 inches using **INSIDE** the shroud systems **FIRST**.
- _____ B. **RAISE** RPV Water Level above -25 inches using **OUTSIDE** the shroud systems **FIRST**.
- _____ C. **WAIT** until RPV Pressure **LOWERS** to 230 psig, **THEN RAISE** RPV Water Level above -25 inches using **INSIDE** the shroud systems **FIRST**.
- _____ D. **WAIT** until RPV Pressure **LOWERS** to 230 psig, **THEN RAISE** RPV Water Level above -25 inches using **OUTSIDE** the shroud systems **FIRST**.

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QUESTION 100

The plant is operating at full power, when a transient occurs, resulting in the following conditions:

- **NO** Control Rod movement occurred.
- Blue Scram Valve Lights, on the full core display, are **ALL LIT**.
- The Turbine Generator is **ON LINE**.
- Reactor Power is 30%.
- ADS is **INHIBITED**.
- FSQ 1-8 is **COMPLETE**.
- RPV Water Level is at 60 inches, **LOWERING** at 4 inches per minute.
- Torus Water Temperature is 90°F, due to HPCI starting.

Which **ONE** of the following EOP **ACTIONS** should have **HIGHEST PRIORITY**, based on these conditions?

- _____ A. Start Torus Cooling per 23.205.
- _____ B. Vent the Scram Air Header per 29.ESP.03.
- _____ C. Deenergize Scram Solenoids per 29.ESP.03.
- _____ D. Defeat RPV Level 1 MSIV Isolation Signals per 29.ESP.11.

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RAPID ESTIMATE OF CORE/FUEL DAMAGE BASED ON ACTUAL OR ESTIMATED CHRRM READING

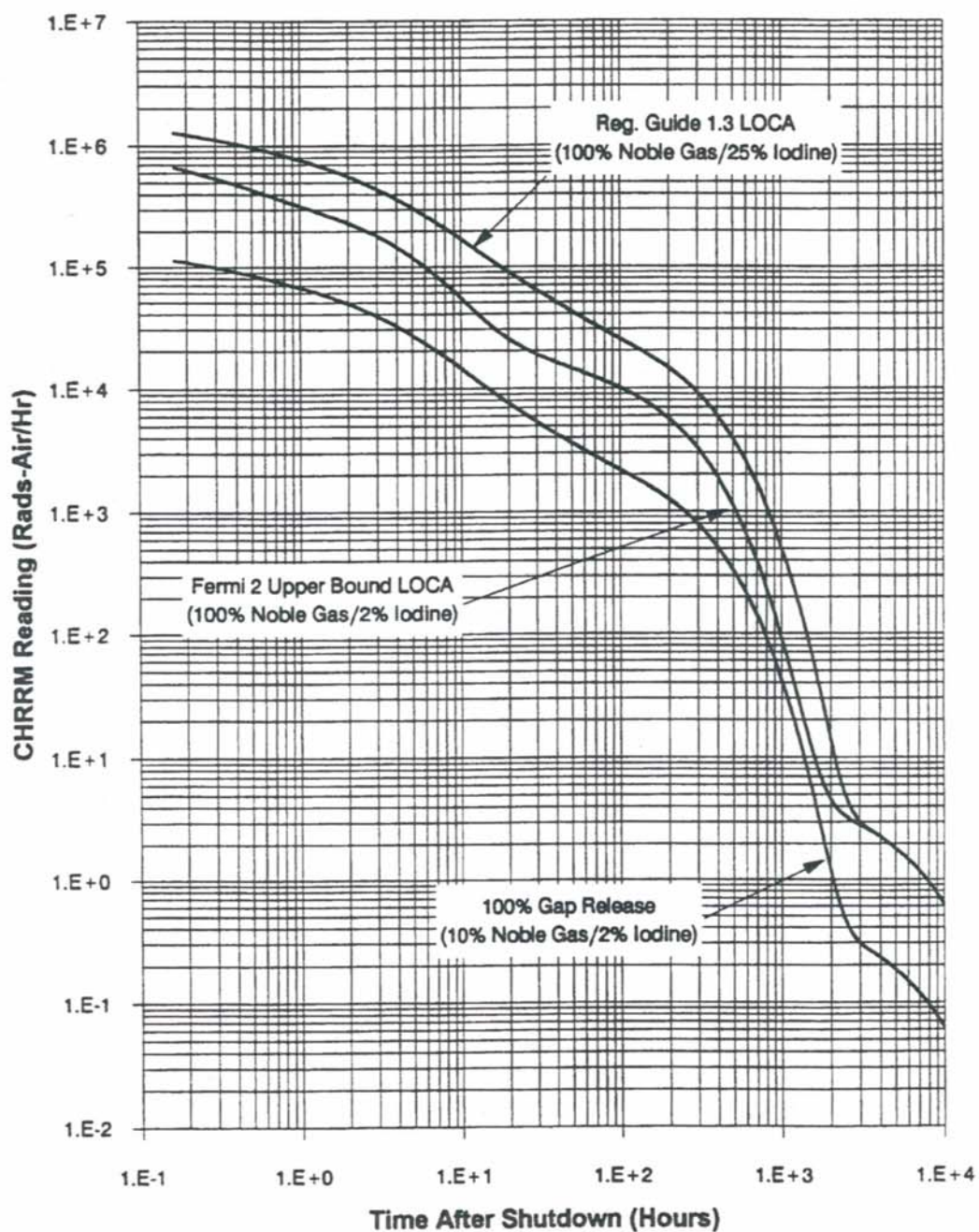
1. Reactor Shutdown Date and Time _____ (A)
2. Monitor Reading Date and Time _____ (B)
3. Time After Shutdown [(B)-(A)] _____ Hours (C)
4. CHRRM Reading _____ Rad/hr (D)
DIV I _____, DIV II _____ (Select Highest)
Estimated _____ (From EP 546)
5. Using (C) and the CHRRM Reading Versus Time (Enclosure B)
 - 100% Gap Release _____ Rad/hr (E)
 - Fermi 2 Upper Bound LOCA _____ Rad/hr (F)
 - Reg Guide 1.3 LOCA _____ Rad/hr (G)
6. (D) _____ Divided By (E) _____ x 100 = _____ (H)
% Gap Release
(D) _____ Divided By (F) _____ x 100 = _____ (J)
% of Fermi 2
Upper Bound LOCA
(D) _____ Divided by (G) _____ x 100 = _____ (K)
% of Regulatory
Guide 1.3 LOCA

Forward original to Supervisor, RERP, 164 NOC

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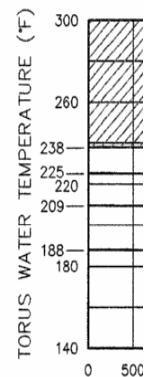
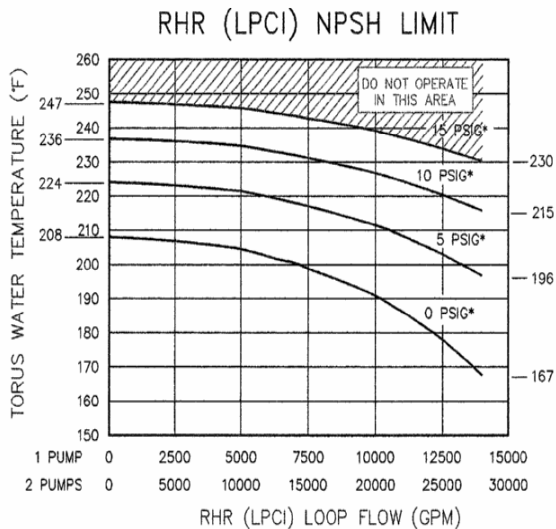
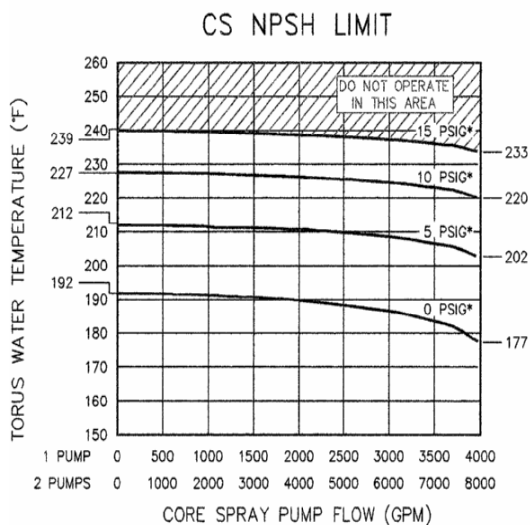
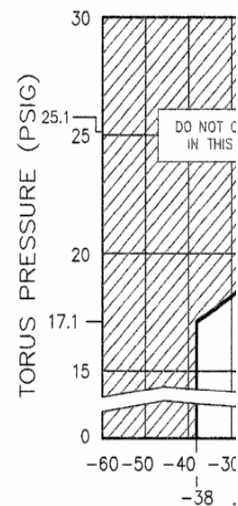
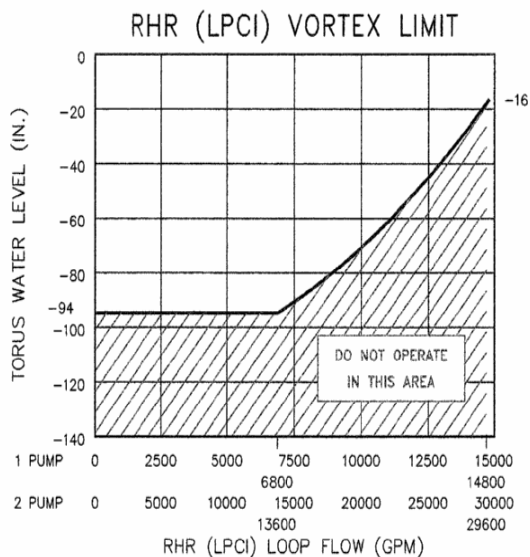
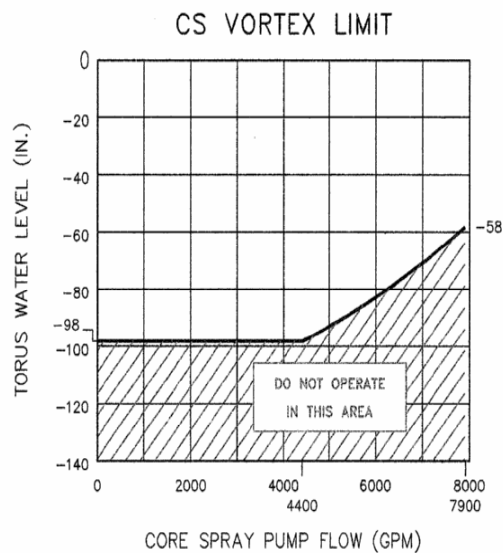
EP-547
Enclosure B, Page 1 of 1
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CHRRM READING VERSUS TIME



END

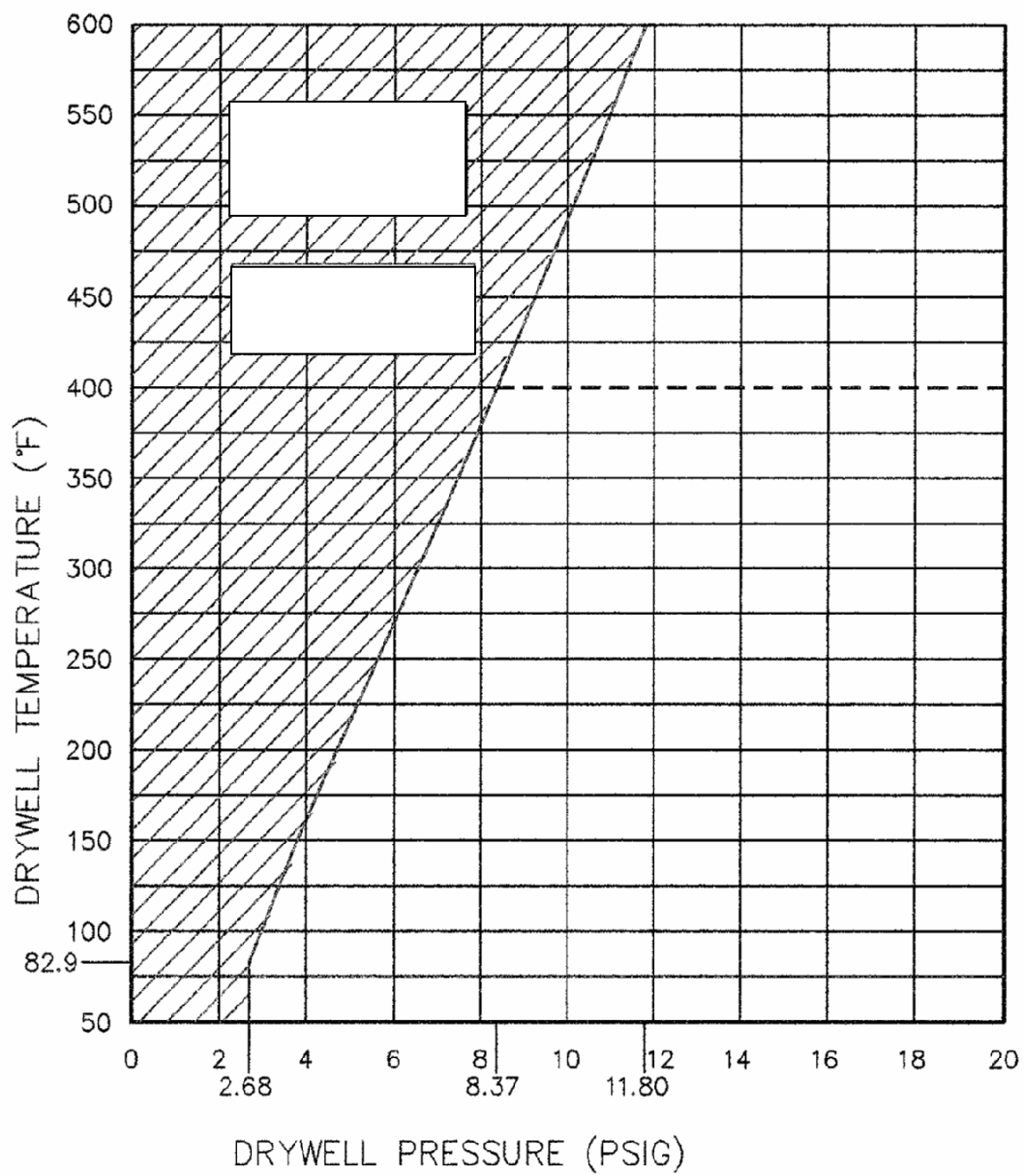
Reference for RO Question 51



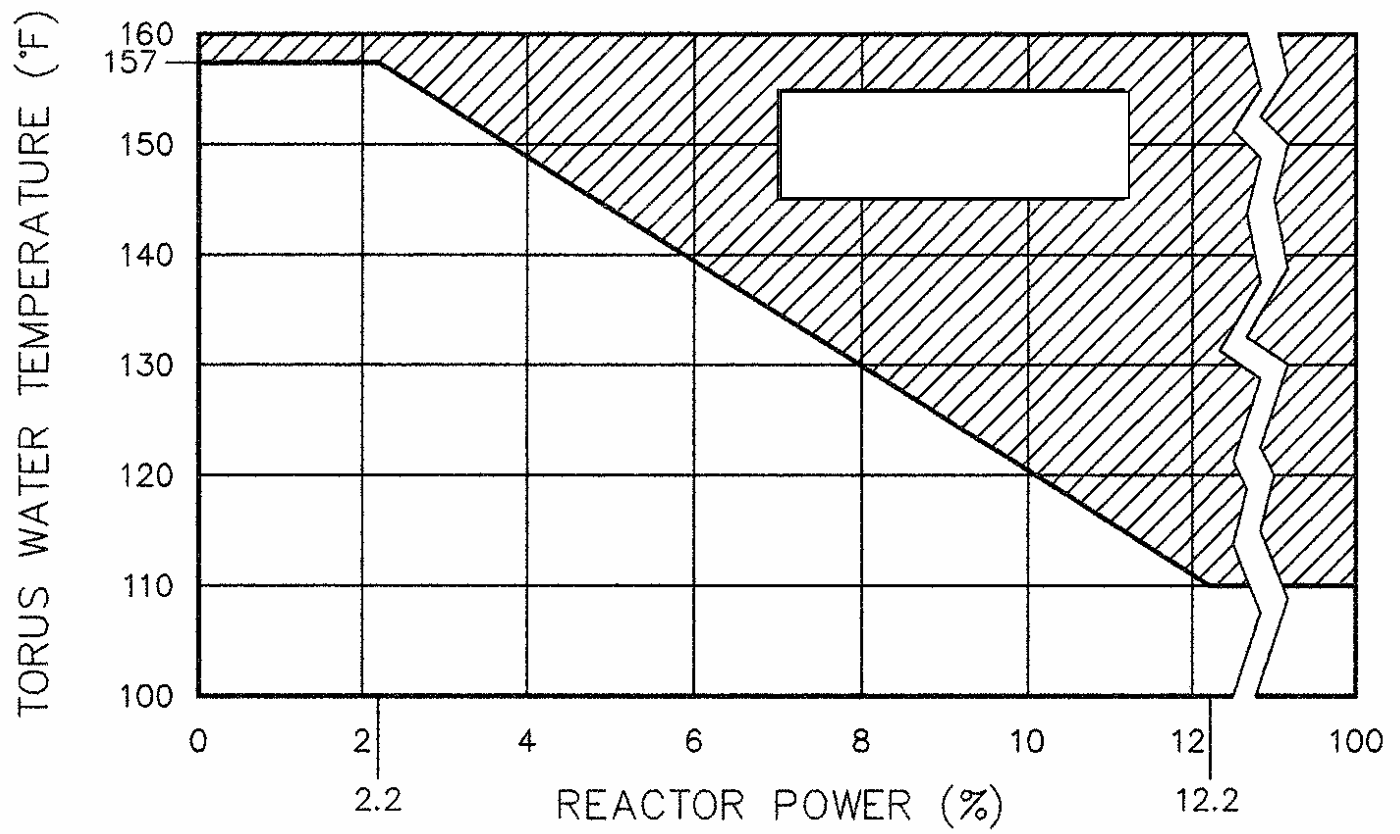
6 < -11 in.

6 < -11 in.

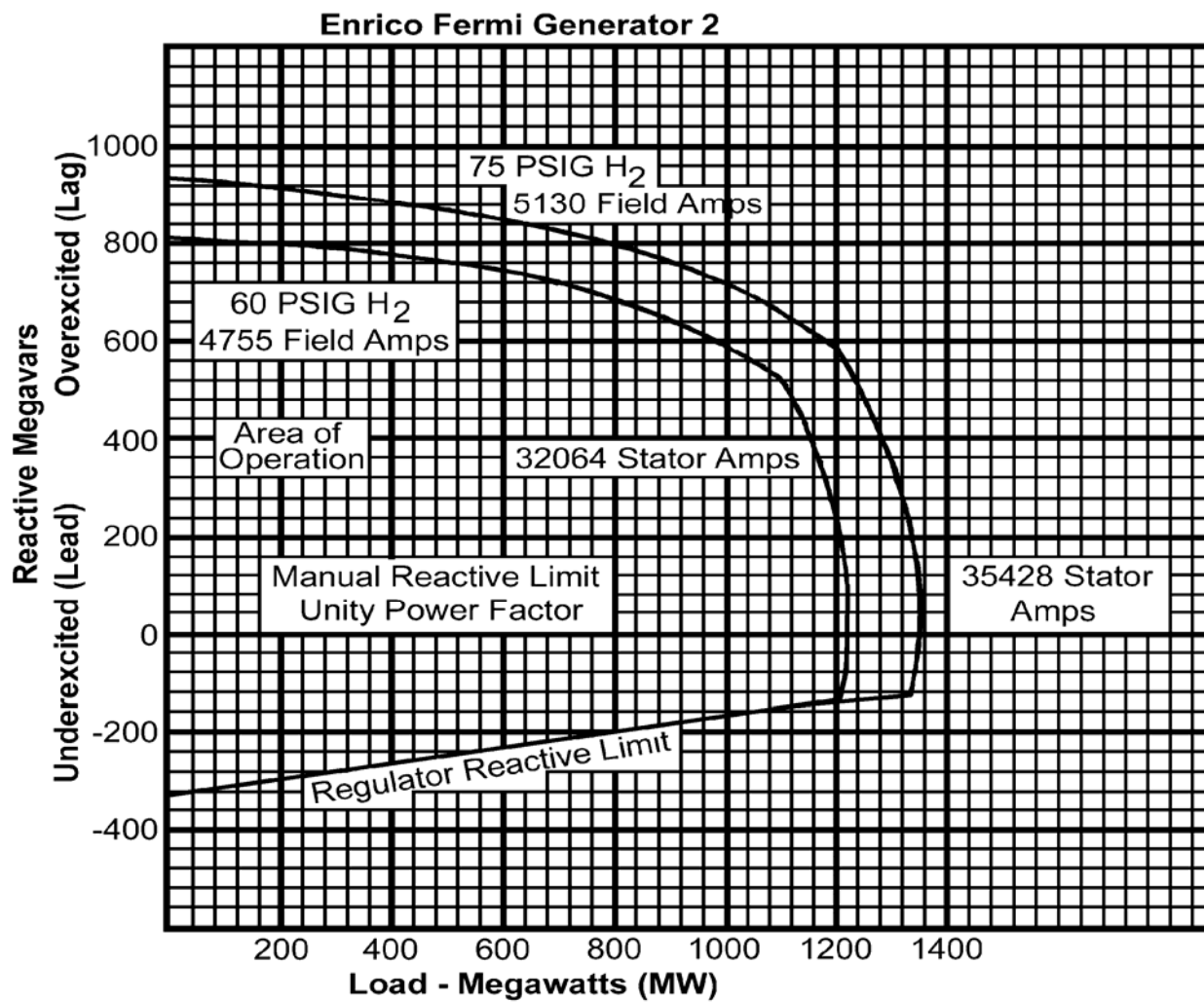
*TORUS OVERPRESSURE = (Indicated Torus Pressure) + 3.5 PSIG + (INDICATED INCHES OF TORUS WATER LEVEL).



RO Reference Question 53



RO Reference Question 55



RO Reference Question 58

PCPL

