QUESTION 1

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

- 7D14, GEN SERV H2O HEADER PRESSURE HIGH/LOW alarms
- 4D64 GENERATOR H2 COOLERS INLET/OUTLET GAS TEMP HIGH / LOW TEMP HIGH alarms.
- Main Generator H_2 Cooler Outlet Temperature is 195ºF on N30-R807.
- GSW Pressure is 60 psig, lowering 1 psig per minute with ALL GSW Pumps running.
- RBCCW HX Outlet temperature is 88ºF.

With one of the following actions is required?

_____ A. Direct the CRNSO to place the Reactor Mode Switch in SHUTDOWN and TRIP the Main Turbine Generator, per 20.131.01, Loss of General Service Water System.

_____ B. Direct the CRNSO to place the Reactor Mode Switch in SHUTDOWN and TRIP BOTH Reactor Recirculation Pumps within TWO minutes per 20.127.01, Loss of Reactor Building Closed Cooling Water.

_____ C. Direct the CRNSO to REDUCE Reactive Load as necessary to reduce Hydrogen Coolers Outlet Temperature, per ARP 4D64, GENERATOR H2 COOLERS INLET/OUTLET GAS TEMP HIGH / LOW TEMP HIGH.

_____ D. Direct the CRNSO to INCREASE cooling water flow using N30-K813, Hydrogen Coolers Temp Controller, per ARP 4D64, GENERATOR H2 COOLERS INLET/OUTLET GAS TEMP HIGH / LOW TEMP HIGH.

QUESTION 2

While mitigating a transient involving a failure to scram and an unisolable Main Steam Line Break, plant conditions are as follows:

- Reactor Power is 14%.
- Reactor Pressure is 800 psig.
- RPV Water Level is -20 (minus 20) inches, maintained with Feedwater.
- Radiation Dose rates at the Site Boundary are 950 mrem/hr, rising.
- 29.ESP.03, Alternate Control Rod Insertion, is in progress.

Which one of the following actions are required?

_____ A. Anticipate Emergency Depressurization by opening Turbine Bypass Valves.

_____ B. Terminate and Prevent RPV Injection and lower RPV Water Level until power lowers to 3%.

_____ C. Terminate and Prevent RPV Injection and Emergency Depressurize the reactor by opening Safety Relief Valves.

_____ D. Maintain RPV Pressure 800 to 100 psig and RPV Water Level above -25 (minus 25) inches while continuing Alternate Rod Insertion.

QUESTION 3

The plant is in MODE 5, REFUELING. Spent fuel is being moved from the Reactor Vessel and placed in the Spent Fuel Pool, with the following conditions:

- One RHR Loop is OPERABLE and is in service.
- BOTH Reactor Recirculation Pumps are secured.
- Reactor Coolant System Temperature is 105ºF.
- Spent Fuel Pool Water Level has lowered to 21 feet above the fuel.
- The operating Fuel Pool Cleanup Pump has tripped.

Based on these conditions, which one of the following describes the affect of these conditions on tech specs, if any, and the appropriate basis?

_____ A. Fuel movement must be suspended until a Reactor Recirculation Pump is started, based on preserving Decay Heat Removal capability.

_____ B. Fuel movement must be suspended until a second RHR Loop is OPERABLE, based on preserving Decay Heat Removal capability.

_____ C. Fuel movement must be suspended until Spent Fuel Pool Water Level is restored above 22 feet, based on preserving Iodine Absorption capability.

_____ D. Fuel movement may continue until Spent Fuel Pool Water Level lowers to 20 feet 6 inches above the Reactor Pressure Vessel Flange, based on preserving Iodine Absorption capability.

QUESTION 4

Following a transient, the following conditions exist:

- Drywell Temperature is 280ºF and stable.
- Drywell Pressure is 15 psig.
- Reactor Pressure is 20 psig.
- RPV Water Level is -10 (minus 10) inches.
- ALL RHR Pumps are injecting.

Which one of the following actions is required?

_____ A. Enter 29.100.01 Sheet 3, RPV Flooding, and inject until the RPV is flooded to the Main Steam Lines.

_____ B. Open Turbine Bypass Valves and rapidly depressurize the reactor per 29.100.01 Sheet 1, RPV Control.

_____ C. Enter 29.100.01 Sheet 3, Emergency Depressurization, and inject until RPV Pressure is > 64 psig above Torus Pressure.

_____ D. Wait until RPV Water Level lowers to -40 (minus 40) inches and then Emergency Depressurize per 29.100.01 Sheet 3, Steam Cooling.

QUESTION 5

The plant is operating at 30% power. Due to a loss of Drywell Cooling, the following sequence occurred:

- At 1205; 3D81, PRIMARY CONTAINMENT PRESSURE HIGH/LOW alarmed.
  - Drywell Pressure indicated 1.50 psig.
- At 1206; 8D41, DIV I DRYWELL TEMPERATURE HIGH alarmed.
- At 1206; 17D41, DIV II DRYWELL TEMPERATURE HIGH alarmed.
  - Average Drywell Temperature was 140ºF.
- At 1300; Drywell Pressure was lowered by venting Nitrogen, clearing alarm 3D81.
- At 1320; Drywell Cooling was restored, clearing alarms 8D41 and 17D41.
- At 1340; 3D81 PRIMARY CONTAINMENT PRESSURE HIGH/LOW alarmed again.
  - Drywell Pressure is -0.15 (minus 0.15) psig.
  - Drywell Temperature is 120ºF.

Which one of the following describes the OPERABILITY of the Primary Containment, with respect to Temperature and Pressure, during this evolution?

_____ A. The Primary Containment was maintained OPERABLE throughout this evolution and no actions are required.

_____ B. The Primary Containment was rendered INOPERABLE due to Low Drywell Pressure only, and remains INOPERABLE.

_____ C. The Primary Containment was rendered INOPERABLE due to Low Drywell Pressure and High Average Temperature, and remains INOPERABLE.

_____ D. The Primary Containment was rendered INOPERABLE due to High Average Temperature AND High Drywell Pressure, and Required Actions were met within the Completion Time.

QUESTION 6

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

- At 0915; 16D27 FIRE ALARM alarms.
- At 0915; Wet Pipe System in the RFPT Lube Oil Room has actuated.
- At 0915; 7D10 ELECTRIC FIRE PUMP AUTO START alarms.
- At 0940; The Fire Brigade is on the scene fighting the fire.
- At 0950; The Fire Brigade reports that the fire is out.

Which of the following is the appropriate Emergency Action Level (EAL) and why?

_____ A. Unusual Event, because a fire is within the Protected Area Boundary and was NOT extinguished within 15 minutes.

_____ B. Unusual Event, because a fire affecting the operability of systems required to maintain Safe Shutdown has occurred.

_____ C. Alert, because a fire is within the Protected Area Boundary and was NOT extinguished within 15 minutes.

_____ D. Alert, because a fire affecting the operability of systems required to maintain Safe Shutdown has occurred.

QUESTION 7

Following a transient, plant conditions are:

- Reactor Power is 10%.
- RPV Water Level is 110 inches.
- 2 Safety Relief Valves are OPEN.
- Reactor Pressure is 1000 psig.
- Standby Liquid is injecting.
- Torus Water Temperature is 121ºF.
- BOTH Loops of RHR are in Torus Cooling mode.

What action is required and why is this action required by the Emergency Operating Procedure Bases?

_____ A. It is required to lower Reactor Pressure by opening Safety Relief Valves to place the reactor in a lower energy state.

_____ B. It is required to lower Reactor Water level by terminating and preventing injection to reduce natural circulation and reactor power.

_____ C. It is required to raise Reactor Water Level by raising Feedwater Flow to ensure that maximum fuel temperatures are not exceeded.

_____ D. It is required to lower Reactor Water level by terminating and preventing injection to increase the concentration of sodium pentaborate near the fuel.

QUESTION 8

With the plant is in Mode 3, Hot Shutdown, with the following conditions:

- Reactor Pressure is 85 psig.
- Main Steam Isolation Valves are OPEN.
- RHR Loop A is operating in Shutdown Cooling Mode with cooldown in progress.
- Reactor Water Cleanup is in service.

Power to RPS Bus A is subsequently lost due to a trip of RPS MG Set A. How is the plant affected by this loss, and which of the stated actions will restore the plant to normal?

_____ A. B2103-F022 A through D, Inboard Main Steam Isolation Valves will ISOLATE due to power loss to Main Steam Line Radiation Monitors. Enter SOP 23.137, Nuclear Boiler System. Reopen the MSIVs. Continue cool down using RHR Loop A.

_____ B. G3352-F004, RWCU Supply Outboard Isolation Valve will ISOLATE due to a loss of logic power. Enter AOP 20.707.01, Loss of RWCU. RWCU will be restored by placing RPS Div 1 on Alternate Power, resetting the isolation, and realigning RWCU.

_____ C. E1150-F015A, Div 1 LPCI Inboard Isolation Valve will ISOLATE due to a spurious RPV Water Level 3 signal. Enter SOP 23.205, RHR System. Shutdown Cooling will be restored by starting an RHR Loop B Pump and opening E1150-F015B, Div 2 LPCI Inboard Isolation Valve.

_____ D. E1150-F015A, Div 1 LPCI Inboard Isolation Valve AND E1150-F009, RHR SDC Inboard Suction Isolation Valve will ISOLATE due to a spurious RPV Water Level 3 signal. Enter AOP 20.205.01, Loss of Shutdown Cooling. Shutdown Cooling will be restored by placing RPS Bus A on Alternate Power, resetting the isolation, and realigning RHR Loop A

QUESTION 9

The reactor is Mode 2, STARTUP, with the following conditions:

- Reactor Power is on Range 7 of the Intermediate Range Monitors.
- Reactor Pressure is 940 psig.
- At 1105; 3D1, CRD PUMP A/B SUCTION PRESSURE LOW alarms.
- At 1110; 3D10, CRD ACCUMULATOR TROUBLE alarms for HCU 26-55, which is FULLY INSERTED. A Nuclear Operator confirms a Low Pressure condition.
- At 1120; 3D10, CRD ACCUMULATOR TROUBLE alarms for HCU 18-47, which is at position 48. A Nuclear Operator confirms a Low Pressure condition.

Which one of the following actions is REQUIRED by Technical Specifications?

_____ A. At 1120, disarm Control Rod 18-47, because without drive capability, Control Rod 18-47 is considered stuck.

_____ B. At 1130, place the Reactor Mode Switch in SHUTDOWN, to avoid the loss of scram function

_____ C. At 1140, place the Reactor Mode Switch in SHUTDOWN, to avoid the loss of scram function.

_____ D. At 1140, declare Control Rods 26-55 AND 18-47 INOPERABLE, due to slower than normal scram times.

QUESTION 10

Following a Loss of Coolant Accident, Core Spray is injecting at 6800 gpm.
Which one of the following is the RPV Water Level which requires transitioning to Severe Accident Guidelines?

_____ A. 0 inches

_____ B. -25 (minus 25) inches

_____ C. -40 (minus 40) inches

_____ D. -48 (minus 48) inches

QUESTION 11

With RHR Pump D operating in the Shutdown Cooling Mode, 2D26, DIV II RHR SYSTEM LOW FLOW BYPASS INITIATED alarms due to a flow instrument failure.

Which one of the following describes the initial impact of this condition, and what action is required?

_____ A. RHR Pump D will TRIP due to a valve closure. It is required to START RHR Pump B.

_____ B. RHR Pump D will OPERATE with NO discharge flow path. It is required to STOP RHR Pump D.

_____ C. RPV Water Level will RISE due to reactor coolant temperature rise. It is required to CLOSE E1150-F048B, Div 2 RHR Hx Bypass Valve.

_____ D. RPV Water Level will LOWER due to coolant being pumped to the Torus. It is required to CLOSE E1150-F007B Div 2 RHR Pumps Minimum Flow Valve.

QUESTION 12

A plant transient has occurred which caused the ADS System to automatically actuate. The current plant conditions are as follows:

- Reactor – All rods inserted
- Narrow Range RPV Water Level – 197 inches
- RPV Pressure – 50 psig

Which one of the following surveillances is procedurally required to be performed within 12 hours due to the SRV actuation?

_____ A. 24.201.01, SRV Vacuum Breaker Operability Test

_____ B. 24.137.11, Safety Relief Valve (SRV) Operability Test

_____ C. 24.402.07, Drywell to Suppression Chamber Bypass Leak Test

_____ D. 24.402.01, Drywell and Suppression Chamber Vacuum Breaker Operability Test

QUESTION 13

The plant is operating at 50% power. Digital Feedwater Level Control is in 3-Element control with the Reactor Level Select Switch in A. 3D164, FEEDWATER CONTROL DCS TROUBLE has alarmed, and both Reactor Feedwater Pump Controllers have switched to Emergency Bypass.

What is the resulting impact to Feedwater Level Control (DCS), and what action is required by procedure?

_____ A. DCS will shift to Forced Single Element Control. Enter SOP 23.107.01. PLACE the Level Control Mode Switch in 1 ELEM, and continue power operation in Single Element Control.

_____ B. DCS remains in 3 Element Control. Enter SOP 23.107.01. PLACE both Emergency Bypass switches in position “M”, manually adjust Reactor Feedwater Pump Controllers to match Feed Pump speeds, and continue power operation in 3 Element Control.

_____ C. DCS will shift to Forced Single Element Control. Enter AOP 20.107.01. North and South Reactor Feedwater Pump speeds will lower. Adequate Pumping capacity is NOT available. The Reactor Mode Switch must be placed in Shutdown.

_____ D. DCS remains in 3 Element Control. Enter AOP 20.107.01. PLACE both Emergency Bypass switches in position “M”, manually adjust Reactor Feedwater Pump Controllers to match Feed Flow with Steam Flow, and continue power operation with manual feed pump speed control.

QUESTION 14

The plant is in Mode 4, Cold Shutdown, with CRD Mechanism replacement in progress. This evolution is an Operation with Potential to Drain the Reactor Vessel (OPDRV). Standby Gas Treatment Train A is operating for Surveillance Testing.

The following conditions are noted:

- Reactor Building Pressure is -0.20 (minus 0.20) inches water column.
- Standby Gas Train A Flow is 2900 cfm.

Which one of the following is correct regarding the OPERABILITY of Standby Gas Train A?

Standby Gas Treatment Train A is:

_____ A. NOT required OPERABLE during current plant conditions.

_____ B. OPERABLE; and no action is required.

_____ C. INOPERABLE; it is required to restore Train A to OPERABLE status

_____ D. INOPERABLE; it is required to suspend CRD Mechanism replacement IMMEDIATELY.

QUESTION 15

The plant is operating at full power, when the following indications are noted:

- The Normal Feeder for Bus 65E, Breaker E6, OPENED.
- Emergency Diesel Generator (EDG) 13 did not start.
- The ESF-EDG Bus Tie Breaker for Bus 65E, Breaker E8, OPENED.
- Buses 64B, 64C, and 65F are powered from their Normal Sources.
- EDGs 11, 12, and 14 remain in standby.

Which one of the following conditions produced these indications, and what action is required?

_____ A. A malfunction of EDG 13 has occurred. Enter 20.307.01.01 Emergency Diesel Generator Start Failure, and MANUALLY start EDG 13.

_____ B. An electrical fault has occurred on Bus 65E. Enter 20.300.65E, Loss of Bus 65E. After the fault is corrected, re-energize Bus 65E per 23.321, ESF Electrical Distribution System.

_____ C. A spurious Division II Loss of Coolant Accident Signal is received. Place the Emergency Signal Bypass Keylock Selector Switch in BYPASS, and declare EDG 13 INOPERABLE per LCO 3.8.1.1.

_____ D. A malfunction of Breaker E6 has occurred. Enter 20.300.65E, Loss of Bus 65E. Re-energize Bus 65E by MANUALLY closing Breaker E9, Alternate Feed to Bus 65E per 23.321, ESF Electrical Distribution System.

QUESTION 16

The plant is operating at 75% power, when the Steam Pressure input to Pressure Regulator 1 FAILS LOW.

Which one of the following is the expected effect of this failure, and what action is required?

Reactor Pressure will __(1)__. It is required to __(2)__.

_____ A. (1) RISE until a reactor scram occurs.
(2) enter 20.000.21, Reactor Scram and 29.100.01, RPV Control.

_____ B. (1) RISE 3.5 psig.
(2) enter 20.109.02 Reactor Pressure Controller Failure and raise Reactor Power above 90%.

_____ C. (1) LOWER until a reactor scram occurs.
(2) enter 20.000.21, Reactor Scram control Reactor Pressure with Safety Relief Valves.

_____ D. (1) RISE 3.5 psig.
(2) enter 20.109.02 Reactor Pressure Controller Failure, and maintain Reactor Power at 75% until both Pressure Regulators are in service.

QUESTION 17

Following an Emergency Depressurization under ATWS conditions the following conditions exist:

- RPV Water Level indications are UPSCALE due to High Drywell and Reactor Building Temperatures.
- Injection has been Terminated and Prevented.
- 4 Safety Relief Valves are OPEN.
- Reactor Pressure is 300 psig.
- Reactor Power is 20%.

Under these conditions, which one of the following describes the status of Core Cooling?

Adequate Core Cooling is:

_____ A. ASSURED by core submergence.

_____ B. ASSURED by sufficient steam flow through OPEN Safety Relief Valves.

_____ C. NOT ASSURED because injection is insufficient to cool the core.

_____ D. NOT ASSURED because an inadequate number of Safety Relief Valves are OPEN.

QUESTION 18

The plant is in MODE 5, REFUEL, with the following conditions.

- ONE Control Rod is withdrawn to position 48.
- The Refuel Platform is moving a New Fuel Assembly from the Spent Fuel Pool towards the Reactor Cavity.
- The Refuel Platform personnel notify the CRNSO that they are prepared to lower the New Fuel Assembly into the core.

Which one of the following describes these conditions, and what action is required?

_____ A. This is an expected sequence of events; permission should be granted to continue the move.

_____ B. The Refueling Hoist is prevented from lowering. It is required to fully insert the withdrawn Control Rod and continue fuel movement.

_____ C. The Refueling Platform should have automatically stopped prior to reaching the reactor cavity. It is required to suspend fuel movements after placing the New Fuel Assembly in the Spent Fuel Pool.

_____ D. The Refueling Platform should have automatically stopped prior to reaching the reactor cavity. It is required to suspend fuel movements after placing the New Fuel Assembly in the correct core location.

QUESTION 19

Per MGA09, Access Control, certain vehicles may be exempted from searches and Radiation Protection inprocessing with the approval of the Shift Manager. Which one of the following vehicles meets this criterion?

_____ A. Monroe – Mercy Hospital Ambulance responding to Medical Emergency.

_____ B. EPA HAZMAT Truck responding to chemical spill at Aux Boiler House

_____ C. Fuel Oil Delivery Truck responding to restore EDG 13 OPERABILITY prior to LCO expiration in 2 Hours

_____ D. ITC Work crew Truck responding to Tech Spec work on 345KV Mat prior to LCO expiration in 3 Hours

QUESTION 20

The plant is operating at full power. All systems are aligned for normal operations.

Which one of the following maintenance activities would REQUIRE immediate notifications, and to whom would the notification be made?

_____ A. CTG 11-1 Out of Service: NRC Resident

_____ B. CTG 11-1 Out of Service: Plant Manager

_____ C. CTG 11-2 Out of Service: Work Week Manager

_____ D. CTG 11-2 Out of Service: Central System Supervisor

QUESTION 21

Which one of the following contains the limitation of 3430 Megawatts as the Maximum Power Level for operation?

_____ A. Facility Operating License, NPF-43

_____ B. Core Operating Limits Report, Cycle 12

_____ C. Safety Limits, Technical Specifications 2.1

_____ D. Power Distribution Limits, Technical Specifications 3.2

QUESTION 22

To prevent exceeding Primary Containment Pressure Limit, 29. ESP.07, Primary Containment Venting is being executed. Containment conditions are:

- Drywell Pressure is 51 psig.
- Torus Pressure is 50 psig.
- Torus Water Level is 0 inches.

Which one of the following vent strategies is appropriate?

_____ A. Vent the Torus via Standby Gas Treatment.

_____ B. Vent the Drywell via Standby Gas Treatment.

_____ C. Vent the Torus using the Hardened Vent Path.

_____ D. Vent the Drywell using the Hardened Vent Path.

QUESTION 23

With the plant initially operating at 100% power, a fuel cladding defect resulted in High Offgas and Main Steam Line Radiation Levels. A Plant Shutdown has been performed to comply with LCO 3.4.7 Reactor Coolant Specific Activity. Plant conditions are as follows:

- All Control Rods are inserted.
- Reactor Pressure is 940 psig, regulated with Main Turbine Bypass Valves.
- Offgas is in service with Condenser Backpressure at 1.0 psia.
- Offsite dose rates have reached the Alert level
- 3D82 MN STM LINE RADIATION UPSCL INOP CHANNEL TRIP alarms.

Which one of the following strategies is required to minimize radioactivity release to the environment?

_____ A. Cooldown at LESS THAN 100ºF by depressurizing to the Main Condenser to allow the Offgas treatment process to limit radioactivity releases.

_____ B. Close the Third MSIVs, and cooldown at LESS THAN 100ºF by depressurizing to the Torus to allow the Containment to limit radioactivity release.

_____ C. Rapidly cooldown at GREATER THAN 100ºF by depressurizing to the Main Condenser to allow the Offgas treatment process to limit radioactivity releases.

_____ D. Close the Third MSIVs, and rapidly cooldown at GREATER THAN 100ºF by depressurizing to the Torus to allow the Containment to limit radioactivity release.

QUESTION 24

The plant is operating at 100% power when a loss of power of 345kv offsite occurs.

- EDGs 13 and 14 have started and loaded
- A and B RR MG sets have tripped.
- 3D79 REAC VESSEL WATER LEVEL L3 CHANNEL TRIP is in alarm.
- 10D43 DIV 2 BUS VOLTAGE LOW is in alarm.
- 17D41 DIV 2 DRYWELL TEMP HI is in alarm.
- T47-R803B DW Cooling System Area Temp Div 2 - Point 24 reads 138°F.
- The Mode Switch has been placed in SHUTDOWN

Which one of the following procedures will the CRS be required to enter NEXT and direct the crew's actions?

_____ A. 20.300.345kv Loss of 345kv

_____ B. 20.138.01 Recirc Pump Trip

_____ C. 29.100.01 RPV Control Sheet 1

_____ D. 29.100.01 Primary Containment Control Sheet 2

QUESTION 25

Which one of the following sets of plant conditions would require an Emergency Classification of Site Area Emergency?

_____ A. Security Event resulting in loss of physical control of the facility.

_____ B. Any loss OR potential loss of either fuel clad OR reactor coolant boundary.

_____ C. Failure of reactor protection system instrumentation to complete OR initiate an automatic reactor scram once a reactor protection system setpoint has been exceeded AND manual scram was NOT successful.

_____ D. Site boundary dose resulting from an actual OR imminent release of gaseous radioactivity that exceeds 1000 mrem TEDE OR 500 mrem Adult Thyroid for the actual OR projected duration of the release using actual meteorology.

QUESTION 1

With the plant operating at 85% Reactor Power and 80 Mlbm/hr Core Flow, Reactor Power unexpectedly LOWERED to 80%.

The following indications are noted:

- Loop A Jet Pump Flow INCREASED to 42 Mlbm/hr.
- Loop B Jet Pump Flow LOWERED to 33 Mlbm/hr.
- Jet Pump 3 and Jet Pump 4 Flow LOWERED from 3.5 to 0.0 Mlbm/hr.

Which one of the following is indicated?

_____ A. Riser for Jet Pump 3 has failed.

_____ B. Diffuser for Jet Pump 3 has failed.

_____ C. North RR Motor Generator Set A speed has increased.

_____ D. B3105-F031B, S RR Pump Discharge Valve, has shut.

QUESTION 2

The Reactor Mode Switch is in SHUTDOWN and Reactor Coolant Temperature is 205ºF.

Electrical power is then lost to the 345 kV Switchyard. ALL other AC sources are energized.

Which one of the following describes the applicable Limiting Condition for Operation (LCO) and the status of LCO compliance?

_____ A. LCO 3.8.1, AC Sources – Operating is applicable, and the LCO is satisfied.

_____ B. LCO 3.8.1, AC Sources – Operating is applicable, and the LCO is NOT satisfied.

_____ C. LCO 3.8.2, AC Sources – Shutdown is applicable, and the LCO is satisfied.

_____ D. LCO 3.8.2, AC Sources – Shutdown is applicable, and the LCO is NOT satisfied.

QUESTION 3

A complete loss of DC Power from Battery 2B-1 Div 2 DC Bus has occurred.

If current exceeds the overcurrent trip setpoint on the breaker for Bus 65E Pos E6, 4160V Normal Feed to Bus 65E, which one of the following will occur with NO operator action?

_____ A. The breaker will TRIP and NEITHER position indication light will be lit.

_____ B. The breaker will TRIP and the OPEN position indication light will be lit.

_____ C. The breaker will REMAIN CLOSED and NEITHER indication light will be lit.

_____ D. The breaker will REMAIN CLOSED and the CLOSED indication light will be lit.

QUESTION 4

Following a MANUAL Reactor Scram from 50% power, the following conditions exist:

- ALL Turbine Control Valves are SHUT.
- MRE-R876, Generator Megawatts on H11-P804 has just reached ZERO.
- The Main Generator Exciter Field Breaker is CLOSED.
- BOTH Main Generator output breakers are CLOSED.

Based on these conditions, which one of the following Turbine Generator Trip signals will initiate?

_____ A. Loss of Field

_____ B. Reverse Power

_____ C. Generator Differential

_____ D. Negative Phase Sequence

QUESTION 5

The Low RPV Water Level Reactor Protection System Trip setpoint causes a reduction in the heat generated from fission, mitigating the effects from which of the following conditions or events?

_____ A. Reaching a Reactor Recirculation Pump trip setpoint.

_____ B. Inducing fuel damage from a lowering RPV inventory.

_____ C. Reaching an Emergency Core Cooling System initiation setpoint.

_____ D. Adding positive reactivity which results from Main Steam Isolation Valve Closure.

QUESTION 6

The Main Control Room has been evacuated.
Which one of the following is the LOWEST RPV Water Level Indication which can be monitored from the Remote Shutdown Panel, H21-P100?

_____ A. +178 inches

_____ B. +160 inches

_____ C. +10 inches

_____ D. -150 (minus 150) inches

QUESTION 7

The plant is operating at 100% with P4300-C001 (North) and P4300-C002 (Center) TBCCW Pumps in service, when the following occurs:

- 5D5, TBCCW PUMPS DIFFERENTIAL PRESSURE HIGH/LOW, alarms
- TBCCW Headers Pressure Indicator on P43-R805, indicates 19 psig.

With these conditions, which one of the following is the correct diagnosis and required action?

_____ A. TBCCW Differential Pressure is too LOW; it is required to REDUCE Main Turbine Generator Load.

_____ B. TBCCW Differential Pressure is too HIGH; it is required to STOP an operating TBCCW Pump.

_____ C. TBCCW Differential Pressure is too LOW; it is required to START P4300-C003 (South) TBCCW Pump.

_____ D. TBCCW Differential Pressure is too HIGH; it is required to OPEN P43-F405, TBCCW DP Control Valve.

QUESTION 8

Following a transfer of MPU 3, 7D55, INTERRUPTIBLE CONTROL AIR ISOLATION VALVE CLOSED alarmed. The OPEN pushbutton for P5000-F473, Station Air to IAS Valve has been depressed and the valve REMAINED CLOSED.

Which one of the following is the correct procedurally directed action required to restore the supply to IAS?

_____ A. MANUALLY OPEN P5000-F473, Station Air to IAS Valve.

_____ B. PLACE the IAS ISOLATION SIGNAL keylock switch in OVERRIDE.

_____ C. MANUALLY OPEN the bypass valve around P5000-F473, Station Air to IAS Valve

_____ D. DEPRESS the OPEN pushbutton for P5000-F401, Station Air Header to TB Isolation Valve.

QUESTION 9

Which one of the following is the LOWEST RPV water level which will maintain natural circulation within the RPV during a loss of shutdown cooling?

_____ A. 173 inches

_____ B. 214 inches

_____ C. 220 inches

_____ D. 255 inches

QUESTION 10

An irradiated Fuel Assembly has been dropped in the Reactor Cavity, gas bubbles are rising to the surface of the pool.

Which one of the following alarms is associated with actuation of automatic protective functions related to this event?

_____ A. 16D1, RB REFUELING AREA FIFTH FLOOR HIGH RADN

_____ B. 3D32, DIV I/II RB VENT EXH RADN MONITOR UPSCALE

_____ C. 3D35, DIV I/II FP VENT EXH RADN MONITOR UPSCALE TRIP

_____ D. 3D41, CONT CENTER MAKEUP AIR RADN MONITOR UPSCALE

QUESTION 11

Following a reactor scram, plant conditions are as follows:

- Drywell Pressure is 12 psig.
- Torus Pressure is 10 psig.
- Drywell Temperature is 225 ºF.
- Torus Water Level is 0 inches.

With these conditions, why do Emergency Operating Procedures require the initiation of Drywell Spray?

_____ A. To reclaim Nitrogen into the Drywell from the Torus.

_____ B. To ensure NPSH limits for ECCS pumps are not violated.

_____ C. To maintain pressure within Primary Containment design limits.

_____ D. To maintain temperature below the Drywell Temperature LCO limits.

QUESTION 12

Following a Main Steam Isolation Valve closure, conditions are as follows:

- All control rods are inserted.
- LLS DIV I SRV OPEN SEALED IN light is OFF
- LLS DIV I SCRAM PRESS SEALED IN light is OFF
- LLS DIV II SRV OPEN SEALED IN light is ON
- LLS DIV II SCRAM PRESS SEALED IN light is ON
- Reactor Pressure LOWERED to 935 psig and then INCREASED to 1050 psig.

What is the status of Low-Low Set Safety Relief Valves?

_____ A. SRV A is SHUT; SRV G is OPEN.

_____ B. SRV A is OPEN; SRV G is SHUT.

_____ C. BOTH SRV A and SRV G are OPEN.

_____ D. BOTH SRV A and SRV G are SHUT.

QUESTION 13

With Torus Water Level at 0 inches, which combination of Reactor Pressure and Torus Water Temperature violates the Heat Capacity Limit?

	Reactor Pressure	Torus Water Temperature
_____ A.	250 psig	195ºF
_____ B.	700 psig	178ºF
_____ C.	900 psig	175ºF
_____ D.	1000 psig	170ºF

QUESTION 14

When it is determined that Drywell Temperature cannot be restored and maintained below 340ºF, the requirement to scram the reactor is based on which one of the following?

_____ A. RPV Level instrument inaccuracies.

_____ B. To allow Drywell Sprays to be initiated.

_____ C. To reduce the rate of energy input to the Drywell prior to Emergency Depressurization

_____ D. To allow the inboard MSIVs to be closed prior to exceeding their qualification temperature.

QUESTION 15

Following a LOCA, the following conditions exist:

- Torus Level is -30 (minus 30) inches.
- Torus Pressure is 3.0 psig steady.
- Torus Temperature is 205ºF steady.
- 'A' RHR Loop flow is 27,000 gpm.
- 'B' Core Spray Loop flow is 4,000 gpm.
- No other ECCS pumps are running.

Based on these conditions, which ECCS Pumps, if any, have sufficient NPSH for continued pump operation?

_____ A. ONLY ‘A’ Loop RHR Pumps.

_____ B. ONLY ‘B’ Loop Core Spray Pumps.

_____ C. BOTH ‘A’ Loop RHR Pumps and ‘B’ Loop Core Spray Pumps.

_____ D. NEITHER ‘A’ Loop RHR Pumps NOR ‘B’ Loop Core Spray Pumps.

QUESTION 16

Following a transient, plant conditions are as follows:

- Drywell Temperature is 135ºF.
- RPV Water Level is +15 inches Wide Range.
- Reactor Pressure is 1000 psig.

Which one of the following describes the accuracy of Wide Range RPV Water Level Instrumentation and the affect of plant cooldown?

_____ A. Wide Range RPV Water Level is INACCURATE and will read HIGHER than actual during plant cooldown.

_____ B. Wide Range RPV Water Level is ACCURATE and will read LOWER than actual during plant cooldown.

_____ C. Wide Range RPV Water Level is ACCURATE and will read HIGHER than actual during plant cooldown.

_____ D. Wide Range RPV Water Level is INACCURATE and will read LOWER than actual during plant cooldown.

QUESTION 17

Which one of the following is assured by the Boron Injection Initiation Temperature (BIIT)?

_____ A. Power oscillations will not exceed a fuel cladding limit.

_____ B. Cold Shutdown Boron Weight will be injected prior to exceeding a primary containment limit.

_____ C. Hot Shutdown Boron Weight will be injected prior to exceeding a primary containment limit.

_____ D. Power transients following Emergency Depressurization will not exceed a fuel cladding limit.

QUESTION 18

Following a steam leak in the Turbine Building, 29.100.01 Sheet 5, Radioactivity Release has been entered. Turbine Building Ventilation has TRIPPED and ISOLATED.

Which one of the following actions are required, and why?

_____ A. Maintain Turbine Building Ventilation ISOLATED to lower the radioactivity released.

_____ B. Maintain Turbine Building Ventilation ISOLATED to prevent an unmonitored release.

_____ C. Defeat the isolation and RESTART Turbine Building Ventilation to ensure the release is monitored.

_____ D. Defeat the isolation and RESTART Turbine Building Ventilation to lower the radioactivity release rate.

QUESTION 19

With a fire in the plant, components in the Relay Room (Fire Zone 8) have been affected. 20.000.18, Control of the Plant from the Dedicated Shutdown Panel, has been entered.

With these conditions, which one of the following sources will be established for maintaining RPV Water Level at the Dedicated Shutdown Panel?

_____ A. Heater Feed Pump(s)

_____ B. Standby Feedwater Pump(s)

_____ C. Reactor Core Isolation Cooling Pump

_____ D. Control Rod Drive Hydraulic Pump(s)

QUESTION 20

E1102-C002A Div 1 RHR Pump A is operating in Shutdown Cooling Mode. Due to a Grid Disturbance in progress, ONLY the 120 KV power lines voltages are LOWERING at 1 KV per minute. 345 KV lines are NORMAL.

Which one of the following conditions will occur as a result of this trend?

_____ A. RHR Pump A will continue to operate in Shutdown Cooling Mode.

_____ B. Degraded Voltage relays will initiate a Division 1 Load Shed.
RHR Pump A will TRIP and automatically RESTART on the EDGs.

_____ C. Bus Undervoltage relays will initiate a Division 1 Load Shed.
RHR Pump A will TRIP requiring entry into 20.205.01, Loss of Shutdown Cooling.

_____ D. Degraded Voltage relays will initiate a Division 1 Load Shed.
RHR Pump A will TRIP requiring entry into 20.205.01, Loss of Shutdown Cooling.

QUESTION 21

The plant is shutdown with RHR Division 1 operating in the Shutdown Cooling Mode.

Annunciator 1D33 RHR SYSTEM OVERPRESSURE alarms.

What was the RPV pressure that caused this alarm and how does the plant respond to protect the RHR system piping?

_____ A. 95 psig, the E1150-F008 and F009, Shutdown Cooling Inboard and Outboard Isolation Valves will close.

_____ B. 140 psig, the E1150-F008 and F009, Shutdown Cooling Inboard and Outboard Isolation Valves will close.

_____ C. 95 psig, The E1150-F015A/B Division 1/2 LPCI Inboard Isolation Valves will close.

_____ D. 140 psig, The E1150-F015A/B Division 1/2 LPCI Inboard Isolation Valves will close

QUESTION 22

With the plant operating at 100% power, one Turbine Driven Reactor Feedwater Pump TRIPS.

Which one of the following describes the response of the Reactor Recirculation System and the reason for that response?

_____ A. The 1 Limiter is enforced to protect operating Reactor Recirculation Pumps from cavitation.

_____ B. The 2/3 Limiter is enforced to protect operating Reactor Recirculation Pumps from cavitation.

_____ C. The 1 Limiter is enforced to reduce reactor power within the capacity of the remaining Feedwater Pump.

_____ D. The 2/3 Limiter is enforced to reduce reactor power within the capacity of the remaining Feedwater Pump.

QUESTION 23

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

- 3D80, CONTROL ROD DRIFT alarms.
- The operator selects control rod 14-31.
- Control rod 14-31 is moving from position 36 to 38.
- Timer Malfunction red SEL BLOCK light is OFF.

Which one of the following actions will be required?

_____ A. Place the Reactor Mode Switch in SHUTDOWN.

_____ B. Insert Rod 14-31 ONE NOTCH using the Rod Movement Control Switch.

_____ C. Insert Rod 14-31 to FULL IN using the Rod Movement Control Switch.

_____ D. Insert Rod 14-31 to FULL IN using the RONOR EMER IN Switch

QUESTION 24

The **Radioactivity Release** Leg of 29.100.01, Sheet 5, requires Emergency Depressurization if a primary system is discharging outside of primary and secondary containment, and radiation levels at the Site Boundary are approaching the General Emergency (GE) release rate.

Assuming a **single**, **unisolable leak** has occurred, and Site Boundary radiation levels are near the GE level, which one of the following sources of a radioactive leak would meet the requirements for Emergency Depressurization?

_____ A. A leak in the Reactor Water Cleanup Pump discharge piping.

_____ B. A leak in the Fuel Pool Cooling and Cleanup Pump discharge piping.

_____ C. A leak in the Main Steam piping at the High Pressure Coolant Injection Pump inlet.

_____ D. A leak in the Main Steam piping at the Reactor Feedwater Pump inlet.

QUESTION 25

Due to a steam leak in the Reactor Building, the NE Corner Room indicates above the MAX NORMAL Radiation Level.

Which one of the following actions is required?

_____ A. ISOLATE the RCIC System.

_____ B. ISOLATE the HPCI System.

_____ C. SCRAM the reactor and OPEN Safety Relief Valves.

_____ D. SCRAM the reactor and OPEN Main Turbine Bypass Valves.

QUESTION 26

Why is it required to enter the Secondary Containment Control Leg of 29.100.01 Sheet 5, when Reactor Building Differential Pressure cannot be maintained negative?

_____ A. An indication that radioactivity will not be treated or monitored prior to release exists.

_____ B. The continued operability of equipment needed to stabilize the plant may be compromised.

_____ C. The structural integrity of the Secondary Containment may fail under accident conditions.

_____ D. An indication of a primary system discharging into the Secondary Containment exists.

QUESTION 27

While executing 29.100.01 Sheet 4, Primary Containment Hydrogen / Oxygen Control, why are Torus Sprays operated when procedurally directed?

_____ A. To prevent chugging during the operation of Drywell Sprays.

_____ B. To mix the containment atmosphere to reduce the localized buildup of combustible gases.

_____ C. To scrub Hydrogen out of the Torus atmosphere prior to the initiation of venting operations.

_____ D. To allow the Reactor Building to Torus Vacuum breakers to OPEN to dilute the concentration of combustible gases in the Torus.

QUESTION 28

How is the effectiveness of Low Pressure Coolant Injection (LPCI) Mode of RHR affected by loss of Automatic Depressurization System initiation logic?

_____ A. LPCI WILL NOT automatically start following a loss of ADS initiation logic.

_____ B. LPCI is NOT AFFECTED, the system provides protection for ALL Loss of Coolant Accidents (LOCAs) without ADS.

_____ C. LPCI WILL automatically start, but will no longer automatically provide protection for SMALL Break Loss of Coolant Accidents (LOCAs).

_____ D. LPCI WILL automatically start, but will no longer automatically provide protection for LARGE Break Loss of Coolant Accidents (LOCAs).

QUESTION 29

RHR A Loop is operating in Shutdown Cooling Mode, with conditions as follows:

- The plant is in MODE 4, Cold Shutdown.
- RPV Water Level is 225 inches.
- NO Reactor Recirculation Pumps are in operation.
- Cooldown Rate is 100ºF per hour.
- RHR A Loop Flow is 9,000 gpm.
- E1150-F048A, Div 1 RHR Hx Bypass Valve is THROTTLED 10% OPEN
- E1150-F003A, Div 1 RHR Hx Outlet Valve is OPEN.
- E1150-F068A, Div 1 RHR Hx Service Water Outlet FCV is OPEN.

Which valve must be repositioned per the applicable procedure, and how will RHR Pump Discharge Pressure be affected?

_____ A. E1150-F048A, Div 1 RHR Hx Bypass Valve will be repositioned; RHR Pump Discharge Pressure will INCREASE.

_____ B. E1150-F003A, Div 1 RHR Hx Outlet Valve will be repositioned; RHR Pump Discharge Pressure will INCREASE.

_____ C. E1150-F048A, Div 1 RHR Hx Bypass Valve will be repositioned; RHR Pump Discharge Pressure will DECREASE.

_____ D. E1150-F068A, Div 1 RHR Hx Service Water Outlet FCV will be repositioned; RHR Pump Discharge Pressure will be UNAFFECTED.

QUESTION 30

Following a transient, High Pressure Coolant Injection is being used to maintain RPV Water Level with the following conditions:

- RPV Water Level is 200 inches, stable.
- HPCI Pump Flow is 5200 gpm.
- HPCI Turbine Speed is 4800 rpm.
- Suction is from the Condensate Storage Tank.
- Torus Water Level is stable at 0 inches
- Condensate Storage Tank Level 24 inches and lowering.

Which one of the following will occur and what action is required to mitigate the condition?

_____ A. The HPCI Pump will cavitate. TRIP the HPCI Turbine.

_____ B. The HPCI Turbine will TRIP. OPEN the HPCI Torus Suction Valves

_____ C. The HPCI Turbine will be damaged by water impingement. TRIP the HPCI Turbine.

_____ D. The HPCI Turbine will be damaged by excessive speed. LOWER the HPCI Flow controller automatic setpoint

QUESTION 31

During Manual Initiation of Core Spray, the following conditions exist:

- Drywell Pressure is 1.75 psig.
- Reactor Pressure is 250 psig, lowering.
- E21-R601A, Div 1 Core Spray Flow Indication is 0 gpm.
- E2150-F031A Div 1 Core Spray Min Flow Valve is OPEN.
- E2150-F005A, Div 1 Core Spray Inboard Isolation Valve is SHUT.

With these indications, which one of the following actions is required?

_____ A. SECURE Core Spray Pumps A and C to prevent overheating.

_____ B. OPEN E2150-F005A, Div 1 CS Inboard Isolation Valve to provide a flowpath.

_____ C. OPEN E2150-F015A, Div 1 CS Test Line Isolation Valve to prevent overheating.

_____ D. SHUT E2150-F031A Div 1 Core Spray Min Flow Valve to raise pump discharge pressure.

QUESTION 32

While operating in the EOPs, SLC was injected, and the system is now shut down. Reactor Water Cleanup is currently being used as an Alternate Pressure Control System. With a plant cooldown in progress, it becomes necessary to perform 29.ESP.05, RPV INJECTION USING THE SLC TEST TANK, to obtain a High Pressure injection source.

Which ONE of the following describes expected operator actions and system response after the SLC Test Tank is lined up and filled?

_____ A. One SLC Pump is started locally, and RWCU System automatically isolates.

_____ B. One SLC Pump is started locally, and RWCU remains in service.

_____ C. One SLC Pump is started from the Control Room, and RWCU System automatically isolates.

_____ D. One SLC Pump is started from the Control Room, and RWCU remains in service.

QUESTION 33

The plant is operating at 100% power.
Condenser Vacuum begins degrading.

What is the lowest pressure that Condenser Vacuum will indicate when an automatic reactor scram occurs?

_____ A. 2.2 psia

_____ B. 2.7 psia

_____ C. 6.9 psia

_____ D. 12.2 psia

QUESTION 34

Intermediate Range Monitors A, C, E and G are de-energized.
Which one of the following electrical power sources has been lost?

_____ A. 24 / 48 VDC Battery 2IA

_____ B. ESS 130 / 260 VDC Battery 2PA

_____ C. 120 VAC Reactor Protection System Bus A

_____ D. 120 VAC Uninterruptible Power Supply Bus A

QUESTION 35

The reactor operator is withdrawing a rod to shorten the reactor period during a reactor startup. All IRM channels are on range 4. The reactor mode switch is in STARTUP and no SRM channels are bypassed.

What is the effect if SRM A fails downscale?

_____ A. RMCS permits rod withdrawal to continue.

_____ B. RMCS causes a control rod block.

_____ C. RPS generates a full reactor scram.

_____ D. RPS generates a half scram on RPS A.

QUESTION 36

The reactor is operating with both recirculation loops in operation, conditions are as follows:

- APRM Flux is 40%.
- APRM Recirc Flow is 45%
- Total Core Flow is 50 Mlbm/hr, equally divided between both loops.

Which one of the following is the LOWEST APRM power which will produce a Simulated Thermal Power Trip?

_____ A. 85%

_____ B. 90%

_____ C. 95%

_____ D. 114%

QUESTION 37

While manually operating the Reactor Core Isolation Cooling (RCIC) Pump for injection, the following conditions exist:

- RCIC Suction is aligned to the Condensate Storage Tank (CST).
- RCIC Pump Flow is 120 gpm.
- RCIC Pump Discharge Pressure is 600 psig.
- RCIC Pump Speed is 1900 rpm.

Which one of the following may result from sustained operation with these conditions?

_____ A. The RCIC Turbine may be damaged by excessive speed.

_____ B. The RCIC Lube Oil Cooler will receive inadequate cooling flow.

_____ C. The RCIC Turbine Exhaust Line may be damaged by water hammer.

_____ D. The Condensate Storage Tank inventory will be pumped into the Torus.

QUESTION 38

Following a transient, plant conditions are:

- RPV Water Level is 36 inches, lowering 2 inches per minute.
- Drywell Pressure is 1.50 psig, stable.
- Power from Division 1 Batteries 2A-1 and 2A-2 has been lost.

Which one of the following describes the affect of these conditions on Automatic Depressurization Valves?

_____ A. ADS will NOT initiate, due to a loss of logic power.

_____ B. ADS will initiate in 3 minutes 45 seconds (225 seconds).

_____ C. ADS will initiate in 9 minutes (540 seconds).

_____ D. ADS will initiate 10 minutes 45 seconds (645 seconds).

QUESTION 39

The plant is operating at 100% power, when the following indications occur on the IPCS MAIN STEAM display:

- STEAM TNL HI TEMP CHANNEL C light is RED.
- NSSSS ISOL LOGIC CHANNEL A TRIP light is GREEN.
- NSSSS ISOL LOGIC CHANNEL B TRIP light is GREEN.
- NSSSS ISOL LOGIC CHANNEL C TRIP light is RED.
- NSSSS ISOL LOGIC CHANNEL D TRIP light is RED.

Which one of the following results from these indications?

_____ A. ALL Main Steam Line Drain Valves receive CLOSE signal.

_____ B. ALL Main Steam Isolation Valves receive CLOSE signal.

_____ C. ONLY INBOARD Main Steam Line Drain Valves receive CLOSE signal.

_____ D. ONLY OUTBOARD Main Steam Line Drain Valves receive CLOSE signal.

QUESTION 40

With the plant at 100% power, the following indications are observed:

- 1D61 SRV OPEN alarms
- SRV G OPEN and CLOSE pushbuttons have been depressed.
- Generator load stabilized about 50 MWe below the initial conditions.

Which one of the following describes present indications and the procedurally required action?

_____ A. SRV G is CLOSED; start all available Torus Cooling.

_____ B. SRV G is OPEN; pull the fuses supplying power to SRV G.

_____ C. SRV G is OPEN; reduce the Pressure Regulator Setpoint to 900 psig.

_____ D. SRV G is CLOSED; verify that the minimum required number of SRVs are operable.

QUESTION 41

A reactor scram occurred at 100% power.
Which one of the following Post Scram Feedwater Logic actuations occurs 6 seconds after a reactor scram?

_____ A. Level Setpoint is lowered to 150 inches.

_____ B. RFPT speed is limited to 2600 to 2700 rpm.

_____ C. N21-F403, RPV Startup LCV, transfers to AUTO.

_____ D. N2100-F607, N RFP Discharge Line Isolation Valve CLOSES.

QUESTION 42

Following a transient, plant conditions are as follows:

- Drywell Pressure is 2.25 psig.
- 8D46 DIV I REACTOR BLDG PRESSURE HIGH / LOW is alarming.
- 17D46 DIV II REACTOR BLDG PRESSURE HIGH / LOW is alarming.
- Reactor Building Pressure is -0.52 (minus 0.52) inches water column.

Which one of the following has occurred?

_____ A. Reactor Building HVAC Exhaust Fans are running.

_____ B. BOTH Trains of Standby Gas Treatment are running.

_____ C. BOTH Trains of Standby Gas Treatment have failed to start.

_____ D. ALL Reactor Building HVAC Isolation Dampers have failed to isolate.

QUESTION 43

What is the affect on an Emergency Diesel Generator when the associated Emergency Signal Bypass Keylock Selector Switch is placed in the BYPASS position?

_____ A. ALL Emergency Diesel Generator NON ESSENTIAL TRIP signals are DEFEATED.

_____ B. ALL Emergency Diesel Generator auto start functions are FUNCTIONAL, but the Emergency Diesel Generator will NOT excite after starting.

_____ C. The Emergency Diesel Generator auto start function due to a Loss of Coolant Accident is DEFEATED, but the Emergency Diesel Generator will auto start due to an Undervoltage condition.

_____ D. The Emergency Diesel Generator auto start function due to an Undervoltage condition is DEFEATED, but the Emergency Diesel Generator will auto start due to a Loss of Coolant Accident.

QUESTION 44

With the plant operating at full power, a total loss of Control Rod position indication has occurred.

Which one of the following power sources has been lost?

_____ A. 260/130 VDC Battery Power

_____ B. 120 VAC Modular Power Unit (MPU) 3

_____ C. 120 VAC Reactor Protection System (RPS) Bus A

_____ D. 120VAC Uninterruptible Power Supply (UPS) Bus A

QUESTION 45

With a loss of Division I ESF DC Power, which one of the following will result?

_____ A. The Reactor Core Isolation Cooling (RCIC) automatic start function is DISABLED.

_____ B. The High Pressure Coolant Injection (HPCI) automatic start function is DISABLED.

_____ C. The Reactor Water Cleanup (RWCU) Outboard Isolation Valve G33-F004 will CLOSE.

_____ D. The Inboard Main Steam Isolation Valves (MSIVs) B2103-F022A through D will CLOSE.

QUESTION 46

Following a transient initiated by a loss of the 345 kV and 120kV switchyards, the following Emergency Diesel Generator conditions exist:

- EDG 11 Jacket Coolant Temperature High is alarming.
- EDG 12 Crankcase Pressure High is alarming.
- EDG 13 Oil Temperature High is alarming.
- EDG 14 Fuel Oil Pressure Low is alarming.

Which one of the Core Spray Pumps is affected?

_____ A. Core Spray Pump A

_____ B. Core Spray Pump B

_____ C. Core Spray Pump C

_____ D. Core Spray Pump D

QUESTION 47

Which one of the following components can be directly supplied from Division 1 Non Interruptible Air System (NIAS)?

_____ A. Safety Relief Valves B2104- F013 H, E, R, P, and J

_____ B. Outboard Main Steam Isolation Valves B2103-F028A, B, C, and D

_____ C. Reactor Recirculation Sample Line Outboard Isolation Valve B3100-F020

_____ D. RCIC Barometric Condenser Drain to Radwaste Outboard Isolation Valve E5150-F005

QUESTION 48

Following a transient at full power, plant conditions are:

- 1D95, DIV I/II RBCCW DIFF PRESS LOW alarms.
- 2D104, RBCCW PUMPS RECIRC VLV CLOSED alarms.
- 2D119, RBCCW PUMPS DIFF PRESS HIGH/LOW alarms.
- NO RBCCW Pumps are operating.

Assuming no operator action, which one of the following components is still supplied with cooling water?

_____ A. Reactor Water Cleanup Pump Seals

_____ B. Control Rod Drive Hydraulic Pumps

_____ C. Division 2 Residual Heat Removal Room Cooler

_____ D. Fuel Pool Cooling and Cleanup Heat Exchangers

QUESTION 49

Two minutes after a **STEAM** leak develops inside the drywell the following conditions exist:

- Drywell Pressure is 13 psig (rising).
- Reactor pressure is 400 psig (lowering at 10 psig per minute).
- RPV level is 170 inches (rising).
- A RRMG set is running at a speed of 30%.
- B RRMG set is tripped.

Recirculation Loop __(1)__ has been selected for injection **AND** on the selected loop __(2)__.

_____ A. (1) A
(2) **BOTH** LPCI injection valves are open

_____ B. (1) B
(2) **BOTH** LPCI injection valves are open

_____ C. (1) A
(2) **ONE** LPCI injection valves is CLOSED

_____ D. (1) B
(2) **ONE** LPCI injection valve is CLOSED

QUESTION 50

The plant is in MODE 3, Hot Shutdown.
Core Spray Loop A is operating in the Full Flow Test Mode.
At the end of the Full Flow Test, system flow is being reduced, the following indications occur:

- Div 1 Core Spray Test Line Isolation Valve, E2150-F015A OPEN and CLOSE lights extinguish.
- DIV I CSS VALVES THERMAL OVERLOAD alarms.

Which one of the following describes the impact of this indication on the Core Spray System and what action is required?

_____ A. Core Spray Loop A is NOT assured to produce the required flow. It is required to enter a Technical Specification LCO.

_____ B. Core Spray Loop A is NOT assured to produce the required flow. Core Spray is NOT required OPERABLE due to present MODE.

_____ C. Core Spray Loop A is assured to produce the required flow by a redundant valve closure. It is required to manually close E 2150-F015A.

_____ D. Core Spray Loop A is NOT assured to produce the required flow. Core Spray Loop A is NOT required because Core Spray Loop B satisfies the Technical Specification LCO indefinitely in the present mode.

QUESTION 51

The plant is operating at 40% power, when Turbine Stop Valve 1 and 2 closed. Which one of the following describes the affect, if any, of this malfunction on the Reactor Protection System?

_____ A. This malfunction results in NO actuation of RPS.

_____ B. This malfunction results in a HALF Scram due to Turbine Stop Valve position.

_____ C. This malfunction results in a FULL Scram due to Turbine Stop Valve position.

_____ D. This malfunction results in a FULL Scram due to increasing Reactor Pressure.

QUESTION 52

With the Reactor Mode Switch in STARTUP HOT STANDBY, the Intermediate Range Monitors are on RANGE 6 with the following readings:

IRM CHANNEL	A	B	C	D	E	F	G	H
READING	122	101	102	102	95	108	103	98

Which one of the following describes the effect, if any, of placing the Range Selector Switch for IRM Channel F to RANGE 5?

_____ A. A full reactor scram occurs.

_____ B. A half scram condition occurs.

_____ C. A rod block condition occurs.

_____ D. There is no effect.

QUESTION 53

The plant is operating at 100% power, when a gradual loss of Interruptible Air System pressure occurs due to a break.

Which one of the following conditions will cause entry into Emergency Operating Procedures?

_____ A. Outboard Main Steam Isolation Valves will fail closed, restricting steam flow, which will result in EOP entry due to High Reactor Pressure

_____ B. Inboard Main Steam Isolation Valves will fail closed, causing void collapse, which will result in EOP entry due to Low RPV Water Level.

_____ C. The ARI Valves will fail open, producing a High Scram Discharge Volume Water Level, which will result in EOP entry due to Low RPV Water Level.

_____ D. The Control Rod Drive Flow control valve will fail open, producing a High Scram Discharge Volume Water Level, which will result in EOP entry due to Low RPV Water Level.

QUESTION 54

When WITHDRAWING a selected control rod, which one of the following describes the INITIAL affect Reactor Manual Control System has on the Control Rod Drive Directional Control Valves?

_____ A. C11F120 and F122 are ENERGIZED to pressurize the TOP of the rod drive piston.

_____ B. C11F121 and F123 are ENERGIZED to pressurize the BOTTOM of the rod drive piston.

_____ C. C11F120 and F122 are DEENERGIZED to pressurize the TOP of the rod drive piston.

_____ D. C11F121 and F123 are DEENERGIZED to pressurize the BOTTOM of the rod drive piston.

QUESTION 55

The plant is operating at 40% power.
A control rod is selected and is intended to be withdrawn from position 00 to 36.
After moving one notch, the control rod becomes uncoupled and sticks.

Which one of the following would result from this condition as the mechanism is moved to position 36?

_____ A. 3D80, CONTROL ROD DRIFT alarms.

_____ B. 3D76, CONTROL ROD OVERTRAVEL alarms.

_____ C. Rod Position Indication STOPS CHANGING at Notch 02.

_____ D. Local Power Range Monitor Indication STOPS CHANGING at Notch 02.

QUESTION 56

With the plant operating at full power, which one of the following results directly from a loss of power to 4160 VAC Bus 65G?

_____ A. ONE Station Air Compressor is deenergized.

_____ B. BOTH Reactor Recirculation Pumps are deenergized.

_____ C. BOTH Reactor Feedwater Pump Turbines are tripped.

_____ D. ONE Emergency Diesel Generator will automatically start.

QUESTION 57

During a plant shutdown with power currently at 65%, which one of the following would result when a Feedwater System transient causes Total Feedwater Flow to drop below 20%?

_____ A. BOTH Reactor Recirculation Pumps will TRIP.

_____ B. BOTH Reactor Recirculation MG Set speeds will LOWER to Limiter 1.

_____ C. BOTH Reactor Recirculation MG Set speeds will LOWER to Limiter 2.

_____ D. BOTH Reactor Recirculation Pumps will REMAIN OPERATING at the current speed setting.

QUESTION 58

With the plant in HOT SHUTDOWN, G33-R606, RWCU Blowdown Flow Control Valve G3300-F033 Controller Demand is increased from 0% to 100%, resulting in the following:

- 2D115, RWCU DIFF FLOW HIGH alarms.
- G33-R800, RWCU System Differential Flow Indication is 80 gpm.
- All other indications are normal.

Which one of the following will result?

_____ A. G3352-F119, RWCU Supply Isolation Valve CLOSES and the RWCU Pumps TRIP.

_____ B. RWCU Filter Demineralizers will go into HOLD and RWCU Pumps REMAIN OPERATING.

_____ C. G3300-F033, RWCU Blowdown Flow Control Valve CLOSES and RWCU Pumps REMAIN OPERATING.

_____ D. G3352-F001, RWCU Supply Inboard Isolation Valve; G3352-F004, RWCU Supply Outboard Isolation Valve; and the G3352-F220, RWCU To FW Outboard Containment Isolation Valve CLOSE and the RWCU Pumps TRIP.

QUESTION 59

Following a Main Steam Line Isolation, the following conditions exist:

- RPV Water Level reached a minimum of 170 inches, and is maintained by Reactor Core Isolation Cooling.
- Drywell Pressure is 1.8 psig and stable.
- Safety Relief Valves are being operated to control Reactor Pressure.
- RHR Loop A is operating in the Torus Cooling Mode.
- BOTH CONTAINMENT SPRAY MODE SELECT switches are in MAN.
- BOTH CONTAINMENT SPRAY 2/3 CORE HEIGHT OVERRIDE switches are in OFF.
- RPV Water Level on B21-R610, Division 1 RPV Core Level Recorder suddenly changes to -150 (minus 150) inches, due to a sensing line failure.

Which one of the following will result from these indications?

_____ A. RHR Loop A remains in the Torus Cooling Mode.

_____ B. RHR Loop A is operating on minimum flow and may be returned to Torus Cooling by depressing the OPEN pushbutton for the affected valves.

_____ C. RHR Loop A is operating on minimum flow and may be returned to Torus Cooling after the associated CONTAINMENT SPRAY 2/3 CORE HEIGHT OVERRIDE switch is placed in MANUAL OVERRIDE.

_____ D. RHR Loop A is operating in the LPCI Mode and may be returned to Torus Cooling after the associated CONTAINMENT SPRAY 2/3 CORE HEIGHT OVERRIDE switch is placed in MANUAL OVERRIDE.

QUESTION 60

Following a transient, the following conditions exist:

- Drywell Pressure is 4.0 psig.
- Drywell Temperature is 250ºF.
- Torus Pressure is 3.0 psig.
- Torus Temperature is 98ºF.

After all required alignments are made for these conditions, which one of the following reflects the expected containment response?

_____ A. Drywell Pressure will lower due to Drywell Spray Initiation.

_____ B. Drywell Temperature will lower due to restoring EECW to the Drywell.

_____ C. Drywell Pressure and Torus Pressure will lower due to Drywell Spray and Torus Spray Initiation.

_____ D. Torus Pressure and Torus Temperature will lower due to operation of Torus Spray and Torus Cooling.

QUESTION 61

The plant is operating at 10% power with the Reactor Mode Switch in STARTUP HOT STBY. A steam leak at the Turbine Inlet has caused Turbine Building Area Temperature to rise to 210ºF.

Which one of the following will result, and what procedure action is required?

_____ A. Main Steam Isolation Valves will CLOSE; it is required to enter 20.000.21, Reactor Scram, and place the Reactor Mode Switch in SHUTDOWN.

_____ B. Main Steam Isolation Valves will CLOSE; it is required to enter 29.100.01, Sheet 5, Secondary Containment Control, and OPERATE available area coolers.

_____ C. Main Steam Isolation Valves will remain OPEN; it is required to enter 20.000.21, Reactor Scram, and place the Reactor Mode Switch in SHUTDOWN.

_____ D. Main Steam Isolation Valves will remain OPEN; it is required to enter 29.100.01, Sheet 5, Secondary Containment Control, and close the Main Steam Isolation Valves.

QUESTION 62

The plant is operating at full power, when Condenser Hotwell Level begins to lower. When Condenser Hotwell Level lowers to 15 inches, which one of the following will result?

_____ A. Condenser Pump Discharge Pressure lowers due to cavitation.

_____ B. Condenser Pump Discharge Pressure rises because Reactor Feed Pumps TRIP.

_____ C. Condenser Pump Discharge Pressure lowers because Condenser Pumps TRIP.

_____ D. Condenser Pump Discharge Pressure rises because of Emergency Hotwell Supply Pump START.

QUESTION 63

With the plant operating at 70% power, the following occurs:

- 5D44 RFP LOW FLOW / N RFPT TRIPPED alarms.
- RPV Water Level is 188 inches, lowering.
- Steam Flow is greater than Feedwater Flow and BOTH are lowering.

Which one of the following actions is procedurally required?

_____ A. INITIATE Reactor Core Isolation Cooling.

_____ B. Inject with BOTH Standby Feedwater Pumps.

_____ C. Manually OPEN the Startup Level Control Valve.

_____ D. Place the South Reactor Feedwater Pump Turbine Controller in EMERGENCY BYPASS.

QUESTION 64

After the actuation of a wet pipe automatic sprinkler system, the following conditions exist:

- Fire Water Header Pressure lowered to 125 psig.
- General Service Water Header Pressure lowered to 105 psig.

Which one of the following alarms is consistent with this condition?

_____ A. 7D2, DIESEL FIRE PUMP TROUBLE

_____ B. 7D6, DIESEL FIRE PUMP AUTO START

_____ C. 7D10, ELECTRIC FIRE PUMP AUTO START

_____ D. 7D14, GEN SERV H2O HEADER PRESS HIGH/LOW

QUESTION 65

Which one of the following **DIRECTLY** results when RBHVAC DIV I MANUAL ISO switch is ARMED and DEPRESSED?

_____ A. T4100-F011, RBHVAC Supply Inboard Isolation Damper, T4100-F009, RBHVAC Exhaust Inboard Isolation Damper will close, and Division 1 SGTS will start.

_____ B. T4100-F010, RBHVAC Supply Outboard Isolation Damper, T4100-F008, RBHVAC Exhaust Outboard Isolation Damper will close, and Division 1 SGTS will start.

_____ C. T4100-F011, RBHVAC Supply Inboard Isolation Damper, T4100-F009, RBHVAC Exhaust Inboard Isolation Damper will close, and Division 1 and 2 SGTS will start.

_____ D. T4100-F010, RBHVAC Supply Outboard Isolation Damper, T4100-F008, RBHVAC Exhaust Outboard Isolation Damper will close, and Division 1 and 2 SGTS will start.

QUESTION 66

Per 23.138.01, Reactor Recirculation System, which ONE of the following describes the **minimum** qualification and coordination requirements for local operation of a Recirculation MG Set Scoop Tube?

_____ A. A qualified Nuclear Operator in communication with the Main Control Room can perform scoop tube position adjustment.

_____ B. A licensed Nuclear Supervising Operator in communication with the Main Control Room can perform scoop tube position adjustment.

_____ C. A qualified Nuclear Operator can perform scoop tube position adjustment with a licensed Nuclear Supervising Operator supervising at the Recirculation MG Set.

_____ D. A licensed Nuclear Supervising Operator can perform scoop tube position adjustment with a Senior Reactor Operator supervising at the Recirculation MG Set.

QUESTION 67

What is the reason for limiting Reactor Recirculation MG Set Speed to 75% during Single Loop Operation?

_____ A. To prevent developing oscillations in Reactor Recirculation MG Set speed.

_____ B. To prevent excessive vibration of components inside the Reactor Vessel.

_____ C. To limit the APRM Simulated Thermal Power Trip setpoint values within Single Loop values.

_____ D. To ensure the proper functioning of the LPCI Loop Select Logic in the event of a Loss of Coolant Accident.

QUESTION 68

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

- Generator Load is 1120 MWe with power factor at 1.0.
- Generator Hydrogen Pressure is 60 psig.
- Due to low grid voltage conditions, it is necessary to raise Generator Voltage.

Which one of the following is the maximum Reactive Power which can be accommodated at the present Generator Load, without exceeding a limit?

_____ A. 125 MVAR (leading)

_____ B. 185 MVAR (leading)

_____ C. 475 MVAR (lagging)

_____ D. 635 MVAR (lagging)

QUESTION 69

Which one of the following situations is appropriate for the use of Temporary Change Notice per MGA 04?

_____ A. To change the intent of a system operating procedure section.

_____ B. To change the approval requirement for an administrative procedure.

_____ C. To correct a component identification in a system operating procedure.

_____ D. To add a corrective action to prevent recurrence to an existing procedure.

QUESTION 70

Which one of the following completes the statement which describes the bases of the limiting condition for operation which requires the Main Turbine Bypass valves and the Moisture Separator Reheater to be operable above 25% power?

An operable Main Turbine Bypass system and the Moisture Separator Reheater will ensure _____.

_____ A. the MCPR safety limit is not exceeded during rapid over pressurization transients.

_____ B. the APLHGR safety limit is not exceeded during rapid over pressurization transients.

_____ C. RPV pressure scram setpoints are not exceeded during all turbine trip events.

_____ D. the plant cool down limits are not exceeded during all turbine trip events.

QUESTION 71

During an emergency, authorization to exceed federal occupational dose limits can **only** be granted by the _____.

_____ A. Plant Manager

_____ B. RERP Supervisor

_____ C. Emergency Director

_____ D. Radiation Protection Manager

QUESTION 72

Following a Main Steam Line Break from full power, 3D45, CONT CENTER MAKEUP AIR RADN MONITOR UPSCALE TRIP alarms.

- Div 1 CCHVAC Makeup Air Radiation Monitor, D11-K809 reads 600 cpm.
- Div 2 CCHVAC Makeup Air Radiation Monitor, D11-K813 reads 700 cpm.

Which one of the following actions is correct?

_____ A. OPERATE CCHVAC in the Purge Mode to maximize dilution.

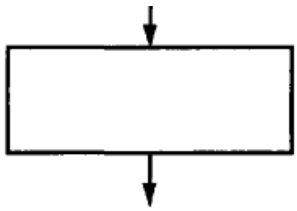
_____ B. SHUTDOWN BOTH CCHVAC Emergency Makeup Fans to reduce the main control room pressure.

_____ C. OPERATE CCHVAC in the Recirculation Mode using ONE Emergency Makeup Fan to optimize filtration.

_____ D. OPERATE CCHVAC in the Recirculation Mode using BOTH Emergency Makeup Fans to maximize filtration.

QUESTION 73

The RECTANGULAR box (shown below) in an Emergency Operating Procedure flowchart indicates which ONE of the following?



_____ A. Decision Step

_____ B. Hold/Wait Point

_____ C. Instructional Step

_____ D. Concurrent Execution

QUESTION 74

While mitigating an Anticipated Transient Without Scram, the following conditions are noted:

- RPS A and B are de-energized.
- ALL HCU blue SCRAM indicating lights are ON.
- 3D2, SCRAM DISCH VOLUME LEVEL HIGH is alarming.
- C1100-F010, Scram Discharge Volume Vent Valve is CLOSED.
- C1100-F180, Scram Discharge Volume Vent Valve is CLOSED.
- C1100-F011, Scram Discharge Volume Drain Valve is CLOSED.
- C1100-F181, Scram Discharge Volume Drain Valve is CLOSED

Given the above indications, which ONE of the following methods will be most effective to insert Control Rods per 29.ESP.03, Alternate Control Rod Insertion Methods?

_____ A. Vent the Scram Air Header

_____ B. De-energize Scram Solenoids

_____ C. Manual Control Rod Insertion

_____ D. Scram Reset and Manual Scram Re-initiation

QUESTION 75

Following a LOCA, the following conditions exist:

- Drywell pressure ..... 9 psig and rising
- Torus pressure ..... 7 psig and rising
- Torus Water Temperature ..... 130 ^{o}F and stable
- Drywell Temperature ..... 235 ^{o}F and rising
- Torus water level ..... -14 inches and stable
- RCIC ..... injecting to the RPV at 600 gpm
- RPV water level ..... 120 inches and stable
- Div. 1 RHR ..... in Torus Cooling

Which one of the following systems or indications will NOT be available for long term use based on current plant trends.

_____ A. Reactor Core Isolation Cooling System (RCIC)

_____ B. RHR in Torus Cooling Mode.

_____ C. B21-R604A(B), Wide Range RPV level indications

_____ D. T23-R800, Suppression Pool Temperature Recorder.

PART 1

CODE I.D. NUMBER A
LEFT BY FILLING IN TH
APPROPRIATE BOXES. I
A NUMBER IS LARGE
THAN 5, FILL IN 5 PLU
THE DIGIT NEEDED T
ADD UP TO THE DESIRE
NUMBER.

WRITE I.D. NUMBER HERE

EXAMPLE

RO

(T) (F) KEY

1		B	C	D	E
2	A		C	D	E
3	A	B		D	E
4	A		C	D	E
5	A		C	D	E
6	A	B		D	E
7	A	B		D	E
8	A	B		D	E
9	A	B		D	E
10	A	B		D	E
11	A	B		D	E
12		B	C	D	E
13	A	B		D	E
14	A	B		D	E
15	A		C	D	E
16	A	B		D	E
17	A	B		D	E
18	A	B		D	E
19	A		C	D	E
20	A	B	C		E
21	A		C	D	E
22	A	B	C		E
23	A	B	C		E
24	A	B	C		E
25		B	C	D	E
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27	A		C	D	E
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36	A		C	D	E
37	A	B		D	E
38		B	C	D	E
39	A		C	D	E
40	A		C	D	E
41		B	C	D	E
42	A		C	D	E
43	A	B		D	E
44	A	B	C		E
45		B	C	D	E
46	A	B		D	E
47		B	C	D	E
48	A	B		D	E
49	A		C	D	E
50		B	C	D	E

IMPORTANT!
USE NO. 2 PENCIL ONLY
MAKE DARK MARKS
ERASE COMPLETELY TO CHANGE

SCANTRON FORM NO. 2

KEY

NAME ILO NRC EXAM
SUBJECT RO-ANSWER KEY
DATE 3-20-2009 PERIOD 1-50

TEST RECORD

PART 1	
PART 2	
TOTAL	

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RO

(T) (F) KEY

51	A		C	D	E
52		B	C	D	E
53		B	C	D	E
54	A		C	D	E
55	A	B	C		E
56	A		C	D	E
57	A		C	D	E
58	A	B		D	E
59	A	B		D	E
60	A	B	C		E
61		B	C	D	E
62	A	B		D	E
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94	A	B	C	D	E
95	A	B	C	D	E
96	A	B	C	D	E
97	A	B	C	D	E
98	A	B	C	D	E
99	A	B	C	D	E
100	A	B	C	D	E

I have reviewed my corrected test and understand those questions that I did not answer correctly.

Signature

ILO
NRC EXAM
ANSWER
KEY

RO 51-75

KEY

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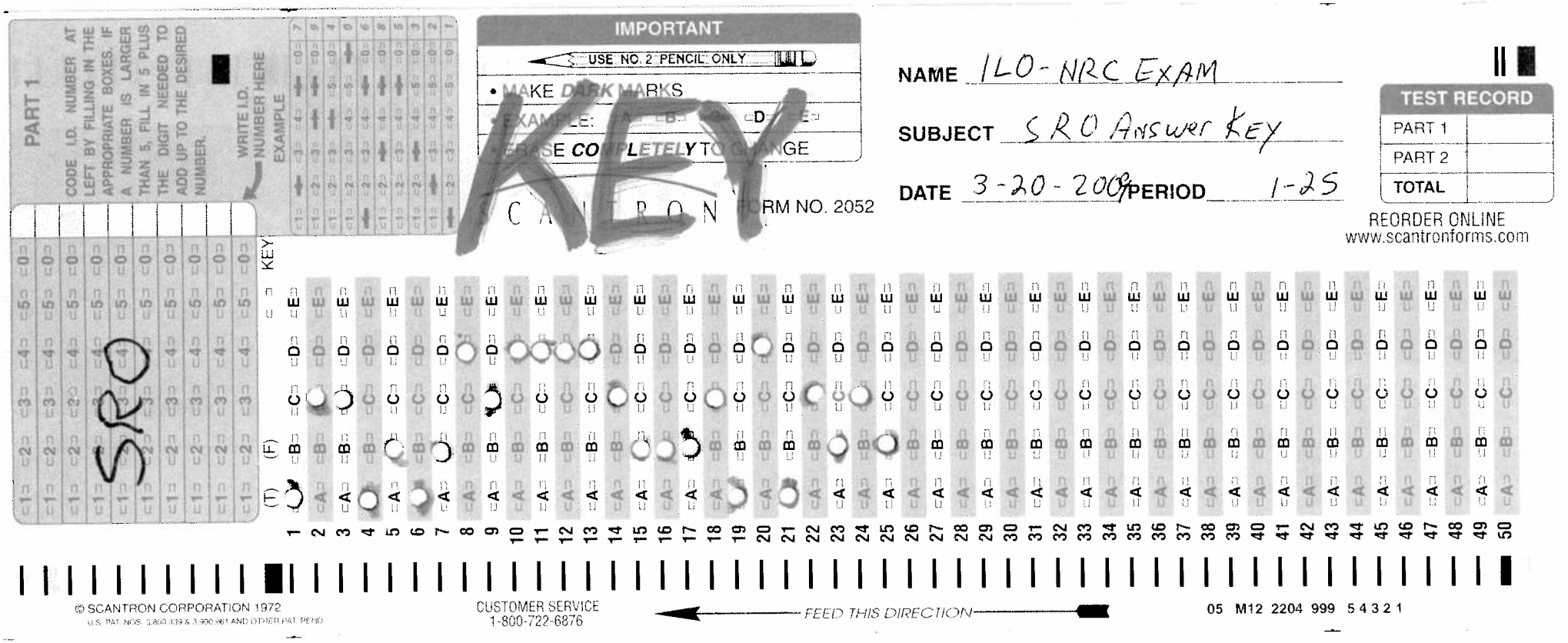
PART 1
CODE I.D. NUMBER AT LEFT BY FILLING IN THE APPROPRIATE BOXES. IF A NUMBER IS LARGER THAN 5, FILL IN 5 PLUS THE DIGIT NEEDED TO ADD UP TO THE DESIRED NUMBER.
WRITE I.D. NUMBER HERE
EXAMPLE
IMPORTANT
USE NO. 2 PENCIL ONLY
• MAKE DARK MARKS
ERASE COMPLETELY TO CHANGE
KEY
SRO
NAME ILO-NRC EXAM
SUBJECT SRO Answer Key
DATE 3-20-2008 PERIOD 1-2S
TEST RECORD
PART 1
PART 2
TOTAL
REORDER ONLINE
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Table 15	HOT SHUTDOWN BORON WEIGHT

- SLC tank level < 45 IN.

OR

- 1290 lbs of borax **AND** 1290 lbs of boric acid have been inj into the RPV

Table 16	COLD SHUTDOWN BORON WEIGHT

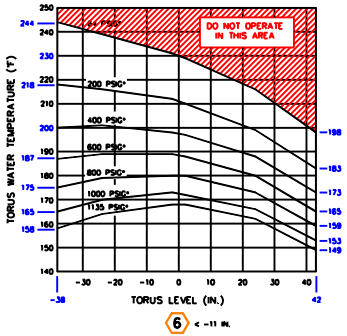
- SLC tank level < 16 IN.

OR

- 3215 lbs of borax **AND** 3215 lbs of boric acid have been inj into the RPV

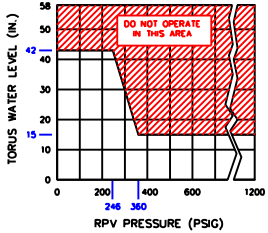
CURVES

HCL

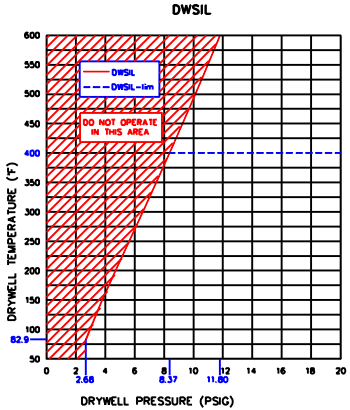


* RPV PRESSURE. DO NOT INTERPOLATE BETWEEN HCL CURVES, USE NEXT HIGHER PRESSURE CURVE.

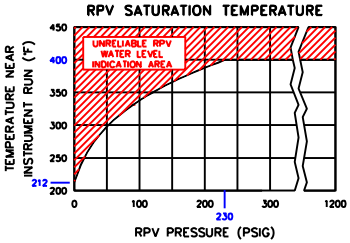
SRVTPLL



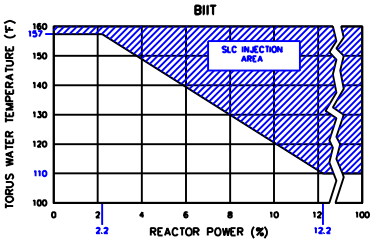
DWSIL



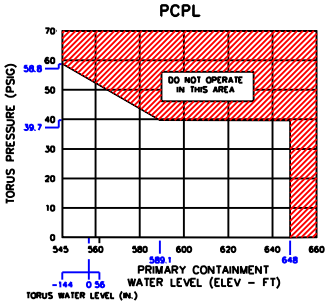
RPV SATURATION TEMPERATURE



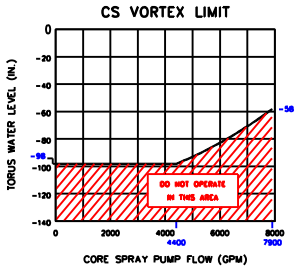
BIIT



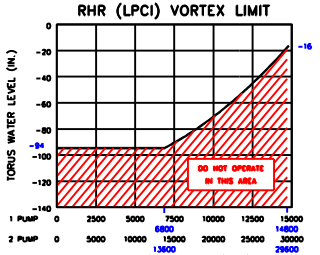
PCPL



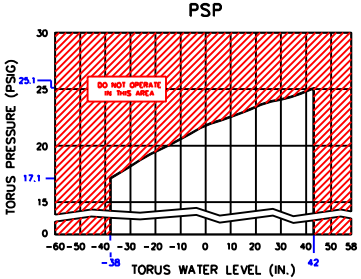
CS VORTEX LIMIT



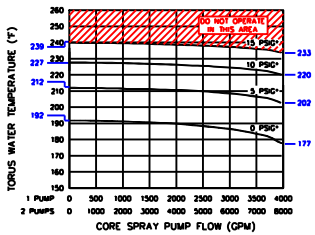
RHR (LPCI) VORTEX LIMIT



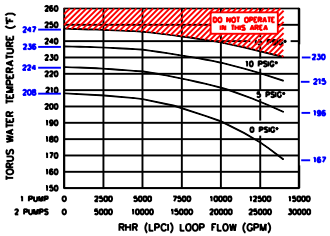
PSP



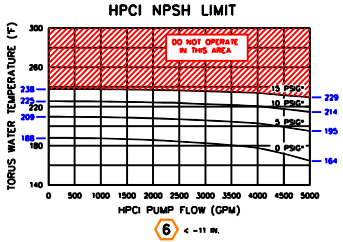
CS NPSH LIMIT



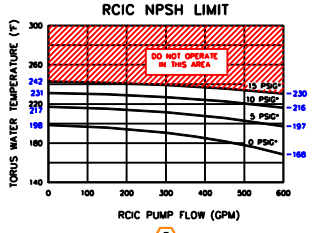
RHR (LPCI) NPSH LIMIT



HPCI NPSH LIMIT



RCIC NPSH LIMIT

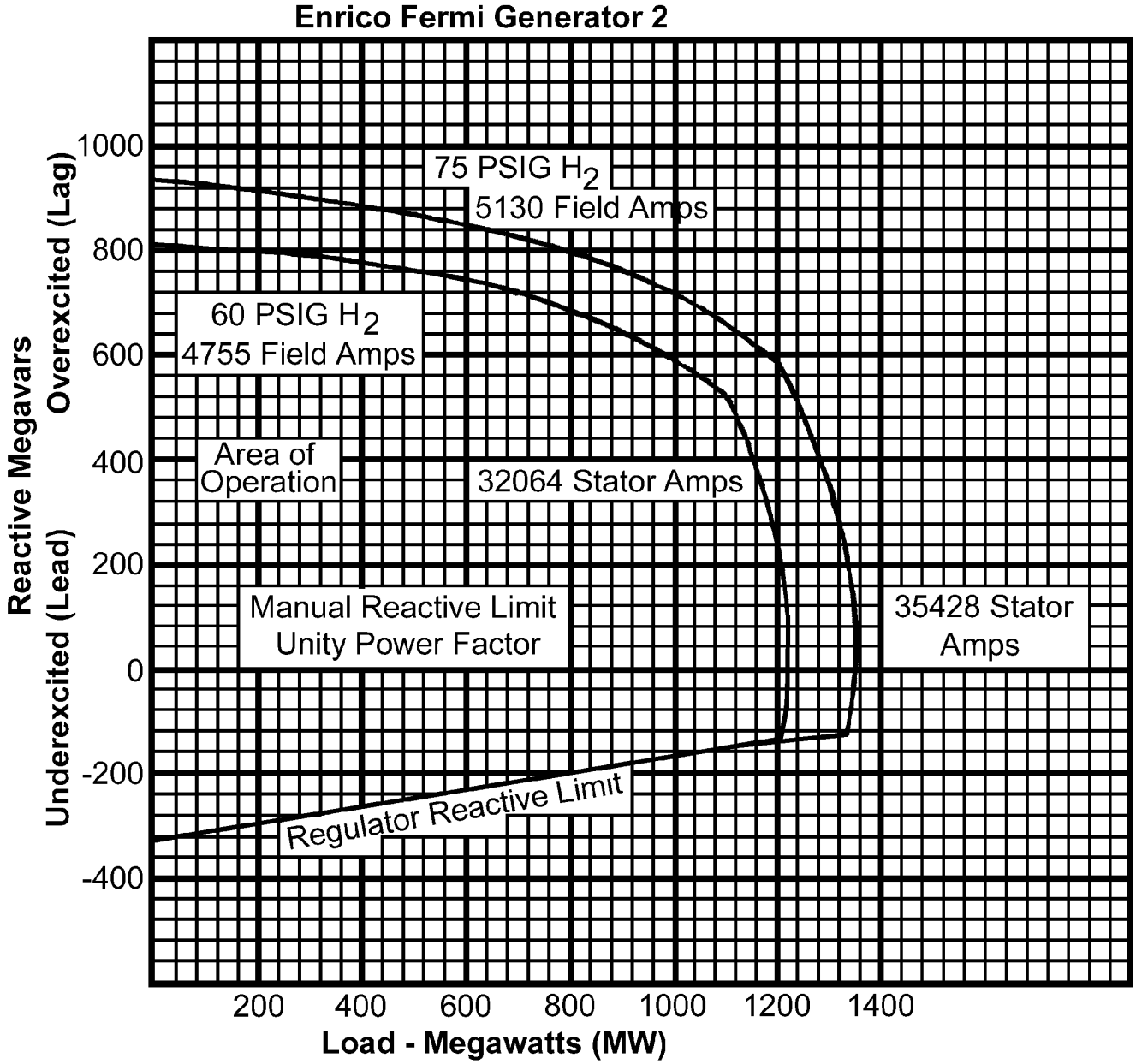


*TORUS OVERPRESSURE = (Indicated Torus Pressure) + 3.5 PSIG + (INDICATED INCHES OF TORUS WATER LEVEL). DO NOT INTERPOLATE BETWEEN NPSH CURVES, USE THE NEXT LOWER CURVE

Table 1	INJECTION SYSTEMS

- Cond/FW (23.107)
- SBFW (23.107.01)
- CRD – both pumps if necessary (29.ESP.04)
- RCIC (23.206) – from CST if able. Defeat RPV low press and hi area temp interlocks if necessary (29.ESP.16)
- HPCI (23.202) – from CST if able. Defeat hi area temp interlocks and torus level transfer if necessary (29.ESP.13)
- CS (23.203)
- LPCI (23.205) – thru Hxs ASAP

Table 8	MINIMUM STEAM COOLING PRESSURE (MSCP)
No. of open SRVs	MSCP (PSIG)
5 or more	230
4	290
3	392
2	595


Enrico Fermi Generator 2
Reactive Megavars
Overexcited (Lag)
Underexcited (Lead)
1000
800
600
400
200
0
-200
-400
75 PSIG H2
5130 Field Amps
60 PSIG H2
4755 Field Amps
Area of
Operation
32064 Stator Amps
Manual Reactive Limit
Unity Power Factor
35428 Stator
Amps
Regulator Reactive Limit
200
400
600
800
1000
1200
1400
Load - Megawatts (MW)