EXAMINATION ANSWER KEY

08-1 NRC Exam

1 **Points: 1.00**

Unit 2 was operating at near rated power when the following events occurred, sequentially:

- Drywell pressure increased to 3.0 psig.
- Annunciator 902-3 H-4, CORE SPRAY SYS B TIMERS NOT HOME is received.
- Bus 24 de-energized due to a Reserve Feed Breaker (RFB) trip.
- Unit 2 EDG started and closed onto Bus 24-1.

When power is restored to Bus 24-1, the 2B Core Spray pump will . . . . .

A. remain off.

B. start as soon as the Bus 24-1 undervoltage condition clears.

C. start five seconds after the Bus 24-1 undervoltage condition clears.

D. start ten seconds after the Bus 24-1 undervoltage condition clears.

Answer: D

Question 1 Details

Comments:

Objective: DRE209LN001.06
Reference: DAN 902-3 H-4
K/A: 209001.K4.08 3.8 / 4.0
K/A: Knowledge of LOW PRESSURE CORE SPRAY SYSTEM design feature(s) and/or interlocks which provide for the following: Automatic system initiation.
Level: High
Pedigree: Bank
Comments: A high DW pressure signal causes the Reactor to scram and the Core Spray pumps start. A loss of power to Bus 24-1 (Bus 24 de-energizing) causes the 2B Core Spray Pump to lose power. The 2B Core Spray pump breaker on Bus 24-1 opens and will reclose 10 seconds after the Bus 24-1 is re-energized by the U2 EDG.

REQUIRED REFERENCES: None.

2 **Points: 1.00**

Unit 2 was operating at rated power, when the following annunciators were received:

- 902-8 E-8 ESS UPS ON DC OR ALTERNATE AC
- 902-8 F-8 ESS UPS TROUBLE

The NLO dispatched to the AEER reported the following on the 902-63B panel:

- Normal A/C power has FAILED to ESS Bus.
- The *LOW DC VOLTAGE* light is illuminated.
- The *DC VOLT* meter indicates 175 volts and lowering.

What is supplying power to the Unit 2 Essential Service (ESS) Bus?

A. MCC 28-2

B. Bus 25

C. Bus 29

D. Unit 2 250 VDC system

Answer: B

Question 2 Details

Comments:

Objective: 262LN005.02, 03, & 06
Reference: DOP 6800-01 & DAN 902-8 F-8
K/A: 262002.K6.02 2.8 / 3.1
K/A: Uninterruptable Power Supply (A.C./D.C.): Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): D.C. electrical power.
Level: High
Pedigree: Bank
Comments: Knowledge of the ESS circuit paths is needed to answer this question. The normal supplies to the ESS Bus, in the descending order they feed is: Bus 29, U2 T.B. 250Vdc battery system, Bus 25, then MCC 28-2 (emergency). Given a degraded condition or loss of the 250Vdc supply, then both NORMAL supplies (Bus 29 and 250 VDC, via the inverter) is lost. The next power supply to feed is the ALTERNATE AC source of Bus 25.

REQUIRED REFERENCES: None.

3 **Points: 1.00**

Unit 2 was operating at near rated power when the 2A Recirc Pump tripped. The following indications are observed:

- Reactor power is 60%.
- Total Core Flow is 43%.
- Flow Control Line is 98%.
- 2B Recirc Pump speed is 42%.
- OPRM GREEN light is NOT illuminated.
- Feedwater temperature is 325^{o}F and dropping slowly.

Which of the following actions is required?

A. Insert control rods to exit the PROHIBITED REGION.

B. Scram the Reactor and enter DGP 2-3, REACTOR SCRAM.

C. Raise 2B Recirc pump speed to exit the PROHIBITED REGION.

D. Insert CRAM Rods per DGP 03-04 to reduce Rx power to 25 to 30%.

Answer: B

Question 3 Details

Comments:

Objective: 29501LK045
Reference: DOA 0202-01, DOA 0500-01, DGP 03-03, DGA 02
K/A: 295001.K1.02 3.3 / 3.5
K/A: Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Power/flow distribution.
Level: High
Pedigree: Bank
Comments: Given the conditions in the stem, the examinee must realize that the NOMINAL feedwater heating flow chart should be used, NOT the REDUCED feedwater heating flow chart. The correct Operator response is to insert a manual scram. 'A' is not correct as it would not be used to escape from the instability region . 'C' is not correct as Recirc flow would not be raised to escape from the instability region. 'D' is not correct because based on conditions supplied, you would NOT insert cram arrays.

REQUIRED REFERENCES: DOA 0202-01.

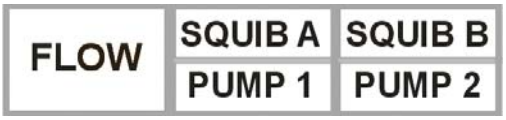
4 **Points: 1.00**

Unit 3 was operating at near rated conditions, when a loss of Feedwater transient occurred, with the following conditions:

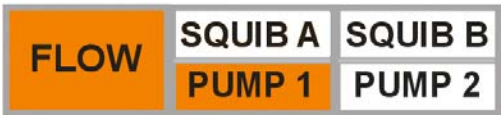
- Bus 39 de-energized.
- RPV water level is -72 inches and trending down slowly.
- The SRO directed you to initiate SBLC for ALTERNATE INJECTION, per the Hard Card.

1 minute after operating the SBLC controls, which of the following would be the expected indication on the 903-5 panel?

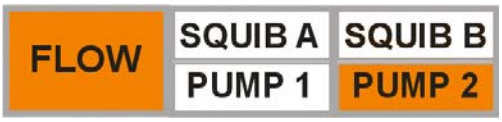
A.



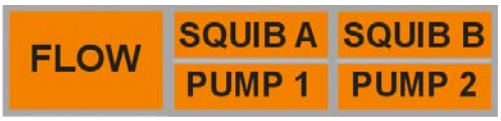
B.



C.



D.



Answer: B

Question 4 Details

Comments: Objective: DRE211LN001.12
Reference: DAN 903-5 H-6, DOS 1100-03
K/A: 211000.A1.10 3.7 / 3.7
K/A: Standby Liquid Control System: Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Lights and alarms.
Level: High
Pedigree: New
Comments: The direction of the hard card for Alternate Water Injection is to place the SBLC control switch in System 1 and 2 to cause both pumps and squibs to operate. With Bus 39 de-energized, MCC 39-1 (the power supply to 'B' SBLC pump and squib) becomes de-energized and the 'B' pump and squib will NOT initiate. The flow light and only the 'A' pump light will illuminate. The 'A' squib light will extinguish when it fires, due to the loss of continuity.

REQUIRED REFERENCES: None.

5 **Points: 1.00**

Unit 2 was operating at 99% core thermal power when the NSO performed an OD-3 report, which indicated the following AGAF data:

- APRM 1 1.018
- APRM 2 1.022
- APRM 3 0.981
- APRM 4 0.977
- APRM 5 0.993
- APRM 6 0.991

Which APRMs (if any) are out of tolerance and require gain adjustments?

A. **NO** APRMs

B. APRMs 1 and 2 **ONLY**

C. APRMs 2 and 4 **ONLY**

D. APRMs 1, 2, 3,and 4 **ONLY**

Answer: C

Question 5 Details

Comments:

Objective: DRE215LN005.08
Reference: DOS 0500-06, DOP 0700-09, Tech Spec 3.3.1.1
K/A: 215005.A4.06 3.6 / 3.8
K/A: Average Power Range Monitor/Local Power Range Monitor System : Ability to manually operate and/or monitor in the control room: Verification of proper functioning / operability.
Level: High
Pedigree: New
Comments: Normal AGAF is 1.00. DOS 0500-06 table 1 shows the acceptable limits based on a CTP of 99% has a tolerance of .020, so ONLY APRMs 2 and 4 are out of tolerance and require gain adjustments.

REQUIRED REFERENCES: None.

6 **Points: 1.00**

Unit 2 was operating at near rated power when the following events occurred:

- The disc inside 2-3713 B-500, 2A RECIRC PUMP OUTER SEAL COOLER RBCCW INLET VALVE, separated from the stem.
- Annunciator 902-4 G-3, RECIRC PP SEAL CLG WTR FLOW LO alarmed.

Why will the Operating team reduce power, based on the above indications?

A. 2A Recirc Pump motor coolers could be damaged within one minute.

B. 2A Recirc Pump seals and bearings could be damaged within one minute.

C. RBCCW temperatures will rise, resulting in elevated Drywell temperatures.

D. RWCU system non-regenerative heat exchangers could become steam bound.

Answer: B

Question 6 Details

Comments: Objective: DRE202LN001.12
Reference: DAN 902-4 G-3, DOA 3700-01
K/A: 295018.K3.02 3.3 / 3.4
K/A: Partial or Complete Loss of Component Cooling Water: Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Reactor power reduction.
Level: High
Pedigree: Bank
Comments: Upon a loss of RBCCW to the Recirc Pump, the seals and bearings (not motor coolers) could be damaged within one minute. The distractor stating RBCCW temperatures will rise, resulting in elevated Drywell temperatures is incorrect since there are no indications that RBCCW temperature is rising. The distractor stating the RWCU system non-regenerative heat exchangers could become steam bound is wrong since the RWCUs are on a different loop of the RBCCW system than the Recirc Pumps (common misconception).

REQUIRED REFERENCES: None.

7 **Points: 1.00**

Unit 2 is operating at near rated power with the FWLCS operating in MASTER AUTO.

An instrument failure resulted in DAN 902-5 G-7, FW LVL SETPOINT SETDOWN annunciating.

15 seconds after the annunciator is received, steam flow is higher than Feedwater flow, due to the ___(1)___ indicators failing ___(2)___ .

A. (1) A and B STM Flow
(2) upscale

B. (1) A and B STM Flow
(2) downscale

C. (1) A and B Narrow Range Level
(2) upscale

D. (1) A and B Narrow Range Level
(2) downscale

Answer: D

Question 7 Details

Comments:

Objective: DRE259LN001.06
Reference: DAN 902-5 G-7
K/A: 295009.A2.02 3.4 / 3.4
K/A: Low Reactor Water Level: Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL : Steam flow/feed flow mismatch.
Level: High
Pedigree: New
Comments: With the unit operating at full power and the Feedwater Level Control System (FWLCS) operating in MASTER AUTO, a loss (failure downscale) of BOTH the A and B Narrow Range Level indicators will cause the FWLCS to shift into setpoint setdown. This will cause a reduction in feedwater flow, which produces a steam to feedflow mismatch.

REQUIRED REFERENCES: None

8 **Points: 1.00**

Unit 3 was operating at near rated power when a transient occurred, causing the HPCI system to AUTO initiate.

After operating for 20 minutes the Unit Supervisor directed HPCI to be shutdown per DOP 2300-04, HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI) SHUTDOWN.

Which of the following MUST be performed and why?

A. Drain the exhaust drain pot;
to prevent exhaust diaphragm rupture, turbine blade and exhaust line valve damage.

B. Slowly throttle down on MO 3-2301-4, STM ISOL VLV;
to prevent discharge check valve damage.

C. Run the HPCI pump on the minimum flow line for at least 10 minutes;
to satisfy IST requirements.

D. Trip the HPCI turbine and verify the turbine does NOT rotate for 3 minutes;
to ensure the stop valves are full closed.

Answer: A

Question 8 Details

Comments:

Objective: DRE206LN001.08
Reference: DOP 2300-04, DAN 903-3 B-11
K/A: 206000.K4.05 3.1 / 3.4
K/A: Knowledge of HIGH PRESSURE COOLANT INJECTION SYSTEM design feature(s) and/or interlocks which provide for the following: Preventing water hammer in turbine exhaust line (procedural control).
Level: Memory
Pedigree: Bank
Comments: DOP 2300-04 Step F.4 states that if HPCI system is being shutdown after any Operation other than normal surveillance testing, the exhaust drain pot must be drained. The Exhaust Drain Pot is designed to remove moisture from the steam side of the system to prevent equipment overpressure and damage on system initiation. Step E.2 states the 2301-4 valve should NOT be left in mid-position for extended periods of time to prevent valve seat damage. Step E.5 states if turbine operation is stopped, with the turbine still hot, then the rotor should not be allowed to remain stationary since rotor distortion begins almost immediately. Step F.3 states if during the performance of this procedure a HPCI pump operates for greater than 10 minutes through the minimum flow line, then the IST coordinator MUST be notified to evaluate/analyze the affected pump for degradation.

REQUIRED REFERENCES: None.

9 **Points: 1.00**

Unit 2 was operating at near rated power when a loss of Bus 29 occurred.

What IMMEDIATE Containment impact is there with this loss?

A. Low Drywell to Torus D/P.

B. Low Reactor Building D/P.

C. Increased Drywell temperature.

D. Increased Reactor Building temperature.

Answer: C

Question 9 Details

Comments:

Objective: DRE262LN001.12
Reference: DAN 923-5 E-1, 12E-2306
K/A: 295012.K2.02 3.6 / 3.7
K/A: High Drywell Temperature: Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell cooling.
Level: High
Pedigree: New
Comments: The loss of Bus 29 de-energizes three of the seven Drywell Coolers (C, D, E) causing both temperature and pressure to rise in the Drywell.

REQUIRED REFERENCES: None.

10 **Points: 1.00**

Unit 2 was operating at near rated power when a transient occurred resulting in an RPV pressure spike.

The highest RPV pressure sensed by the ATWS/ARI instruments were observed as:

- PT 2-263-20A: 1275 psig
- PT 2-263-20B: 1270 psig
- PT 2-263-20C: 1150 psig
- PT 2-263-20D: 1145 psig

The current conditions are:

- Reactor Power is 20%.
- Both Recirc pumps are operating at minimum speed.

Based on the above conditions, which of the following actions are REQUIRED to be performed?

1) Start SBLC
2) Trip both Recirc Pumps
3) FIRST insert SRMs and IRMs

A. 1 ONLY

B. 2 ONLY

C. 1 and 2 ONLY

D. 1, 2, AND 3

Answer: C

Question 10 Details

Comments:

Objective: 212L-S2.5
Reference: DAN 902-5 A-8, DAN 902-5 F-7, DGP 02-03
K/A: 295037.A1.03 4.1 / 4.1
K/A: SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : ARI/RPT/ATWS: Plant-Specific.
Level: High
Pedigree: Bank
Comments: None of the Recirc MG Set Field Breakers have tripped (Reactor Power 20%). With Reactor power >6% DGP 2-3 actions direct the operator to trip BOTH Recirc pumps and initiate SBLC. Inserting SRMs and IRMs are not done, since this is done only when a scram is successful, per DGP 2-3.

REQUIRED REFERENCES: None.

11 **Points: 1.00**

When an automatic Isolation Condenser system initiation signal is present the RX INLET ISOL MO 3-1301-3 . . . . .

A. will go full open and **CANNOT** be throttled.

B. is interlocked fully open for 30 seconds, then can be throttled.

C. is throttled if **NO** other means of slowing cooldown are available.

D. will remain full open until control switch taken to the open position.

Answer: A

Question 11 Details

Comments:

Objective: 207L-S1-05
Reference: DOP 1300-02
K/A: 207000.A3.05 3.6 / 3.8
K/A: Ability to monitor automatic operations of the ISOLATION (EMERGENCY) CONDENSER including:
System lineup: BWR-2,3.
Level: Memory
Pedigree: Bank
Comments: With an auto initiate signal the 2-1301-3 vlv is interlocked open and cannot be throttle to control flow UNTIL the initiation signal is cleared and reset and the HAND/RESET switch taken to HAND.

REQUIRED REFERENCES: None.

12 **Points: 1.00**

Unit 2 was operating at near rated power with Bus 25 O.O.S., when Bus 24 experienced an overcurrent condition.

If the situation is uncorrected, what is the expected plant response?

A. The INBOARD MSIVs will close.

B. The HPCI system will NOT be able to operate.

C. The 2/3 Emergency Diesel Generator will AUTO start.

D. The Reactor Building ventilation isolation dampers will close.

Answer: D

Question 12 Details

Comments:

Objective: DRE278LN001.12
Reference: DOA 4700-01
K/A: 295019.K2.08 2.8 / 2.9
K/A: Partial or Complete Loss of Instrument Air: Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Plant ventilation.
Level: High
Pedigree: New
Comments: With a loss of Bus 24, power will be lost to Bus 26 and Bus 27 (no cross-tie is available with Bus 25 O.O.S.). Bus 26 and Bus 27 are the power supplies for all the Unit 2 IACs. With a loss of all IACs, header pressure will drop, causing the Reactor Building vent isolation dampers to close. The U2 EDG (not 2/3 EDG) will auto start. The OUTBOARD (not inboard) MSIVs will close. The HPCI system DRAIN VLV, AO 2-2301-29, and DRAIN VLV, AO 2-2301-30, would CLOSE and DRAIN BYP VLV, AO 2-2301-28, would OPEN, however HPCI could still operate.

REQUIRED REFERENCES: None.

13 **Points: 1.00**

In an ATWS condition, reactor power DECREASES as RPV water level is ___(1)___, because it reduces core flow causing ___(2)___ void fraction.

A. (1) raised;
(2) decreased

B. (1) raised;
(2) increased

C. (1) lowered;
(2) decreased

D. (1) lowered;
(2) increased

Answer: D

Question 13 Details

Comments:

Objective: 29501LK093
Reference: EPG B-14-16
K/A: 295031.K1.03 3.7 / 4.1
K/A: Reactor Low Water Level: Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Water level effects on reactor power.
Level: Memory
Pedigree: Bank
Comments: The void coefficient becomes more negative as the core void fraction increases, because the core is less moderated.

REQUIRED REFERENCES: None.

14 **Points: 1.00**

Unit 3 was operating at near rated power when a spurious scram occurred.

The Shift Manager has determined that a hot fast restart is to be performed.

Which equipment condition(s) needs to be met to allow the Mode Switch to be placed in the Refuel Position to perform Reactor Mode Switch Interlock testing?

A. Moderator temperature $\leq 350^{o}F$.

B. All Control rods are fully inserted.

C. SRM Rod Block Functional Test complete.

D. Refuel Position One Rod Out Interlock met.

Answer: B

Question 14 Details

Comments:

Objective: 20102LK004
Reference: DGP 2-3; Tech Spec 3.10.1
K/A: 295006.G.1.23 4.3 / 4.4
K/A: SCRAM: Ability to perform specific system and integrated plant procedures during all modes of plant operation.
Level: Memory
Pedigree: Bank
Comments: The correct answer of all control rods being inserted can be found in Tech Spec 3.10.1.

REQUIRED REFERENCES: None.

15 **Points: 1.00**

Which of the following lists ALL permissible U2 NSO actions that meet the procedural requirements to scram the reactor per DSSP 100-CR HOT SHUTDOWN PROCEDURE - CONTROL ROOM EVACUATION?

A. Pull scram solenoid fuses in the 902-15 and 902-17 panels **ONLY**.

B. Place the Scram Toggle Switches to the UP position on panel 902-16 **ONLY**.

C. Depress the BOTH manual scram pushbuttons on the 902-5 panel **AND** initiate ARI.

D. Rotate the MODE SWITCH to the REFUEL position on the 902-5 panel **AND** initiate ARI.

Answer: C

Question 15 Details

Comments:

Objective: 29501LP084
Reference: DSSP 100-CR
K/A: 295016.G.4.12 4.0 / 4.3
K/A: Control Room Abandonment: Knowledge of general operating crew responsibilities during emergency operations.
Level: Memory
Pedigree: New
Comments: Per the DSSP, the required actions to scram the reactor are to depress MANUAL SCRAM CH A AND MANUAL SCRAM CH B pushbuttons on the 902-5 panel and initiate ARI.

REQUIRED REFERENCES: None.

16 **Points: 1.00**

A locked throttle valve in a safety related system is to be positioned three turns CLOSED FROM FULL OPEN. The Shift Manager assigns you the job of assuring the valve is in the correct position.

Per OP-AA-108-101-1001, COMPONENT POSITION DETERMINATION, which of the following are you being asked to perform?

A. Peer Check

B. Double Verification

C. Concurrent Verification

D. Independent Verification

Answer: C

Question 16 Details

Comments:

Objective: 29900LK051
References: OP-AA-108-101-1001, HU-AA-101
K/A: Generic.1.29 4.1 / 4.0
K/A: Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.
Level: Memory
Pedigree: Bank
Comments: Per OP-AA-108-101-1001 for component position determination, concurrent verification is required for throttle valve position.

REQUIRED REFERENCES: None.

17 **Points: 1.00**

Unit 2 was operating at near rated power when TR-29 experienced a fire, causing Bus 29 to de-energized.

Which of the following is a plant response, and expected actions?

A. RPS Bus "A" will become de-energized and will need to be MANUALLY re-energized from MCC 25-2 via a *Key Interlock*.

B. RPS Bus "B" will become de-energized and will need to be MANUALLY re-energized from MCC 25-2 via a *Key Interlock*.

C. Instrument Bus will lose its normal power supply and will AUTOMATICALLY be re-energized from MCC 25-2, via a *Normal Seeking ABT*.

D. Essential Service Bus will lose its normal power supply and will AUTOMATICALLY be re-energized from MCC 28-2, via a *Power Seeking ABT*.

Answer: A

Question 17 Details

Comments:

Objective: DRE262LN005.12
Reference: DOA 0500-05
K/A: 262001.K3.06 3.8 / 4.1
K/A: Knowledge of the effect that a loss or malfunction of the A.C. ELECTRICAL DISTRIBUTION will have on following: Reactor protection system.
Level: High
Pedigree: Bank
Comments: With a fire in in TR-29 and subsequently Bus 29 becoming de-energized, This will cause a loss of power to the Reactor Protection (RPS) Bus "A". To remedy this situation, the "A" Bus will need to be powered manually from MCC 25-2.
It is a common misconception that the "B" Bus will be lost, because the "B" Bus is powered from the Div I power supply instead of the normal Div II power supply (Bus 28 vice Bus 29).
The Inst Bus normal power supply will not be lost, since it is normally powered from Div I, not Div II.
While the Essential Service Bus WILL lose its normal power supply, the 250VDC and/or Bus 25 will take over powering the ESS Bus prior to the ABT swapping to MCC 28-2.

REQUIRED REFERENCES: None.

18 **Points: 1.00**

Unit 2 was operating at near rated power when a loss of coolant resulted in a Reactor Scram. The following conditions exist:

- Drywell pressure is 18 psig.
- RPV water level is 10 inches.
- 902-8 H-3, 4 KV BUS 24 OVERCURRENT annunciator illuminated.
- 10 minutes later, the US notices that the Division II CAM H2/O2 system is NOT working.

What action(s) is/are required to initiate the CAM system?

A. Reset the Bus 29 UV device ONLY.

B. Place the OFF-STANDBY-ANALYZE switch to ANALYZE.

C. Reset the Bus 29 UV device AND close the feed breaker to MCC 29-3.

D. Close the feed breaker to MCC 29-3, then place the OFF-STANDBY-ANALYZE switch to ANALYZE.

Answer: C

Question 18 Details

Comments:

Objective: DRE223LN006.08
Reference: DAN 902-8 H-3, DGA-12, DOP 2400-01, DOP 7000-07
K/A: 223001.K6.11 3.0 / 3.2
K/A: Knowledge of the effect that a loss or malfunction of the following will have on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES: A.C. electrical distribution.
Level: High
Pedigree: Bank
Comments: When Bus 24 goes overcurrent, Bus 24-1 and Bus 29 are de-energized and will load shed some equipment. During load shed conditions the breaker to the MCC 29-3 (which powers div 2 CAM) trips open. Once power is restored to Bus 29 (Bus 24-1 re-energized via the U2 EDG), the Bus 29 UV relay must be reset and then MCC 29-3 closed in manually. The CAM feed breaker does NOT trip and with an ECCS signal still present, the system will start up automatically as soon as power is restored.

REQUIRED REFERENCES: None.

19 **Points: 1.00**

Unit 3 was operating at near rated power, with the 3A CRD pump out of service for an oil change, when the following events occurred:

- Time 02:15:00 - Bus 34 experienced an overcurrent fault.
- Time 02:19:00 - CRD F-06 ACCUMULATOR TROUBLE light illuminated and is verified at position 28.
- Time 02:20:00 - CRD N-09 ACCUMULATOR TROUBLE light illuminated and is verified at position 32.
- Time 02:23:00 - NLO reported CRD F-06 accumulator pressure was 900 psig.
- Time 02:24:00 - NLO reported CRD N-09 accumulator pressure was 880 psig.

If the above conditions do NOT change, at time 02:45:00, what action(s) is/are required?

A. Place the Reactor Mode switch in SHUTDOWN and enter DGP 02-03.

B. Restore charging water header pressure to ≥ 940 psig by time 03:20:00.

C. Insert BOTH Control Rod F-06 AND N-09 with the Scram toggle switches.

D. Insert EITHER Control Rod F-06 OR N-09 with the Scram toggle switches.

Answer: A

Question 19 Details

Comments:

Objective: DRE201LN001.12
Reference: DOA 0300-01
K/A: 295022.K1.01 3.3 / 3.4
K/A: Knowledge of the operational implications of the following concepts as they apply to LOSS OF CRD PUMPS: Reactor pressure vs. rod insertion capability.
Level: High
Pedigree: New
Comments: The candidate must understand with the reactor in mode 1 (indicated by full power) and a loss of all charging water pressure being lost for 20 minutes (indicated by 3A CRD pump out of service and 3B being lost when Bus 34 de-energizes) and a two or more CRD trouble alarms for low pressure, for CRDs not at position 00, the correct action is to place the mode switch in SHUTDOWN and enter DGP 02-03. Restoring charging water pressure is not the action to take since the 20 minute procedural time has already expired. Inserting any CRD with the scram toggle switch is not the appropriate action, since the reactor is NOT in mode 3, 4, or 5.

REQUIRED REFERENCES: None.

20 **Points: 1.00**

Which of the following is the **MAXIMUM** RPV steam dome pressure that would **NOT** violate Safety Limits?

A. 1060 psig

B. 1160 psig

C. 1260 psig

D. 1360 psig

Answer: C

Question 20 Details

Comments:

Objective: DRE299LN001.03
Reference: Tech Spec 2.0
K/A: 295025.G.2.38 3.6 / 4.5
K/A: High Reactor Pressure: Knowledge of conditions and limitations in the facility license.
Level: Memory
Pedigree: Modified
Comments: per TS 2.0 "Reactor steam dome pressure shall be $\leq$ 1345 psig."

REQUIRED REFERENCES: None.

21 **Points: 1.00**

Unit 2 was operating at near rated power when a transient occurred, resulting in the following:

- RPV water level is -68 inches.
- Smoke began billowing from the Control Room Ventilation ducts.

Where can the Operator monitor RPV water level in the Reactor Building?

A. 2202-5 and 2202-6 instrument racks.

B. 2202-5 and 2202-7 instrument racks.

C. 2202-6 and 2202-8 instrument racks.

D. 2202-7 and 2202-8 instrument racks.

Answer: D

Question 21 Details

Comments:

Objective: 299L-03-04
Reference: DSSP 100-CR, DEOP 0010-00, TSG-2
K/A: 21600.K4.01 3.6 / 3.6
K/A: Nuclear Boiler Instrumentation: Knowledge of NUCLEAR BOILER INSTRUMENTATION design feature(s) and/or interlocks which provide for the following: Reading of nuclear boiler parameters outside the control room.
Level: Memory
Pedigree: Bank
Comments: The 2202-7 and 2202-8 racks are the only racks that will provide level indication in the stated range.

REQUIRED REFERENCES: None.

22 **Points: 1.00**

Unit 2 was operating at near rated power when a transient occurred, resulting in a loss of annunciators, along with a loss of indicating lights for the following:

- Bus 21
- Bus 23
- Bus 23-1
- Bus 25
- Bus 28

What is the status of the Recirc Pump(s) / MG set(s) on U2?

A. The 2A Recirc MG Set breaker is tripped due to loss of control power.

B. The 2B Recirc MG Set breaker is tripped due to loss of control power.

C. The 2A Recirc Pump remains in operation with loss of all remote speed control.

D. The 2B Recirc Pump remains in operation with loss of all remote speed control.

Answer: C

Question 22 Details

Comments:

Objective: DRE263LN002.12
Reference: DOA 6900-02
K/A: 295004.A2.02 3.5 / 3.9
K/A: Partial or Complete Loss of D.C. Power: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Extent of partial or complete loss of D.C. power.
Level: High
Pedigree: New
Comments: The stem of the question describes a loss of Division I 125 VDC. This will cause the 2A Recirc Pump MG Circulating Oil Pumps (not MG SET) to trip but the 2A Recirc Pump remains in operation with loss of all remote speed controls. The distractors pertaining to the 2B Recirc pumps are incorrect because this describes what would happen if Division II were lost (not Division I).

REQUIRED REFERENCES: None.

23 **Points: 1.00**

Which of the following describes the **HIGHEST** RPV pressure where the Low Pressure Coolant Injection (LPCI) system INJECTION flow is expected, following an auto initiation signal?

A. 300 psig

B. 325 psig

C. 400 psig

D. 425 psig

Answer: B

Question 23 Details

Comments:

Objective: DRE206LN001.06
Reference: DAN 902-3 A-4, DAN 902-3 H-16
K/A: 295007.K1.01 2.9 / 3.2
K/A: High Reactor Pressure: Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: Pump shutoff head.
Level: Memory
Pedigree: Bank
Comments: LPCI and Core Spray systems will start upon an initiation signal, but the injection valves will not open until RPV pressure drops to <350 psig (shutoff head). This makes 325 psig the highest pressure that injection will occur.

REQUIRED REFERENCES: None.

24 **Points: 1.00**

Unit 2 was operating at near rated power, when a transient occurred. At time 05:25, the following indications are observed:

- Drywell temperature is 140°F and trending UP at a rate of 1.0°F/minute.
- Drywell pressure is 1.2 psig and trending UP at a rate of 0.2 psig/minute.
- RPV water level is 20 inches and trending DOWN at a rate of 1 inch/minute.

At time 05:31, which of the following procedures are required to be entered?

1) DAN 902-5 D-11 DRYWELL PRESS HI-HI
2) DEOP 100 RPV CONTROL
3) DEOP 200-1 PRIMARY CONTAINMENT CONTROL
4) DOA 0040-01 SLOW LEAK

A. 1, and 4 ONLY

B. 1, 2, and 4 ONLY

C. 1, 3, and 4 ONLY

D. 1, 2, 3, AND 4

Answer: D

Question 24 Details

Comments:

Objective: 29502LK001
Reference: DEOP 100, DEOP 200-1
K/A: 295010.G.04.04 4.5 / 4.7
K/A: High Drywell Pressure: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.
Level: High
Pedigree: Modified
Explanation: At time 05:31 (6 minutes from start of event at 05:25), the following parameters will exist:

- DW Temp: 146°F.
- DW press: 2.4 psig.
- RPV water level: 14 inches.

Dan 902-5 D-11 is entered at a Drywell pressure of 1.8 psig
DEOP 200 is entered until a Drywell pressure of 2.0 psig.
DOA 0040-01 is entered at a Drywell pressure of 1.5 psig.
DEOP 100 is entered at a Drywell pressure of 2.0 psig.
DEOP 100 would NOT on RPV level until +8 inches (but is entered for Drywell pressure of 2.0 psig).
DEOP 200 would NOT on Drywell Temp until 156°F (but is entered for Drywell pressure of 2.0 psig).

REQUIRED REFERENCES: None.

25 **Points: 1.00**

The DEOPs require Emergency Depressurization if Torus water level CANNOT be maintained above 11 feet.

What is the basis for requiring Emergency Depressurization at this point?

A. Prevent exceeding LPCI NPSH requirements.

B. Prevent exceeding SRV tailpipe pressure limits.

C. Steam discharged from HPCI will NOT be suppressed.

D. Suppression of steam discharged from the downcomers can NOT be assured.

Answer: D

Question 25 Details

Comments:

Objective: DRE259LN001.12
Reference: DEOP 200-1 and EPG B-7-49
K/A: 295030.G.4.18 3.3 / 4.0
K/A: Low Suppression Pool Water Level: Knowledge of the specific bases for EOPs.
Level: Memory
Pedigree: Bank
Comments: An emergency depressurization is performed at 11 feet in the Torus to ensure the steam can be condensed prior decreasing to the level of the downcomers.

REQUIRED REFERENCES: None.

26 **Points: 1.00**

Unit 2 was operating at near rated power when a Scram and Turbine/Generator trip occurred.

Instrument Air is ___(1)___ the extraction steam non-return check valves, to primarily prevent ___(2)___ .

A. (1) applied to;
(2) turbine overspeeding

B. (1) applied to;
(2) condenser overpressurization

C. (1) vented off;
(2) turbine overspeeding

D. (1) vented off;
(2) condenser overpressurization

Answer: C

Question 26 Details

Comments:

Objective: DRE260LN001.12
Reference: LP DRE260LN001
K/A: 295005.K3.05 2.5 / 2.6
K/A: Main Turbine Generator Trip: Knowledge of the reasons for the following responses as they apply to MAIN TURBINE GENERATOR TRIP: Extraction steam/moisture separator isolations.
Level: Memory
Pedigree: Bank
Comments: IA is vented off on a turbine trip to prevent steam flow from the FW heaters back to the main condenser, through the turbine, causing the turbine to overspeed.

REQUIRED REFERENCES: None.

27 **Points: 1.00**

What is the Basis for scramming the Reactor when a primary system is discharging into the Secondary Containment and Secondary Containment temperatures reach maximum safe values?

A. Lowers the pressure of the RPV to prevent the leak from getting larger.

B. Ensure the Reactor can be maintained subcritical during subsequent repairs.

C. Reduces the energy the RPV may be discharging into secondary containment to decay heat levels.

D. RPV water level instruments are unreliable when secondary containment temperatures approach maximum safe values.

Answer: C

Question 27 Details

Comments:

Objective: 29502LK001
Reference: EPG B-8-12
K/A: 295032.K3.02 3.6 / 3.8
K/A: Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Reactor SCRAM.
Level: Memory
Pedigree: Bank
Comments: Scramming the reactor reduces, to decay heat levels, the energy that the RPV may be discharging to the secondary containment.

REQUIRED REFERENCES: None.

28 **Points: 1.00**

A room in the Unit 3 Reactor Building was recently surveyed and the following radiological conditions exist:

- General area radiation of 150 mrem/hour.
- Smearable contamination of 1100 dpm/100 cm^2 (beta-gamma).

When you arrive at the room, the posted signs are as follows:

- Caution - Radiation Area
- Caution - Contaminated Area

What actions (if any) are required/allowed?

A. Continue with assigned work in the area.

B. Do NOT proceed, notify the RP Department that the *Radiation Area* ONLY posting is incorrect.

C. Do NOT proceed, notify the RP Department that the *Contaminated Area* ONLY posting is incorrect.

D. Do NOT proceed, notify the RP Department that the *Radiation Area* AND *Contaminated Area* postings are incorrect.

Answer: B

Question 28 Details

Comments:

Objective: 29900LK085
Reference: RP-AA-376
K/A: Generic.3.07 3.5 / 3.6
K/A: Ability to comply with radiation work permit requirements during normal and abnormal conditions.
Level: High
Pedigree: Modified
Comments: A High Radiation Area is greater than 100 mrem/hour but less than 1000 mrem/hour. A Contamination Area is greater than 1000 dpm/100 cm^2. If the expected conditions are not what is found at the job area, the radiation worker is required to report to the RP Department the discovered changes.

REQUIRED REFERENCES: None.

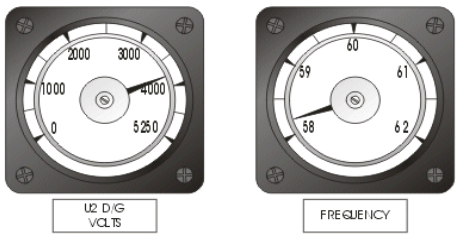
29 **Points: 1.00**

Unit 2 was operating at near rated power, when Bus 24-1 experienced an undervoltage condition.

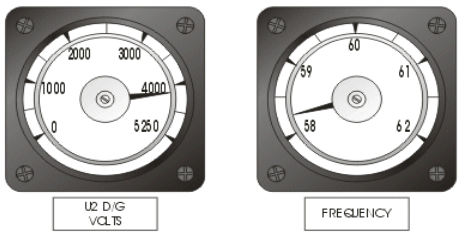
The Unit 2 Aux NSO subsequently started 2C & 2D LPCI pumps and 2B Core Spray pump.

Which of the following set of U2 EDG indications would the NSO expect to see on the 902-8 Panel 45 seconds after the above pumps were started?

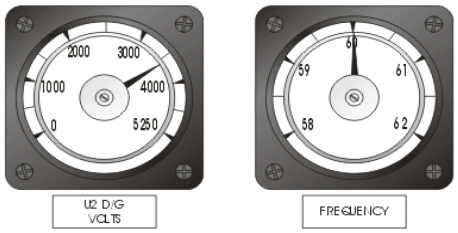
A.



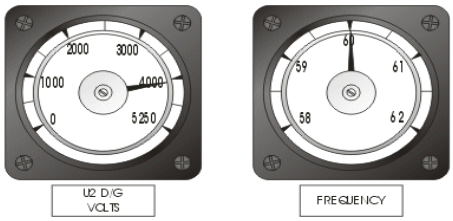
B.



C.



D.



Answer: D

Question 29 Details

Comments: Objective: DRE264LN001.11
Reference: DOS 6600-01
K/A: 264000.A3.04 3.1/3.1
K/A: Emergency Generators (Diesel/Jet): Ability to monitor automatic operations of the EMERGENCY GENERATORS (DIESEL/JET) including: Operation of the governor control system on frequency and voltage control.
Level: High
Pedigree: New
Comments: With Bus 24-1 going undervoltage, the candidate must know that the Unit 2 EDG will auto start and then re-energize Bus 24-1. The acceptance criteria in DOS 6600-01 for a successful "Fast Start" is: 3952 to 4368 Volts AND 58.8 to 61.2 Hz within $\leq$13 seconds.

REQUIRED REFERENCES: None.

30 **Points: 1.00**

While performing a unit startup, the RPIS switches at position 48 fail to close, for control rod N-5 when it is fully withdrawn.

What would the NSO expect to see on the RWM, for control rod N-5?

A. Red dashes.

B. Yellow dashes.

C. Red question marks.

D. Yellow question marks.

Answer: C

Question 30 Details

Comments:

Objective: DRE201LN006.12
Reference: DOP 0400-02
K/A: 201006.K6.3 2.9 / 2.9
K/A: Rod Worth Minimizer System (RWM): Knowledge of the effect that a loss or malfunction of the following will have on the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC): Rod position indication.
Level: Memory
Pedigree: Bank
Comments: Per the above DOP, the indication for an unknown position, that does not have a substitute value, is two red question marks.

STUDENT REFERENCES: None.

31 **Points: 1.00**

Unit 2 was operating at near rated power, when an ATWS occurred and the following conditions exist:

- Reactor power is 5%.
- **ALL** APRM downscale lights are illuminated.
- RPV level is -60 inches.
- Drywell pressure is 15 psig.
- Drywell AND Torus sprays have been initiated.

Given the above conditions, which of the following will PREVENT an automatic actuation of ADS?

A. Drywell pressure dropping below 2 psig prior to timeout of the 120 second timer.

B. RPV pressure dropping below 150 psig prior to timeout of the 120 second timer.

C. Place low pressure ECCS pumps in PTL prior to timeout of the 120 second timer.

D. Depress AND release the TIMER RESET pushbutton prior to timeout of the 120 second timer.

Answer: C

Question 31 Details

Comments:

Objective: DRE218LN001.06
Reference: DAN 902-3 B-13
K/A: 218000.K1.02 4.0 / 4.1
K/A: Automatic Depressurization System: Knowledge of the physical connections and/or cause effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: Low pressure core spray: Plant-Specific.
Level: High
Pedigree: Bank
Comments: With RPV level lo-lo and/or Drywell pressure high AND any low pressure pump (LPCI or CS) running (discharge pressure greater than 100 psig) is a permissive to seal in the 120 sec ADS timer (DAN 902-3 B-13 references this as one of the conditions needed).
Once drywell pressure is above 2 psig, it seals in until reset (will not prevent actuation).
Reactor pressure is not an ADS permissive, but is a common misconception that the ADS will not open when RPV pressure is too low (150 psig).
Depressing and releasing the TIMER RESET pushbutton would only reset the timer and delay the ADS actuation (not prevent).

REQUIRED REFERENCES: None.

32 **Points: 1.00**

Unit 2 was operating at near rated power when a transient occurred, and the following conditions exist:

- RPV pressure is 250 psig.
- Drywell pressure is +2.2 psig AND steady.
- The 2B Recirc Pump discharge valve is CLOSED due to LPCI loop select logic.

Which of the following LPCI system valves would be indicating OPEN?

1) LPCI INJ VLV MO 2-1501-21A
2) LPCI INJ VLV MO 2-1501-21B
3) LPCI INJ VLV MO 2-1501-22A
4) LPCI INJ VLV MO 2-1501-22B

A. 1, 3 ONLY

B. 2, 4 ONLY

C. 3, 4 ONLY

D. 1, 2, 3, AND 4

Answer: B

Question 32 Details

Comments:

Objective: DRE203LN001.06
Reference: DOP 1500-05 table, DAN 902-3 A-4
K/A: 203000.A3.07 4.2 / 4.6
K/A: RHR/LPCI: Injection Mode (Plant Specific): Ability to monitor automatic operations of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) including: Loop selection: Plant-Specific.
Level: High
Pedigree: New
Comments: After an auto initiation of LCPI the suction valve and the "B" injection valves (selected loop) would be OPEN.

REQUIRED REFERENCES: None.

33 **Points: 1.00**

Both Units were operating at near rated power when the following occurred:

- 345Kv L2311 experienced a fault.
- 345Kv BT 5-6 CB did NOT open.
- 345Kv BT 6-7 CB responded as designed.

Based on the above failure, which of the following is an *ALL-INCLUSIVE* list of breaker(s) that will receive a *Local Breaker Backup* trip SIGNAL, with regards to the Dresden Switchyard system?

A. 345Kv BT 1-7 only

B. 345Kv BT 4-5 only

C. 345Kv BT 1-7
and
345Kv BT 4-5

D. 345Kv BT 3-4
and
345Kv BT 4-8

Answer: B

Question 33 Details

Comments:

Objective: DRE262LN009.06
Reference: DOP 6400-13
K/A: 700000.K2.02 3.1 / 3.3
K/A: Generator Voltage and Electric Grid Disturbances: Knowledge of the interrelations between GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES and the following: Breakers, relays.
Level: High
Pedigree: New
Comments: A knowledge of the switchyard layout AND local breaker backup logic is required to answer this question. With a fault on L2311, breakers 5-6 and 6-7 BOTH should open to isolate the line. When 5-6 fails to open, a local breaker backup signal is sent to circuit breaker 4-5 only. Breaker 1-7 would only be correct if breaker 6-7 failed to open. Breakers 1-7 and 4-5 would only be correct if both breakers 5-6 and 6-7 failed to open. Breakers 3-4 and 4-8 would only be correct if the fault was on adjacent line L1220 and breaker 4-5 failed to open.

REQUIRED REFERENCES: None.

34 **Points: 1.00**

Unit 2 was operating at near rated power with Bus 26 O.O.S., when the 2B Instrument Air Compressor tripped.

Per DOA 4700-01, the NSO is required to monitor the Unit 2 Instrument Air Header pressure and perform mitigating actions at a specific value.

Where does the NSO monitor the Instrument Air header pressure?

A. 901-2 Panel

B. 902-3 Panel

C. 902-54 Panel

D. 923-1 Panel

Answer: D

Question 34 Details

Comments:

Objective: DRE278LN001.11
Reference: DOA 4700-01
K/A: 300000.A4.01 2.6 / 2.7
K/A: Instrument Air System: Ability to manually operate and / or monitor in the control room: Pressure gauges.
Level: Memory
Pedigree: Bank
Comments: Per immediate actions of DOA 4700-01, if **at Panel 923-1**, U2 IA HDR PRESS drops to 55 psig then the NSO should manually scram the reactor.

REQUIRED REFERENCES: None.

35 **Points: 1.00**

While executing a Dresden Emergency Operating Procedure (DEOP), what must be done if ANOTHER entry condition occurs OR the initial entry condition re-occurs?

A. Return to the start of the procedure and execute the procedure.

B. Suspend performance of the procedure UNTIL concurrence from STA.

C. Continue where you are presently at in the procedure, re-entry is NOT required.

D. Wait until you can exit the current leg, THEN re-enter the procedure with the current conditions.

Answer: A

Question 35 Details

Comments:

Objective: 29501LE004
Reference: DEOP 0010-00
K/A: Generic.4.14 3.8 / 4.5
K/A: Knowledge of general guidelines for EOP usage.
Level: Memory
Pedigree: Bank
Comments: As described in the DEOPs.

REQUIRED REFERENCES: None.

36 **Points: 1.00**

Unit 2 was operating at near rated power during the summer months, when a scram occurred. The following conditions exist:

- RPV water temperature is 195°F.
- Shutdown Cooling system is in service with the A and B loops.
- The 2/3 RBCCW pump and heat exchanger are lined up to **Unit 3**.

If the 2A RBCCW pump trips on overcurrent, which annunciator would be experienced FIRST?

A. 902-3 G-2, AREA TEMP HI

B. 902-4 A-23, SDC HX/FUEL POOL WTR TEMP HI

C. 902-4 B-23, SDC PP TRIP

D. 902-4 H-4, 2A RECIRC LOOP WTR TEMP HI

Answer: B

Question 36 Details

Comments:

Objective: DRE205001.08
Reference: DOP 1000-03, DAN 902-4 A-23
K/A: 205000.A1.08 3.1 / 2.92
K/A: Shutdown Cooling System: Ability to predict and/or monitor changes in parameters associated with operating the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) controls including: Heat exchanger temperatures.
Level: High
Pedigree: Bank
Comments: 902-4 A-23 would be received FIRST since its setpoint is > 200°F SDC HX inlet and outlet shell side temp, which would occur when 2A RBCCW pump tripped (reduced RBCCW cooling). 902-3 G-2 would NOT be received first since the area temp hi does not come in until the SDC temps reach 150°F and this condition would not cause the area temperatures to rise that fast. 902-4 B-23 would NOT come in first since the SDC pump trip is a temperature of 339°F on the pump suction and would not occur that fast. 902-4 H-4 would NOT come in first since the recirc temperature of > 330°F would not be reached that fast.

REQUIRED REFERENCES: None.

37 **Points: 1.00**

Both units were operating at near rated power, when the following annunciators were received simultaneously:

- 902-3 A-3, RX BLDG VENT CH B RAD HI HI
- 902-3 F-14, RX BLDG VENT CH A RAD HI HI

Three minutes after the annunciators are received, which of the following would be the expected indication for the Standby Gas Treatment System (SBGT)?

Figure A

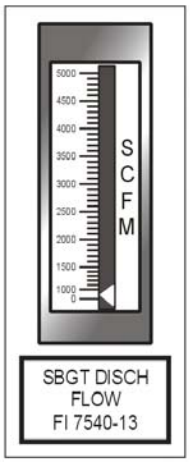


Figure B

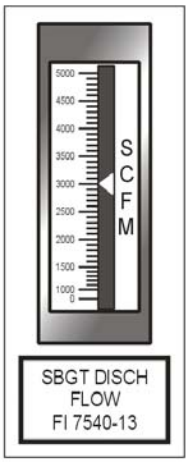


Figure C

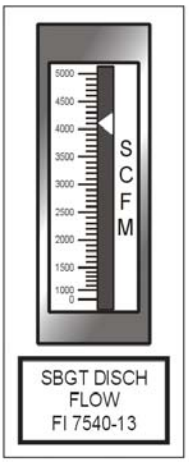
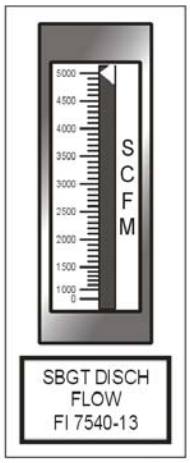


Figure D



A. Figure "A"

B. Figure "B"

C. Figure "C"

D. Figure "D"

Answer: C

Question 37 Details

Comments: Objective: DRE261LN001.06
Reference: DAN 902-3 A-3, DAN 902-3 F-14, DOP 7500-01
K/A: 295038.A1.06 3.5 / 3.6
K/A: Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Plant Ventilation.
Level: High
Pedigree: New
Explanation: With a high radiation condition in the exhaust of the Reactor Building Ventilation (as indicated by the two annunciators), the Reactor Building Ventilation will trip. When this trip occurs, the SBGT treatment system will auto start. With an auto start, the normal expected flow is 4000 scfm plus or minus 10 percent. With 300 scfm ambient air passing through the standby unit, the required range for flow is 3900 to 4700 scfm indicated on SBGT DISCH FLOW, FI 7540-13.

REQUIRED REFERENCES: None.

38 **Points: 1.00**

A loss of Unit 2 RBCCW will cause a loss of cooling to which of the following components below?

A. Unit 2 Service Air Compressors ONLY.

B. Unit 2 Pumpback Air Compressors ONLY.

C. Unit 2 AND Unit 3 Pumpback Air Compressors.

D. Unit 2 AND Unit 3 Resin Transfer Air Compressors.

Answer: C

Question 38 Details

Comments:

Objective: DRE208LN001.03
Reference: DOA 3700-01, DOP 3800-01
K/A: Generic.2.03 3.8 / 3.9
K/A: Knowledge of the design, procedural, and operational differences between units.
Level: Memory
Pedigree: New
Explanation: The candidates need to understand the operational difference between both unit's RBCCW systems. Both unit's Pumpback Air Compressors are supplied cooling water from Unit 2 (Unit 3 RBCCW does NOT supply its own Pumpback Air Compressors). The Service Air Compressors and Resin Transfer Air Compressors are cooled by their own TBCCW not RBCCW (common misconception).

REQUIRED REFERENCES: None.

39 **Points: 1.00**

Unit 3 was operating at near rated power when a transient occurred with the following conditions:

- RPV pressure is 650 psig and steady.
- Torus water level is 15 feet and steady.
- All RPV water level indications are **UNAVAILABLE**.
- Torus temperature is indicating 170^{o}F and rising slowly.
- Bus 33 and 34 are de-energized and efforts to energize them have been unsuccessful.

What action(s) are required?

A. Start all Torus cooling.

B. Emergency Depressurize.

C. Vent to stay below the Primary Containment Pressure Limit.

D. Lower reactor pressure to stay below the Heat Capacity Limit.

Answer: B

Question 39 Details

Comments:

Objective: 29502-06
Reference: DEOP 100 and 200-1
K/A: 295026.A2.01 4.1 / 4.2
K/A: Suppression Pool High Water Temperature: Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature.
Level: High
Pedigree: Bank
Comments: Torus cooling is unavailable because CCSW has no electrical power (33 and 34 de-energized). With all RPV water level indicators unavailable, the team is in RPV flooding and cannot lower pressure. The HCL curve is being exceeded and therefore blowdown is required. The PCPL is not being violated.

REQUIRED REFERENCES: None.

40 **Points: 1.00**

Unit 2 was operating at near rated power when an instrument failure required the 2A Recirc pump speed to be adjusted LOCALLY.

Which of the following describes the MINIMUM requirements to perform this evolution?

Communication between the Control Room and _____ at the motor generator.

A. ANY Operator

B. an ACTIVE LICENSED Operator

C. ANY Operator with no restriction which would prohibit solo operations

D. an ACTIVE LICENSED Operator with no restriction which would prohibit solo operations

Answer: D

Question 40 Details

Comments:

Objective: 20200LP008
Reference: DOP 0202-12
K/A: Generic.1.08 3.4 / 4.1
K/A: Ability to coordinate personnel activities outside the control room.
Level: Memory
Pedigree: Bank
Comments: In order to perform Recirc MG Scoop Tube Manual Local Operation, communications must be established between the Control Room and the operator at the applicable recirc MG set. The operator at the MG set must have an active license with no license restrictions preventing solo operations.

REQUIRED REFERENCES: None.

41 **Points: 1.00**

Unit 3 was operating at near rated power, when Bus 33-1 experienced an *OVERCURRENT* condition.

What would be a correct plant response/indication?

A. Unit 3 RPS EPA 3A-1 "IN" light extinguished.

B. Unit 3 RPS EPA 3B-1 "IN" light extinguished.

C. Annunciator 903-8 C-4 U2/3 DIESEL GEN FAIL TO START in alarm.

D. Annunciator 903-8 E-8 ESS UPS ON DC OR ALTERNATE AC in alarm.

Answer: A

Question 41 Details

Comments:

Objective: DRE212LN001.03
Reference: DOP 0500-03 figure 2, DANs 903-8 C-4 and 903-8 E-8
K/A: 212000.K1.04 3.4 / 3.6
K/A: Reactor Protection System: Knowledge of the physical connections and/or cause effect relationships between REACTOR PROTECTION SYSTEM and the following: A.C. electrical distribution.
Level: High
Pedigree: Modified
Comments: With an overcurrent on Bus 33-1 it will become completely de-energized, which will cause Bus 38 to become de-energized. With Bus 38 de-energized, MCC 38-2 also becomes de-energized, which is the power supply to RPS MG set A. When MG Set A coasts down, the EPA 3A-1 becomes de-energized (IN power light goes out).
EPA 3B-1 is incorrect because it is powered from MG Set B (MCC 39-2).
Annunciator for U2/3 EDG fail to start is incorrect, because with an overcurrent on Bus 33-1, the U2/3 EDG will auto start (but is prevented from closing in on the bus).
Annunciator for ESS Bus Transfer is incorrect because it is powered from MCCs Bus 39, not Bus 38.

REQUIRED REFERENCES: None.

42 **Points: 1.00**

Unit 3 was operating at near rated power when IMD reported that one of the PCIS *Drywell Pressure - High* instruments failed downscale. All other *Drywell Pressure - High* instruments are normal.

Which of the following is required?

A. Initiate action to restore channel to OPERABLE status immediately.

B. Restore isolation capability within 1 hour.

C. Place the channel in trip within 12 hours.

D. Be in MODE 3 within 12 hours and MODE 4 within 36 hours.

Answer: C

Question 42 Details

Comments:

Objective: DRE223LN001.07
Reference: Tech Spec 3.3.6.1
K/A: 223002.G.2.40 3.4 / 3.7
K/A: Primary Containment Isolation System/Nuclear Steam Supply Shut-Off: Ability to apply Technical Specifications for a system.
Level: High
Pedigree: New
Comments: With one of the required channels inoperable, the channel must be place in trip. The 12 hour timeframe is based on the instrument being a function of instrument 2.b. The distractor with restore channel to operable would be correct if the required action of C was not completed. Restoring isolation capability within 1 hour is incorrect since isolation capability was NOT lost. The distractor for Being in MODE 3 and MODE 4 is incorrect since condition G (as required by required action C.1 and referenced in Table 3.3.6.1-1) has not been exceeded.

REQUIRED REFERENCES: I.T.S. 3.3.6.1 with less than 1 hour times removed.

43 **Points: 1.00**

Unit 2 was operating at approximately 60% power, with the FWLC in **3 Element** control and the FW Reg valves in **AUTO**, when the 2C Steam Flow detector instantaneously failed downscale.

After 2 minutes, the FWLC system will be controlling in . . . . .

A. Single Element

B. Three Element

C. Master Manual

D. Individual Manual

Answer: A

Question 43 Details

Comments:

Objective: DRE259LN002.06
Reference: DAN 902-5 G-8
K/A: 259002.K6.03 3.1 / 3.1
K/A: Reactor Water Level Control System: Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Main steam flow input.
Level: Memory
Pedigree: Bank
Comments: With the Steam Flow detector failing downscale (bad quality) when > 33.5%, total Steam flow will automatically transfer the FWLC System to SINGLE ELEMENT control.

REQUIRED REFERENCES: None.

44 **Points: 1.00**

Unit 2 was operating at near rated power when a transient occurred, resulting in the following conditions:

- Torus water level is 31 feet.
- Drywell pressure is 1.31 psig and steady.
- Current Iodine-131 sample is 2.0 X 10^{-8} uCi/cc.
- Current Beta/Gamma (total particulate) is 5.0 X 10^{-7} uCi/cc.
- Radiation protection is unavailable to perform an off-site dose calculation.

Which of the following is an allowable vent/purge path, IAW with DOP 1600-05, PRIMARY CONTAINMENT INERTING AND ATMOSPHERE CONTROL, to reduce airborne concentrations?

___(1)___ vent/purge through ___(2)___ .

A. (1) Torus
(2) SBGT

B. (1) Drywell
(2) SBGT

C. (1) Torus
(2) Rx Building Vent

D. (1) Drywell
(2) Rx Building Vent

Answer: B

Question 44 Details

Comments:

Objective: 22301LP006
Reference: DOP 1600-05, DEOP 0500-04
K/A: Generic.3.11 3.8 / 4.3
K/A: Ability to control radiation releases.
Level: High
Pedigree: Bank
Comments: An analysis of the radiation levels is required to determine that if the radiation levels are within the mentioned bands, then SBGT train should be used. Also an analysis of the Torus level is required to determine which location to vent to. if Torus level is > 30 ft, vent the Drywell as opposed to the Torus.

REQUIRED REFERENCES: DEOP 500-4 and DOP 1600-05.

45 **Points: 1.00**

What is the bases for a reactor scram being performed if the operating team is unable to restore and hold Drywell temperature below 281° F?

A. Ensure control rods are inserted before initiating DW sprays.

B. Ensure Reactor is shutdown before performing Containment Flooding.

C. Shutdown Reactor before CRD components fail due to high temperature.

D. Ensure Reactor is shutdown before performing an Emergency Depressurization.

Answer: D

Question 45 Details

Comments:

Objective: 29502LK015
Reference: EPG B-7 page 28, Bases 3.6.5.1
K/A: 295028.K3.05 3.6 / 3.7
K/A: High Drywell Temperature: Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE: Reactor SCRAM.
Level: Memory
Pedigree: Bank
Comments: Although unlikely a scram has not occurred by the time this decision is made, it is specifically stated to ensure the reactor is shutdown before an emergency depressurization is performed. The distractors are incorrect as follows. An ATWS condition does not warrant ignoring protecting containment, and DEOP 400-5 has provisions for 'post blowdown'. There is no failure concerns with components needed to insert control rods in the temperature ranges discussed. There also is no correlation between having rods inserted before spraying the drywell.

REQUIRED REFERENCES: None.

46 **Points: 1.00**

Unit 3 was operating at near rated power when the feed breaker to the Unit 3 250 VDC Turbine Building MCC 3 tripped.

This will cause a loss of power to the . . . . .

A. HPCI System, 3-2303-AOP **U3** AUX OIL PUMP

B. Isolation Condenser, 2-1301-3 **U2** RX INLET ISOL VLV

C. Isolation Condenser, 3-1301-3 **U3** RX INLET ISOL VLV

D. Turbine oil System, 2-5350-ESOP **U2** EMERG OIL PUMP

Answer: B

Question 46 Details

Comments:

Objective: DRE263LN001.12
Reference: DOA 6900-04, DOP 6900-01
K/A: 263000.K2.01 3.1 / 3.4
K/A: D.C. Electrical Distribution: Knowledge of electrical power supplies to the following: Major D.C. loads.
Level: Memory
Pedigree: Bank
Comments: The candidate must understand the 250 VDC systems are cross connected and that with the feed breaker to the Unit 3 250 VDC Turbine Building MCC 3 tripped it causes a loss of power to the U2 RB MCCs 2A and 2B. The 2-1301-3 **U2** RX INLET ISOL VLV is powered from RB MCC 2A. The 2-5350-ESOP **U2** EMERG OIL PUMP, 3-1301-3 **U3** RX INLET ISOL VLV, and 3-2303-AOP **U3** HPCI AUXILIARY OIL PUMP are unaffected, as they still have power.

REQUIRED REFERENCES: None.

47 **Points: 1.00**

Unit 2 was operating at near rated power when a transient caused RPV water level to drop 20 inches BELOW the value that is an entry condition for DEOP 100, RPV CONTROL.

No other DEOP entry conditions are satisfied.

What PCIS group isolation(s) have automatically occurred?

A. Group 2 ONLY

B. Group 3 ONLY

C. Group 2 and Group 3 ONLY

D. Group 1, Group 2, and Group 3 ONLY

Answer: C

Question 47 Details

Comments:

Objective: 29501LK019
Reference: DAN 902-5 E-5, DAN 902-5 D-5, DEOP 100
K/A: Generic.4.02 4.5 / 4.6
K/A: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
Level: High
Pedigree: Bank
Comments: Per DEOP RPV Control, the entry condition for level is +8 inches. The level setpoint for a group 2 is +6 inches and the level setpoint for a group 3 is +6 inches.

REQUIRED REFERENCES: None.

48 **Points: 1.00**

Unit 3 is in startup with the MODE switch in STARTUP and Control Rod pulls in progress.

All IRMs are on range 2, with the following indications:

- IRM 11 is 60
- IRM 12 is 55
- IRM 13 is 45
- IRM 14 is 70
- IRM 15 is 60
- IRM 16 is 45
- IRM 17 is 50
- IRM 18 is 50

When the IRM 14 range switch is turned one position to the right, IRM 14 displays a reading of 1.

What is the result(s) AND appropriate action(s) to take?

A. IRM DOWNSCALE alarm **only**;
continue with startup.

B. IRM DOWNSCALE alarm **and** ROD BLOCK;
bypass IRM 14, contact IMD, and continue with startup.

C. IRM DOWNSCALE alarm **and** ½ SCRAM;
bypass IRM 14, contact IMD, reset the ½ scram, and continue with startup.

D. IRM DOWNSCALE alarm **and** ½ SCRAM;
rotate range switch the other direction 2 positions, reset the ½ scram, and continue with startup.

Answer: B

Question 48 Details

Comments: Objective: DRE215LN003.08
Reference: DRE LP215LN003
K/A: 215003.A2.06 3.0 / 3.2
K/A: Intermediate Range Monitor (IRM) System: Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Faulty range switch.
Level: High
Pedigree: Bank
Comments: A faulty range switch or its associated attenuators caused the downscale indication. A downscale (5/125) generates a ROD BLOCK in this condition. Rods cannot to be pulled until the rod block is cleared. This is accomplished by bypassing the IRM. The downscale ROD BLOCK is only bypassed when on range 1 or with reactor mode switch in RUN. A ½ SCRAM would occur if indication pegged upscale. Indication would have pegged upscale if the range switch was mis-positioned in the wrong direction.

REQUIRED REFERENCES: None.

49 **Points: 1.00**

Unit 3 was operating at near rated power when a transient caused the Drywell pressure to reach 3.5 psig.

Which of the following conditions will TRIP the Unit 3 Emergency Diesel Generator, 3 minutes after it has started?

A. Generator Differential Fault

B. Engine Low Water Pressure

C. Main Bearing Oil Pressure Low

D. Engine High Water Temperature

Answer: A

Question 49 Details

Comments:

Objective: DRE264LN001.06
Reference: DOS 6600-01
K/A: 264000.K4.02 4.0 / 4.2
K/A: Emergency Generators (Diesel/Jet): Knowledge of EMERGENCY GENERATORS (DIESEL/JET) design feature(s) and/or interlocks which provide for the following: Emergency generator trips (emergency/LOCA).
Level: Memory
Pedigree: New
Comments: The candidate must understand that a Drywell pressure greater than 2.0 psig will cause the EDG auto start relay (ASR) to energize. When the ASR energizes, it auto starts the EDG and bypasses several EDG trips. The trips that are NOT bypassed during an ASR actuation are engine overspeed and generator differential current. The remaining signals are only in effect if the EDG was started for a surveillance.

REQUIRED REFERENCES: None.

50 **Points: 1.00**

Which choice completes the sentence below, describing a function of the RBCCW system Expansion Tank?

To provide a place for . . . . .

A. chemical addition.

B. system make-up from Service Water.

C. system make-up from Clean Demineralized Water.

D. system make-up from the Condensate Storage Tanks.

Answer: C

Question 50 Details

Comments:

Objective: DRE208LN001.02
Reference: UFSAR 9.2.3.2
K/A: 400000.G.1.28 4.1 / 4.1
K/A: Component Cooling Water System (CCWS): Knowledge of the purpose and function of major system components and controls.
Level: Memory
Pedigree: Bank
Comments: The UFSAR states that the expansion tank provides a storage volume of water to replenish RBCCW from the Clean Demineralized Water tank. The Service Water System is on the tube side, not shell side of the RBCCW System and is not replenished by the Expansion Tank. A common misconception is that the Condensate Storage Tanks are used as makeup to the RBCCW System since they are the makeup to the Clean Demin Tank. A place for chemical addition is a function of the chem add tank.

REQUIRED REFERENCES: None.

51 **Points: 1.00**

Unit 2 was operating at near rated power, with the following set of conditions:

- Drive Water Pressure is 290 psid.
- The "Rod Out Permissive" light is illuminated.

The NSO selected and attempted to single notch a control rod from position 12 to 14.

After moving the ROD MOVEMENT CONTROL switch to "ROD OUT NOTCH" and then releasing it, the following indications are observed:

- The 'ROD OUT' light illuminated for approximately 1.5 seconds.
- The "SETTLE" light then illuminated for approximately 7.0 seconds.
- The NSO noted that the control rod did NOT move from the position 12.

Based on these indications, which one of the following explains why the rod did NOT move?

A. A control rod withdrawal block exists.

B. The NSO did not properly position the rod movement control switch.

C. The CRD Drive Water pressure is too low for normal rod movement.

D. A problem exists with the "Rod In" portion of the "Notch Out" sequence.

Answer: D

Question 51 Details

Comments:

Objective: DRE201LN002.08
Reference: LP DRE201LN002, DOP 0400-01
K/A: 201002.A1.03 3.0 / 2.9
K/A: Reactor Manual Control System: Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Rod movement sequence lights.
Level: High
Pedigree: Bank
Comments: The ROD IN light was not received at the beginning of the rod withdrawal sequence therefore the rod could not move out because it was never moved off of the collet fingers. A withdrawal block could not have existed since the ROD OUT permissive light was lit. If the rod were just difficult to move (i.e. won't move with normal drive water pressure) the ROD IN light would've still energized. Since all other normal light indications, except the ROD IN light being lit, occurred the switch had to have been properly positioned.

REQUIRED REFERENCES: None.

52 **Points: 1.00**

Unit 3 was operating at near rated power, when a transient occurred, resulting in the following Recirc loop flow indications:

- 'A' flow of 87%.
- 'B' flow of 98%.

The requirement for Recirc Loop flows are ___(1)___ and the Operating team ___(2)___ .

A. (1) met;
(2) CAN continue plant operation indefinitely.

B. (1) met;
(2) is required to adjust Recirc Pump Speeds within 2 hours.

C. (1) NOT met;
(2) is required to adjust Recirc Pump Speeds within 2 hours or declare the 'A' Loop flow to be "not in operation" AND perform the required actions of the Tech Specs.

D. (1) NOT met;
(2) is required to adjust Recirc Pump Speeds within 2 hours or declare BOTH Loop flows to be "not in operation" AND perform the required actions of the Tech Specs.

Answer: C

Question 52 Details

Comments:

Objective: DRE202LN001.08
Reference: DOA 0202-03, I.T.S. 3.4.1
K/A: 202002.A2.04 3.0 / 3.2
K/A: Recirculation Flow Control System: Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation pump speed mismatch between loops: Plant-Specific.
Level: High
Pedigree: New
Comments: Loop flow mismatch must be < 5% of rated core flow when operating at ≥ 70% of rated core flow. Since the requirement is based on RATED CORE FLOW and each loop accounts for half, the candidate must divide the difference by 2, which will give a mismatch of 5.5%. This causes the DOA 0202-03 requirement to not be met. With the loops NOT within 5%, the correct action is to adjust speeds to within 5% within 2 hours or declare the lower loop not in operation and perform the required actions of the Tech Specs..

REQUIRED REFERENCES: None.

53 **Points: 1.00**

A visual inspection requires momentarily placing the Unit 2 Emergency Diesel Generator's (EDG) control switch on the 902-8 panel, in **STOP**.

The EDG is considered INOPERABLE, until . . . . .

A. REMOTE starting capability is verified.

B. the EDG's AUTO START function is tested.

C. an Operator is stationed in the EDG room, ready to start the EDG locally.

D. the control switch is either Independently or Concurrently VERIFIED in its normal position.

Answer: D

Question 53 Details

Comments:

Objective: DRE29900LK157
Reference: HU-AA-101
K/A: Generic.2.14 3.9 / 4.3
K/A: Knowledge of the process for controlling equipment configuration or status.
Level: Memory
Pedigree: New
Comments: Independent Verification shall be performed for safety related equipment, when returning these systems to their final configuration prior to considering them operable.

REQUIRED REFERENCES: None.

54 **Points: 1.00**

An indication of a CRD Accumulator having low Nitrogen pressure, would be a(an) _____ Accumulator trouble light on the Full Core Display.

A. Red

B. Blue

C. White

D. Amber

Answer: D

Question 54 Details

Comments:

Objective: 201LN002.03
Reference: DRE201LN002
K/A: 214000.A3.01 3.4 / 3.3
K/A: Rod Position Information System: Ability to monitor automatic operations of the ROD POSITION INFORMATION SYSTEM including: Full core display.
Level: Memory
Pedigree: New
Comments:
The AMBER light, in the top left, is the “Accumulator” Trouble alarm.
The RED light, in the bottom right, is the “Drift” light.
The WHITE light, in the top right, is the “Core Position”.
The BLUE light, in the bottom left is actually RED and is the “Scram” light.

REQUIRED REFERENCES: None.

55 **Points: 1.00**

Unit 2 was operating at near rated power when 2 of the 3 DEHC Pressure Control Processors failed HIGH.

What is the expected plant response?

A. Turbine Control Valves ONLY close, causing RPV pressure to increase; MSIVs close and the Reactor scrams.

B. Turbine Control Valves ONLY open, causing RPV pressure to decrease; MSIVs close and the Reactor scrams.

C. Turbine Control AND Bypass Valves close causing RPV pressure to increase; the Reactor scrams.

D. Turbine Control AND Bypass Valves open causing RPV pressure to decrease; the Reactor scrams.

Answer: B

Question 55 Details

Comments:

Objective: DRE241LN001.12
Reference: DOA 5600-02
K/A: 241000.K1.02 3.9 / 4.1
K/A: Reactor/Turbine Pressure Regulating System: Knowledge of the physical connections and/or cause effect relationships between REACTOR/TURBINE PRESSURE REGULATING SYSTEM and the following: Reactor pressure.
Level: High
Pedigree: New
Comments: If 2 out of 3 DEHC Pressure Controller Processors fail high, then the Turbine Control Valves open, causing Turbine throttle pressure to DECREASE (not increase) to $\leq$ 827 psig with Reactor Mode Switch in RUN, then the MSIVs close and the Reactor scrams. The Turbine AND (not only) Bypass valves closing occurs only if 2 out of 3 processors fail LOW.

REQUIRED REFERENCES: None.

56 **Points: 1.00**

Unit 2 was operating at near rated power when a leak inside the Drywell occurred, with the following set of conditions :

- Torus temperature is 90°F and rising.
- Drywell pressure is 3.5 psig and rising.
- Drywell temperature is 125°F and rising.

The Operating team was executing DEOP 200-1, when TR-86 Sudden Pressure Relay (SPR) activated.

Two (2) minutes after the SPR activation, without any Operator action, which of the following is a consequence?

A. Torus temperature will continue to rise, due to a loss of power to the LPCI pumps.

B. Torus temperature will continue to rise, due to a loss of power to the CCSW pumps.

C. Drywell temperature will continue to rise, due to a loss of power to the Torus Spray valves.

D. Drywell temperature will continue to rise, due to a loss of power to the Drywell Spray valves.

Answer: B

Question 56 Details

Comments:

Objective: DRE203LN001.02
Reference: 12E-2302 sht 2
K/A: 219000.K3.01 3.9 / 4.1
K/A: Knowledge of the effect that a loss or malfunction of the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE will have on following: Suppression pool temperature control.
Level: High
Pedigree: New
Comments: The candidate must know that when Drywell pressure exceeded 2.0 psig, an automatic reactor scram occurred. Also, when the TR-86 sudden pressure relay activated, this caused a loss of power to TR-22, which is the division II power normal supply to the unit. With the combination of the scram and loss of power to TR-22, all off site power is lost. This causes a loss of power to 4 KV Buses 21, 22, 23, and 24. All 4 CCSW pumps are powered from Bus 23 and Bus 24. The loss of the CCSW pumps causes a loss of the cooling medium for Torus cooling, thus the Torus temperatures will continue to rise. Torus temperature will NOT rise due to a loss of LPCI pumps, since they will be re-powered once the EDGs auto start and re-power emergency Buses 23-1 and 24-1 (13 seconds after the SPR event). The Torus Spray AND Drywell valves are powered from MCC 28-1 and MCC 29-1, which stay connected and will be re-powered from Bus 28 and Bus 29, when they are restored from Bus 23-1 and Bus 24-1, via the EDGs (within 13 seconds of the SPR event).

REQUIRED REFERENCES: None.

57 **Points: 1.00**

While performing DOS 0040-07 VERIFICATION OF REMOTE POSITION INDICATION FOR VALVES INCLUDED IN INSERVICE TESTING (IST) PROGRAM, steps may be performed out of sequence, with the permission of the . . . . .

A. S.O.S. ONLY.

B. Unit Supervisor ONLY.

C. IST Coordinator ONLY.

D. Shift Manager AND IST Coordinator.

Answer: B

Question 57 Details

Comments:

Objective: DRE264LN004.14
Reference: DOS 0040-07
K/A: Generic.2.12 3.7 / 4.1
K/A: Knowledge of surveillance procedures.
Level: Memory
Pedigree: New
Comments: Per the limitations and actions of the surveillance, steps may be performed out of sequence upon Unit Supervisor direction.

REQUIRED REFERENCES: None.

58 **Points: 1.00**

Unit 2 was in a STARTUP with All SRMs indicating ~ 5000 cps. The NSO selects all SRMs for movement and pushes and holds the DRIVE OUT pushbutton. 1 minute later, the NSO releases the DRIVE OUT pushbutton.

The following is observed:

- SRM 21 indicates ~ 300 cps.
- SRM 22 indicates ~ 300 cps.
- SRM 23 indicates ~ 300 cps.
- SRM 24 indicates ~ 4000 cps.

SRM 24 indication tracked with the other three (3) SRM indications until it reached 4000 cps, then it stopped tracking.

SRM 24 . . . . .

A. has developed a whisker and the NSO should bypass the SRM.

B. has developed a whisker and IMD should be contacted to run a detector test.

C. is stuck and the NSO should dispatch an NLO to replace fuses located in panel 2202-14.

D. is stuck and the NSO should attempt to free the detector by using the DRIVE IN and DRIVE OUT pushbuttons.

Answer: D

Question 58 Details

Comments:

Objective: DRE215LN004.08
Reference: DOA 0700-02
K/A: 215004.A2.03 3.0 / 3.3
K/A: Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Stuck detector.
Level: High
Pedigree: Bank
Comments: Per DOA 0700-02, the symptom of a stuck detector is count level not changing during withdraw or insert attempt. SRM 24 stopped tracking with the other SRMs, and its count level remained at 4000cps. This indicates a stuck detector, which could be caused by a number of things. The first action for the crew to take per DOA 0700-02 is to attempt to free the stuck detector using the DRIVE IN and DRIVE OUT pushbuttons. Fuse 705 is not specific to SRM 24. It is replaced when all SRM indication on the 5 panel is lost. A detector whisker does not cause counts to stay at mid position. A whisker causes a spurious spike in indication, usually upscale.

REQUIRED REFERENCES: None.

59 **Points: 1.00**

Unit 2 was operating at near rated power when a fire occurred in Bus 29, causing it to de-energize.

Which of the following describes an impact of this transient?

A. A loss of all RPIS indication for Unit 2.

B. APRM recorders 4, 5, and 6 become de-energized.

C. 2B Refuel Floor rad monitors become de-energized.

D. 2A and 2C Main Steam Line (MSL) rad monitors become de-energized.

Answer: D

Question 59 Details

Comments:

Objective: DRE272LN002.02
Reference: DOA 0500-05, DOA 6800-01, UFSAR Section 11.5.2.1
K/A: 272000.K2.01 2.5 / 2.8
K/A: Radiation Monitoring System: Knowledge of electrical power supplies to the following: Main steamline radiation monitors.
Level: High
Pedigree: New
Comments: With a fire in Bus 29 that causes it to de-energize (due to fault), the candidate must understand that there is NO auto crosstie from Bus 28. With Bus 29 de-energized, MCC 29-2 also de-energizes. A loss of MCC 29-2 causes a loss of power to the "B" RPS MG Set, which causes a loss of power to the "A" RPS Bus (the concept of "A" feeding "B" within the RPS system is a common misconception at Dresden Station). The Main Steam Line Rad Monitors A+C are powered from the "A" RPS Bus and subsequently become de-energized. The "B" refuel floor rad monitors stay energized since they are powered from the "B" RPS Bus ("A" MG Set). The APRM recorders 4, 5, and 6 would not be lost, since the power for these come from the Instrument Bus. A loss on RPIS indication is incorrect, since the RPIS power is from the ESS Bus.

REQUIRED REFERENCES: None.

60 **Points: 1.00**

Given the following set of conditions:

- Unit 3 was operating at near rated power.
- Unit 2 was declared critical during a startup from a refuel outage, when it was shutdown with all rods in, due to a fuel manufacturer notice.
- Unit 2 began fuel moves 12 hours after shutdown completed.
- Two hours into fuel moves, noxious fumes are detected in the Main Control Room.
- The Unit Supervisor directs an NSO to place the Control Room Ventilation system CRM AIR FLOW CONTROL switch to OUTSIDE.

The Control Room team is required to IMMEDIATELY . . . . .

A. suspend fuel moves.

B. start the “B” HVAC train.

C. place the CRM ISOL switch to ISOLATE.

D. verify that the B Air Handling Unit (AHU) automatically starts.

Answer: A

Question 60 Details

Comments:

Objective: DRE288LN003.11
Reference: DOP 5750-05, TS 3.7.4
K/A: 290003.G.1.36 3.0 / 4.1
K/A: Control Room HVAC: Knowledge of procedures and limitations involved in core alterations.
Level: High
Pedigree: Bank
Comments: Placing the system in the “outside” position, renders the CREVs inoperable. Per the Tech, with the system inoperable during recently irradiated fuel moves in the secondary containment, the team must immediately suspend the fuel moves. The definition of "recently irradiated" is 24 hours or less. Placing the CRM ISOL switch to ISOLATE is NOT applicable for this situation. Starting the “B” HVAC train is required IF Control Room temperature drops below 70°F OR rises above 80°F. Verifying that the B AHU starts is a requirement if the A AHU has tripped (not the case in the stem).

REQUIRED REFERENCES: None.

61 **Points: 1.00**

You are about to take the shift as a Unit 2 NSO. The last time you were on shift was seven (7) days ago.

How many days are you REQUIRED to review the turnover logs back to, prior to completing relief?

A. 1 day.

B. 2 days.

C. 4 days.

D. 7 days.

Answer: C

Question 61 Details

Comments:

Objective: 29900LK022
Reference: OP-AA-112-101
K/A: Generic.1.3 3.7 / 3.9
K/A: Knowledge of shift or short-term relief turnover practices.
Level: Memory
Pedigree: New
Comments: OP-AA-112-101 requires Reactor Operator log review through the last previous date on shift, or the preceding four days, whichever is less. The distractors for 1 or 2 days are common misconceptions, based on days off during normal rotation. The 7 day distractor would be the choice (incorrect) based on not being on shift for the last 7 days.

REQUIRED REFERENCES: None.

62 **Points: 1.00**

Unit 2 was operating at approximately 70% power, with the number 2 Low Pressure Heater String completely isolated, when the following occurred:

- Annunciator 902-6 G-3, 2A3 HEATER LVL HI alarmed.

Condensate Booster pump discharge pressure on BOOST PP DISCH PRESS PI 2-3340-50 will ___(1)___ and the team is required to ___(2)___ .

A. (1) decrease;
(2) reduce power with flow

B. (1) decrease;
(2) open MO 3-3403, LP HTR BYPASS

C. (1) increase;
(2) reduce power with flow

D. (1) increase;
(2) open MO 3-3403, LP HTR BYPASS

Answer: C

Question 62 Details

Comments:

Objective: DRE259LN001.12
Reference: DAN 902-6 G3, DOA 3500-02
K/A: 256000.A4.06 3.1 / 3.0
K/A: Reactor Condensate System: Ability to manually operate and/or monitor in the control room: System pressure.
Level: High
Pedigree: Bank
Comments: A high level in the 2A3 heater will cause the heater string bypass valve to open and the heater string condensate isolation valves to close. With the number 2 and number 3 heater strings isolated, all the condensate flow must now pass through the remaining heater string and the bypass line. The Condensate Booster pump discharge pressure will increase due to flow resistance. The bypass valve will not need to be opened since it will AUTO open on a high level (and should have already been opened when the first string was isolated).

REQUIRED REFERENCES: None.

63 **Points: 1.00**

If an Electromatic Relief Valve fails open, Control Rod Worth will ___(1)___ .

If the moderator temperature rises, Control Rod Worth will ___(2)___ .

A. (1) decrease;
(2) decrease

B. (1) decrease;
(2) increase

C. (1) increase;
(2) decrease

D. (1) increase;
(2) increase

Answer: B

Question 63 Details

Comments:

Objective: BR04I.06
Reference: GFES exam bank, QID B53, QID B2656
K/A: 201003.K5.06 2.7 / 2.9
K/A: Knowledge of the operational implications of the following concepts as they apply to CONTROL ROD AND DRIVE MECHANISM: How control rod worth varies with moderator temperature and voids.
Level: High
Pedigree: New
Explanation: When an Electromatic Relief Valve fails open, voids go up. As voids go up, the worth of a rod will decrease. While pulling rods during a startup, the temperature of the moderator goes up. As moderator temperature goes up the worth of the rod will increase.

REQUIRED REFERENCES: None.

64 **Points: 1.00**

Operations was required to perform, and **ONLY** performed step I.3 of DOS 1100-03 STANDBY LIQUID CONTROL INJECTION TEST, and the following information has been collected:

- Test tank level at start was 15 inches from the top.
- Test tank level at finish was 63 inches from the top.
- 2A SBLC pump run time was 3 minutes.

Based on the data above, which one of the following is true concerning the SBLC system?

A. The 2A pump must be **RE-TESTED**.

B. The 2B SBLC pump must be tested **ALSO**.

C. The injection check valves 2-1101-15 and 2-1101-16 **MEET** acceptance criteria.

D. The injection check valves 2-1101-15 and 2-1101-16 **FAILED** to meet acceptance criteria.

Answer: C

Question 64 Details

Comments:

Objective: DRE211LN001.08
Reference: DOS 1100-03
K/A: 211000.K5.06 3.0 / 3.2
K/A: Knowledge of the operational implications of the following concepts as they apply to STANDBY LIQUID CONTROL SYSTEM: Tank level measurement.
Level: High
Pedigree: Modified
Comments: By using the formula supplied in DOS 1100-03 step I.3.a.16, the calculation of gpm can be obtained. Tank level change was 48 inches and total run time was 3 minutes. The level change is divided by total run time in minutes, which equals 16. This number is multiplied by 3.04 (gallons per inch of the test tank) which equals 48.64 gpm. The SBLC injection check valves 2-1101-15 and 2-1101-16 have a safety function in the open position. To verify these valves operable, they must pass at least 40 gpm. The acceptance criteria is 42.5 gpm. The 2B pump is not required to be tested, per this procedure. There is not a requirement to perform a leak test here.

REQUIRED REFERENCES: DOS 1100-03, with pages 9-32 removed.

65 **Points: 1.00**

Prior to Control Rod withdrawal for a Reactor startup and with a signal to noise ratio of < 20:1, DOP 0700-01, SOURCE RANGE MONITOR (SRM) OPERATION, directs to verify at least three SRM Channels indicate equal to or greater than ___(1)___ cps .

During detector motion, Period indication ___(2)___ be reliable.

A. (1) 1;
(2) WILL

B. (1) 1;
(2) will NOT

C. (1) 3;
(2) WILL

D. (1) 3;
(2) will NOT

Answer: D

Question 65 Details

Comments:

Objective: DRE215LN004.11
Reference: DOP 0700-01
K/A: 215004.K5.03 2.8 / 2.8
K/A: Knowledge of the operational implications of the following concepts as they apply to SOURCE RANGE MONITOR (SRM) SYSTEM: Changing detector position.
Level: Memory
Pedigree: Bank
Explanation: Per DOP 0700-01, while withdrawing Control Rods during a Reactor startup verify at least three SRM Channels indicate GREATER than 3 cps during detector motion AND period indication will NOT be reliable.

REQUIRED REFERENCES: None.

66 **Points: 1.00**

Unit 2 was operating at near rated power, when a transient occurred, causing the following events to occur sequentially:

- Drywell pressure reached 2.5 psig.
- TR-86 sudden pressure relay (SPR) activated.

Per DGA-12, PARTIAL OR COMPLETE LOSS OF AC POWER, what is the recommended power supplies to the following buses?

(assume backfeeding, where appropriate)

	power:	Bus 23	Bus 23-1	Bus 24	Bus 24-1
	from:				
A.		Bus 23-1	2/3 EDG	U2 SBO	U2 EDG
B.		Bus 23-1	2/3 EDG	U2 SBO	Bus 24
C.		U2 SBO	2/3 EDG	Bus 24-1	Bus 24
D.		U2 SBO	Bus 23	Bus 24-1	U2 EDG

Answer: A

Question 66 Details

Comments:

Objective: DRE262LN001.08
Reference: DGA-12 table 1
K/A: 295003.A1.02 4.2 / 4.3
K/A: Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Emergency generators.
Level: High
Pedigree: New
Comments: With Drywell pressure reaching 2.5 psig, a scram occurred, which caused a loss of Div I power. When TR-86 experienced the SPR event, Div II power is lost. This is a complete loss of AC power to the unit. Per DGA-12 table 1, the preferred power supplies would be to power (or ensure powered) as follows:

Bus 23 from Bus 23-1 (backfeed).
Bus 23-1 from EDG 2/3.
Bus 24 from the U2 SBO.
Bus 24-1 from the U2 EDG.

The distractors would only be correct if there was a failure of any of the various EDGs, per table 1 of DGA-12.

REQUIRED REFERENCES: None.

67 **Points: 1.00**

Unit 2 125VDC Main Bus 2A-1 experienced a fire and de-energized. What affect (if any) does this have on the Unit 2 Isolation Condenser INITIATION LOGIC?

A. No effect

B. A loss of power to Div I initiation logic ONLY

C. A loss of power to Div II initiation logic ONLY

D. A loss of power to Div I AND Div II initiation logic

Answer: B

Question 67 Details

Comments:

Objective: DRE207LN001.02
Reference: DOP 6900-02, LP DRE207LN001
K/A: 207000.K2.02 3.5 / 3.7
K/A: Knowledge of electrical power supplies to the following: Isolation Condenser Initiation Logic: BWR-2,3.
Level: Memory
Pedigree: New
Comments: With a loss of U2 125VDC Main Bus 2A-1, both distribution panels 2A-1 and 2A-2 are lost. Div I initiation logic is powered from 125 VDC 2A-1 and Div II is powered from 125 VDC 2B-1, thus ONLY Division I of the Iso Cond initiation logic will be lost.

REQUIRED REFERENCES: None.

68 **Points: 1.00**

Unit 3 was operating at near rated power when a transient occurred. The following parameters are observed:

- Drywell temperature is 170°F.
- Primary Containment water level is 11 ft.
- Drywell/Torus pressure is rising.

At which one of the following values would containment integrity no longer be assured?

A. Drywell pressure of 20 psig.

B. Drywell temperature of 230°F.

C. Torus bottom pressure of 65 psig.

D. Drywell/Torus differential pressure of +2 psid.

Answer: C

Question 68 Details

Comments:

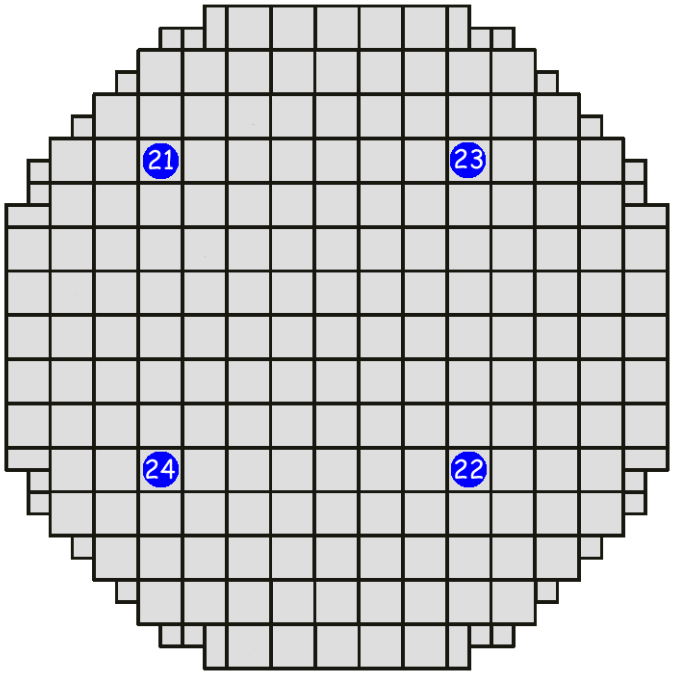
Objective: DRE223LN001.12
Reference: DEOP 200-1, DEOP Bases B-7-14
K/A: 295024.K1.01 4.1 / 4.2
K/A: Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE: Drywell Integrity: Plant-Specific.
Level: High
Pedigree: Bank
Comments: Given a Primary Containment (Drywell or Torus) water level of 11 feet, only a Torus bottom pressure of 65 psig would threaten the integrity of containment. The distractors provide parameters that have not yet reached the point to challenge containment or are points to take other actions.

REQUIRED REFERENCES: None.

69 **Points: 1.00**

Unit 3 was in refuel, when Operations received a call from the refuel floor, stating that a fuel bundle was dropped, while trying to insert it adjacent to Control Rod N-05.

Which Source Range Monitor (SRM) would respond FIRST, as being closest to the area of the dropped fuel bundle?



A. SRM 21

B. SRM 22

C. SRM 23

D. SRM 24

Answer: B

Question 69 Details

Comments: Objective: DRE215LN004.04
Reference: Figure 201LN006-003
K/A: 295023.A1.06 3.3 / 3.4
K/A: Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Neutron monitoring.
Level: Memory
Pedigree: New
Comments: Control Rod N-05 is located in the lower right hand portion of the full core display, which is where SRM 22 is located.

REQUIRED REFERENCES: None.

70 **Points: 1.00**

Unit 2 was operating at near rated power, when a transient occurred.

The NSO completed the actions of DGP 02-03 attachment C Hard Card, SCRAM CHOREOGRAPHY and reported that Reactor Power is 25% and steady.

15 seconds later, what color would the RX POWER bar graph on the SPDS screen be indicating?

A. RED

B. BLUE

C. GREEN

D. YELLOW

Answer: A

Question 70 Details

Comments:

Objective: DRE283LN002.03
Reference: DOP 9950-17
K/A: 295015.A1.08 2.7 / 2.9
K/A: Ability to operate and/or monitor the following as they apply to INCOMPLETE SCRAM : Process computer/SPDS/ERIS/CRIDS/GDS: Plant-Specific.
Level: High
Pedigree: New
Comments: The RX POWER bar graph will turn RED if more than seven seconds has elapsed since the mode switch was place in SHUTDOWN (met when the NSO completed the hard card) and any APRM is on-scale (indicated by a Rx power of 25%).

REQUIRED REFERENCES: None.

71 **Points: 1.00**

Both units were operating at near rated power, when a fire occurred in MCC 29-9, causing it to become de-energized.

A consequence of this transient would be a loss of _____ for the SBGT System.

A. power to the 2/3A Air Heater

B. indication for Fan Inlet Damper MO 2/3-7506A

C. power to the 2/3B Air Heater

D. indication for Fan Inlet Damper MO 2/3-7506B

Answer: A

Question 71 Details

Comments:

Objective: DRE261LN001.02
Reference: DAN 923-5 A-6
K/A: 261000.K6.01 2.9 / 3.0
K/A: Knowledge of the effect that a loss or malfunction of the following will have on the STANDBY GAS TREATMENT SYSTEM: A.C. electrical distribution.
Level: Memory
Pedigree: New
Comments: The 2/3A train heater is powered from MCC 29-9. The 2/3B train heater is powered from MCC 39-2. The 2/3-7506A damper indication is powered from Bus 2A-1. The 2/3-7506B damper indication is powered by Bus 2B-1.

REQUIRED REFERENCES: None.

72 **Points: 1.00**

With regards to the Main Steam system, the Electromatic Relief valves discharge to the ___(1)___ and the Safety valves discharge to the ___(2)___ .

A. (1) Torus;
(2) Torus

B. (1) Drywell;
(2) Drywell

C. (1) Torus;
(2) Drywell

D. (1) Drywell;
(2) Torus

Answer: C

Question 72 Details

Comments:

Objective: DRE239LN001.02
Reference: M-12, M-25
K/A: 239002.K1.07 3.6 / 3.8
K/A: Knowledge of the physical connections and/or cause effect relationships between RELIEF/SAFETY VALVES and the following: Suppression pool.
Level: Memory
Pedigree: New
Comments: Per the above prints, the Relief Valves discharge to the Torus and the Safety Valves discharge to the Drywell.

REQUIRED REFERENCES: None.

73 **Points: 1.00**

Both units were operating at near rated power, when noxious fumes are detected in the Control Room.

The Unit Supervisor has directed all NSOs to don MSA SCBA air packs.

What is the time expectancy of the air supply for an MSA SCBA air cylinder, WITHOUT using the bypass valve (red knob)?

A. 15 minutes

B. 30 minutes

C. 45 minutes

D. 60 minutes

Answer: B

Question 73 Details

Comments:

Objective: DRE288LN003.03
Reference: DOP 4650-01
K/A: 600000.A2.11 2.9 / 3.0
K/A: Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Time limit for use of respirators.
Level: Memory
Pedigree: New
Comments: The MSA cylinders are rated to last 30 minutes without utilizing the bypass valve.

REQUIRED REFERENCES: None.

74 **Points: 1.00**

Both units were operating at near rated power when a fire occurred, causing the Unit 3 125 VDC Main Bus 3A to de-energize.

Which of the following is a consequence of the above transient?

A loss of control power to the . . . . .

A. **2C** AND **2D** CCSW pump breakers.

B. **2A** Stator Cooling Water pump breaker.

C. **3C** AND **3D** CCSW pumps breakers.

D. **3B** Electro-Hydraulic Control (EHC) pump breaker.

Answer: A

Question 74 Details

Comments:

Objective: DRE263LN002.12
Reference: DOA 6900-T1
K/A: 263000.K3.02 3.5 / 3.8
K/A: Knowledge of the effect that a loss or malfunction of the D.C. ELECTRICAL DISTRIBUTION will have on following: Components using D.C. control power (i.e. breakers).
Level: Memory
Pedigree: New
Explanation: Upon a loss of the 125 VDC Main Bus 3A, the U3 125 VDC Distribution panels 3A-1 and 3A-2 AND the **U2** 125 VDC Distribution panels 2B-1 and 2B-2 will also lose power (since they are cross-connected from Unit 3). The loss of U2 distribution panels 2B-1 and 2B-2 will cause a loss of control power to any components powered from Buses 24, 26 or 27. The 2C and 2D CCSW pumps are powered from Bus 24 and subsequently lose control power. The 3C and 3D CCSW pumps control power are not affected, since they are powered from Bus 34. The 2A Stator Cooling Water Pump is not affected since it is powered from Bus 25. The 3B EHC Pump is not affected since it is powered from Bus 37.

REQUIRED REFERENCES: None.

75 **Points: 1.00**

Unit 2 was in MODE 3, on 3/15/09 at 05:10:00, with the following conditions:

- SDC in operation, with the 2B pump and heat exchanger in service.
- RBCCW in operation, with the 2B AND 2/3 pumps and heat exchangers in service.

The following annunciators are then received:

- Time 05:15:00; 902-4 A-23, SDC HX/FUEL POOL WTR TEMP HI.
- Time 05:25:00; 902-4 B-23, SDC PP TRIP.

Which of the following actions could have caused the **SDC Pump** to trip?

A. Bus 23-1 undervoltage.

B. Trip of the 2B RBCCW pump.

C. Starting an additional Service Water pump.

D. The 2B SDC pump discharge valve drifting closed.

Answer: B

Question 75 Details

Comments:

Objective: DRE205LN001.06
Reference: DAN 902-4 B-23
K/A: 295021.K2.04 3.0 / 3.1
K/A: Knowledge of the interrelations between LOSS OF SHUTDOWN COOLING and the following: Component cooling water systems: Plant-Specific.
Level: High
Pedigree: New
Comments: With the conditions given, only a trip of the 2B RBCCW pump would cause the SDC pump to trip. This occurs because after the RBCCW pump trips, the SDC temperatures start to rise (as indicated by both annunciators). When the SDC temperature reaches 339^{o}F at the suction of the pumps, this causes the SDC pump to trip. Starting an additional Service Water pump is incorrect, as this would increase cooling to the RBCCW system and subsequently increase cooling to the SDC system, causing the SDC temperatures to drop. Closing of the 2B SDC pump discharge valve is incorrect as it would cause SDC pump suction pressure to increase (which is the opposite of the SDC pump trip on LOW suction pressure). Bus 23-1 undervoltage is incorrect as the pumps listed as operating in the initial conditions are powered from Bus 24-1 (common misconception of power supplies since both the SDC and RBCCW systems have 3 pumps - with opposite power supplies from each other).

REQUIRED REFERENCES: None.

76 **Points: 1.00**

Unit 2 was operating at near rated power when annunciator 902-5 D-9, CHANNEL A MN STM TUNN TEMP HI alarmed.

The NSO reported the Shutdown Cooling Pump Room temperature is 190^{o}F and rising slowly.

The Unit Supervisor is required to direct the NSO to . . . . .

A. increase TBCCW flow to the X-Area coolers.

B. manually scram the reactor and shut the MSIVs.

C. secure Reactor Building ventilation and start SBGT.

D. manually scram the reactor and perform a blowdown.

Answer: B

Question 76 Details

Comments:

Objective: 29502LP017
Reference: DEOP 300-1
K/A: 295032.G.4.04 4.5 / 4.7
K/A: High Secondary Containment Area Temperature: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.
Level: High
Pedigree: Bank
Comments: These are the correct action per the DEOP 300-1 flow chart. TBCCW does not cool the X area coolers, a blowdown is not required until TWO areas are above Max Safe and starting SBGT would not cool the area down.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

77 **Points: 1.00**

Unit 2 was operating at near rated power.

At time 0000 hours , on January 1, the following SBLC surveillance results were received:

- Tank temperature of 115^{o}F
- Tank level of 3500 gallons
- Sodium Pentaborate solution of 15%
- 'A' pump flow rate of 39 gpm at 1275 psig
- 'B' pump flow rate of 43 gpm at 1330 psig

If the SBLC conditions do NOT change, which of the following describes the LATEST time allowed to be in Hot Shutdown?

A. 0800 hours, on January 1

B. 1200 hours, on January 1

C. 2000 hours, on January 1

D. 1200 hours, on January 8

Answer: C

Question 77 Details

Comments:

Objective: DRE211LN001.07
Reference: Tech Spec 3.1.7
K/A: Generic.1.25 3.9 / 4.2
K/A: Ability to interpret reference materials, such as graphs, curves, tables, etc.
Level: High
Pedigree: Bank
Comments: Per the given conditions, the SBLC system is outside the acceptable region of ITS 3.1.7 figure 1. ITS 3.1.7 condition B says that with two subsystems inop, restore one subsystem within 8 hours. Condition C says if cannot meet completion time of B, then be in Mode 3 in 12 hours. 8 hours and 12 hours, make 2000 hours on January 1.

SRO per Criteria: 2

REQUIRED REFERENCES: Tech Spec 3.1.7 with the less than one hour entry conditions blacked out.

78 **Points: 1.00**

[Question was deleted from the Exam based on Post-Examination comment]

Unit 2 was in startup, with Reactor power indicating 35%, when a transient occurred. The following conditions are observed:

- Turbine pressure indicates zero.
- Main Generator Field Breaker is closed.

Thirty (30) seconds after the transient, what immediate action(s) is/are the Unit Supervisor required to direct?

A. Scram the Reactor and close the MSIVs per DEOP 100, REACTOR CONTROL.

B. Control Reactor pressure with the HPCI system per DOA 2300-02, HARD CARD.

C. Control Reactor pressure with the Iso Condenser per DOP 1300-03, HARD CARD.

D. Reduce Recirc flow per DGP 03-01 POWER CHANGES, or insert CRAM rods per DGP 03-04, CONTROL ROD MOVEMENTS.

Answer: D

Question 78 Details

Comments:

Objective: DRE245LN001.08
Reference: DOA 5600-01
K/A: 295005.G.4.49 4.6 / 4.4
K/A: Main Turbine Generator Trip: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
Level: High
Pedigree: New
Comments: The candidate will need to assess that the Turbine has tripped (turbine pressure indicating zero). Once these conditions have been assessed the required actions, per the DOA is to maintain core thermal power less than 38.5% (with recirc or control rods) to stay within the capability of the bypass valves (33.5%) and the auxiliary loads (5%). Scramming the reactor and closing the MSIVs would only be correct if the stop valves did not close. Opening the output circuit breakers would be the correct action if the generator failed to trip AND 90 seconds had elapsed. Controlling reactor pressure (with HPCI or Iso) would be the correct action if there was indication that the bypass valves were not controlling pressure.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

79 **Points: 1.00**

You are the Shift Manager, meeting with the Plant Manager in the Training Building.

At time 09:00:00, the Main Control room calls you to report that on Unit 2 Drywell pressure is 1.45 psig and rising at a rate of 0.5 psig/1 minute.

Per OP-AA-101-111 Roles and Responsibilities of On-Shift Personnel, what is the LATEST time that the Shift Manager must be capable of being in the Control Room?

A. 0905

B. 0910

C. 0915

D. 0920

Answer: B

Question 79 Details

Comments:

Objective: 29900LK022
Reference: OP-AA-101-111
K/A: Generic.1.05 2.9 / 3.9
K/A: Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
Level: Memory
Pedigree: Bank
Comments: One of the responsibilities of the Shift Manager is to monitor compliance to all license requirements and regulations to ensure minimum staffing requirements are met at all times. Per the above procedure, the Shift Manager will remain within 10 minutes of the control room.

SRO per Criteria: 1

REQUIRED REFERENCES: None.

80 **Points: 1.00**

Unit 3 was operating at near rated power when a reactor coolant leak occurred inside the Drywell, and the following conditions exist:

- Torus level is 13 feet.
- Torus sprays are operating.
- Torus bottom pressure is 11 psig and rising.
- RPV level is 10 inches and rising slowly.
- RPV pressure is 880 psig and lowering slowly.
- Drywell pressure is 5 psig and steady.
- Drywell temperature is 260^{o}F and rising rapidly.
- Drywell sprays have NOT been attempted.

Which of the following actions is required to be performed NEXT per the DEOPs?

A. Spray the Drywell ONLY.

B. Perform an RPV Blowdown.

C. Vent the Primary Containment.

D. Trip Drywell Coolers AND spray the Drywell.

Answer: B

Question 80 Details

Comments:

Objective: 29502LP006
Reference: DEOPs 200-1 and 400-2
K/A: 295028.A2.05 3.6 / 3.8
K/A: Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE :
Torus/suppression chamber pressure: Plant-Specific.
Level: High
Pedigree: Bank
Comments: RPV blowdown required due to about to exceed drywell temperature limits. Can not spray the Drywell because the conditions are to the left of the Drywell Spray Initiation Limit curve. Can not vent because at this point there is no direction to exceed off-site release rates.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

81 **Points: 1.00**

With both units operating at near rated power, an NLO has a Clearance Order that requires independent verification.

For which of the following conditions can the Shift Manager WAIVE the independent verification?

A Clearance Order card is to be hung on a . . . . .

A. RFP valve located six feet above the 3A RFP.

B. Low Pressure Heater Drain valve located in LP Heater Bay.

C. 2/3 Diesel Generator Air Start motor that was just replaced.

D. SBGT damper located 8 feet off the floor in the Turbine Building 534 level.

Answer: B

Question 81 Details

Comments:

Objective:
Reference: HU-AA-101
K/A: Generic.3.13 3.4 / 3.8
K/A: Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.
Level: Memory
Pedigree: Bank
Comments: The Shift Manager may waive verification requirements for ALARA concerns. With the unit at power (and Hydrogen injection in service), a valve inside the Heater Bay would be of a dose concern. The valve located in overhead areas of the turbine building (while would requiring climbing) are not a valid reason to waive IV. A component (safety related) in the EDG room also does not meet the criteria for waiving IV.

SRO per Criteria: 4

REQUIRED REFERENCES: None.

82 **Points: 1.00**

Unit 2 was operating at near rated power, when a transient occurred, and the following conditions exist:

- Drywell pressure is 3.0 psig and steady.
- Reactor pressure is 950 psig and steady.
- RWCU blowdown rate is 100 gpm and steady.
- RWCU recirculation and blowdown modes are being used to control RPV pressure.
- RPV water level is 12 inches and lowering at rate of 1 inch/minute with all available systems operating.

Of the following action(s), with regard to the RWCU system, what would the Unit Supervisor be correct in directing?

A. Secure blowdown AND recirculation modes.

B. Secure blowdown mode and maintain recirculation mode.

C. Maintain existing blowdown AND recirculation modes.

D. Maintain existing blowdown mode and secure recirculation mode.

Answer: B

Question 82 Details

Comments:

Objective: DRE204LN001.08
Reference: DEOP 100
K/A: 295009.A2.03 2.9 / 2.9
K/A: Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL : Reactor water cleanup blowdown rate.
Level: High
Pedigree: Bank
Comments: Securing blowdown will decrease the amount of water leaving the reactor, which corrects the lowering RPV water level. DEOP 100 allows installing jumpers to maintain RWCU Recirc mode for pressure control.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

83 **Points: 1.00**

Which of the following sets of parameters would require the Unit Supervisor to direct lowering RPV Pressure, prior to being required to direct an Emergency Depressurization?

A. Reactor Pressure: 450 psig
Suppression Pool Temperature: 170°F
Suppression Pool Level: 12.5 feet

B. Reactor Pressure: 600 psig
Suppression Pool Temperature: 165°F
Suppression Pool Level: 15 feet

C. Reactor Pressure: 700 psig
Suppression Pool Temperature: 160°F
Suppression Pool Level: 15 feet

D. Reactor Pressure: 800 psig
Suppression Pool Temperature: 160°F
Suppression Pool Level: 18 feet

Answer: D

Question 83 Details

Comments:

Objective: 29501LP005
Reference: DEOP 200-1
K/A: 295026.A2.02 3.8 / 3.9
K/A: Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool level.
Level: High
Pedigree: Bank
Comments: Utilizing the DEOP 200-1 Heat Capacity Temperature Limit (HCTL) curve (table M), none of the distractors are correct. But since 'D' distractor has a Torus level above 17 feet, TSG attachment G must be utilized. It can then be determined that the correct answer is 'D' because the Heat Capacity Limit is being violated.and would require a blowdown.

SRO per Criteria: 5

REQUIRED REFERENCES: DEOP charts, with the entry conditions blanked out AND attachment G of the TSGs.

84 **Points: 1.00**

Unit 3 was operating at near rated power when MCC 38-1 de-energized from a fire.

An isolation signal was received for the Isolation Condenser.

The RX INLET ISOL MO 3-1301-4 valve must be closed to complete the isolation.

The Unit Supervisor is required to direct an Operator to close the 3-1301-4 valve per ___(1)___, using the local controls in the ___(2)___ .

A. (1) DOP 6700-20, 480V CIRCUIT BREAKER TRIP;
(2) Unit 3 TIP room

B. (1) DOP 6700-20, 480V CIRCUIT BREAKER TRIP;
(2) Unit 2/3 Diesel Generator Room

C. (1) DAN 903-3 H-2, ISOL CNDR LINE BREAK (GROUP 5 ISOL);
(2) Unit 3 TIP room

D. (1) DAN 903-3 H-2, ISOL CNDR LINE BREAK (GROUP 5 ISOL);
(2) Unit 2/3 Diesel Generator Room

Answer: D

Question 84 Details

Comments:

Objective: DRE207LN001.05
Reference: DAN 903-3 H-2 and DSSP 0100-A1
K/A: Generic.4.35 3.8 / 4.0
K/A: Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.
Level: Memory
Pedigree: New
Comments: Upon a failed Grp V, the operator must be dispatched to the 2/3 EDG room to make the failed automatic action occur (close the 3-1301-4 valve). This direction to close the valve is per the DAN 903-3 H-2. The valves can be local operated from the 2/3 EDG room. A common misconception is that the valve can be operated from the U3 TIP room, but the U3 TIP room only has controls to isolate the 2/3 EDG panel in case of a fire in the EDG room. The DOP for 480V breaker trip will be directed to be entered, but does not direct closing the 3-1301-4 valve.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

85 **Points: 1.00**

Unit 2 is operating at near rated conditions, when the following occurred:

- 125 Vdc Bus 2A-1 is de-energized due to a problem with its feed breaker.
- Subsequently, the feed breaker from 2B-1 to DIV II ADS LOGIC tripped on a fault.

What is the status of ADS system availability and based on this status what actions (if any) are required by Tech Specs?

A. ADS valves can still actuate on an ADS signal;
NO action required.

B. ADS valves will open when the control switch(es) are operated;
Be in MODE 3 in 12 hours, with steam dome pressure ≤150 psig in 36 hours.

C. ADS valves can **NOT** be opened from the control room;
Be in MODE 3 in 12 hours, with steam dome pressure ≤150 psig in 36 hours.

D. ADS valves can **NOT** be opened from the control room;
Declare ADS valves inoperable in immediately and restore the channel to operable status within 7 days.

Answer: B

Question 85 Details

Comments:

Objective: DRE218LN001.12
Reference: Electrical Prints 12E-2461 & 12E-2462, I.T.S. 3.5.1, DRE218LN001
K/A: 218000.A2.05 3.4 / 3.6
K/A: Ability to (a) predict the impacts of the following on the AUTOMATIC DEPRESSURIZATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of A.C. or D.C. power to ADS valves.
Level: High
Pedigree: Bank
Comments: Bus 2A-1 is the only source of power to Div 1 ADS Logic circuit. It is the backup source of power to Div II logic and the normal source to the ADS valves. Div I logic has no backup power source so when 2A-1 is de-energized, Div I logic has no power, the ADS valves swap to their alternate source from 2B-1 ckts 11 (3A & 3B) & 12 (3C, 3D, & 3E). When the 2B-1 feed to Div II logic is lost then the ADS function of the Relief valves is lost but they can fulfill their relief function and can be operated manually.

SRO per Criteria: 2

REQUIRED REFERENCES: Tech Spec 3.5.1, with the less than one hour entry conditions blanked out.

86 **Points: 1.00**

Both units were operating at near rated power, when the 2/3 Service Water Pump tripped. The following conditions exist:

- Service Water pressure is 78 psig dropping.
- X-area temperature is 147°F and rising.
- Alternator air temperature is 52°C and steady.
- Stator Cooling Water outlet temperature is 75°C and rising.

The Unit Supervisor is required to direct . . . . .

A. a scram, tripping both Recirc Pumps and entering DGP 02-03, REACTOR SCRAM.

B. immediately reducing load to < 38.5%, tripping the Main Turbine, and entering DOA 5600-01, TURBINE TRIP.

C. cross-connecting the fire water and service water systems per DOA 3900-01, LOSS OF COOLING WATER SYSTEM.

D. verifying runback of Main Generator load set and entering DOA 7400-01, FAILURE OF THE STATOR COOLANT SYSTEM.

Answer: B

Question 86 Details

Comments:

Objective: 276LN001-8
Reference: DOA 3900-01
K/A: 295018.A2.01 3.3 / 3.4
K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Component temperatures.
Level: High
Pedigree: Bank
Comments: If alternator air temperature exceeds 48°C, then the above DOA directs load reduced and the main turbine tripped. Stator Cooling Water temperature is below the setpoint to verify runback of Main Generator load set. Cross-connecting fire water and service water is not a REQUIRED procedural action (still a viable option). Tripping Recirc Pumps would only be correct if RBCCW (not Service Water - as stated in the stem) has been lost.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

87 **Points: 1.00**

Unit 3 was operating at near rated power when a transient occurred resulting in the following conditions:

- Time 08:00 Containment Oxygen is 2%.
- Time 08:10 Containment Oxygen is 3%.
- Time 08:20 Containment Oxygen is 4%.
- Time 08:30 Containment Oxygen is 5%.

At what time will a timeclock to complete Tech Spec actions begin, and what is the basis for this associated LCO?

A. 08:20;
to prevent zirconium metal water reaction

B. 08:20;
to ensure combustible mixture cannot be present

C. 08:30;
to prevent zirconium metal water reaction

D. 08:30;
to ensure combustible mixture cannot be present

Answer: B

Question 87 Details

Comments:

Objective: DRE223LN001.07
Reference: Tech Spec and Bases 3.6.3.1
K/A: 223001.G.2.22 4.0 / 4.7
K/A: Primary Containment System and Auxiliaries: Knowledge of limiting conditions for operations and safety limits.
Level: High
Pedigree: Bank
Comments: Per the above references, Oxygen concentration shall be < 4% to prevent a combustible mixture.

SRO per Criteria: 2

REQUIRED REFERENCES: None.

88 **Points: 1.00**

Unit 2 is operating at near rated power when the following components lose their Control Room light indications:

- "A" RBCCW Pump
- "A" and "C" SDC Pumps
- "A" RWCU Pump
- "A" Core Spray Pump
- "A" and "B" LPCI Pumps

What is the cause of the event AND what action is the SRO required to direct?

A. The normal feed breaker to the Unit 2 125VDC 2A-2 Dist Panel has tripped; the 2A Recirc MG Set motor must be tripped at Bus 21.

B. The normal feed breaker to the Unit 2 125VDC 2A-2 Dist Panel has tripped; the RBX to TBX **and** RBX to 2/3 D/G interlock doors must be blocked closed.

C. The normal feed breaker to the Unit 2 125VDC Rx Bldg Dist Panel has tripped; the 2A Recirc MG Set motor must be tripped at Bus 21.

D. The normal feed breaker to the Unit 2 125VDC Rx Bldg Dist Panel has tripped; the RBX to TBX **and** RBX to 2/3 D/G interlock doors must be blocked closed.

Answer: D

Question 88 Details

Comments:

Objective: 26302LK002
Reference: DOA 6900-02
K/A: 295004.A2.01 3.2 / 3.6
K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : Cause of partial or complete loss of D.C. power.
Level: Memory
Pedigree: Bank
Comments: The components that lost indication are all powered from Bus 23-1. The control power that supplies Bus 23-1 has been lost and normally comes from the Rx Bldg Dist Panel. Per the above DOA, interlock doors must be blocked.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

89 **Points: 1.00**

Both units are operating at near rated power, when the following occurred:

- At time 05:01 Rx Building D/P was 0.45 inches vacuum, when the Rx Building Exhaust Fan tripped.
- At time 05:03 Rx Building D/P was 0.35 inches vacuum and becoming less negative.
- At time 05:04 Annunciator 923-5 C-1 RX BLDG DP LO came in.

Assuming a constant rate of change, what is the EARLIEST time that Secondary Containment will exceed the Tech Spec limit **AND** what is the Basis for this LCO?

A. 05:05;
Minimize untreated radioactive release during a LOCA

B. 05:05;
Minimize untreated radioactive release due to a breach of the Drywell or the Torus

C. 05:06;
Minimize untreated radioactive release due to a LOCA

D. 05:07;
Minimize untreated radioactive release due to a breach of the Drywell or the Torus

Answer: ~~A~~ **C [NOTE: Correct answer changed from "A" to "C" based on Post-Examination comment]**

Question 89 Details

Comments:

Objective: DRE223LN001.07
Reference: Tech Spec and Bases 3.6.4.1
K/A: 295035.A2.01 3.8 / 3.9
K/A: Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment pressure: Plant-Specific.
Level: High
Pedigree: Bank

Comments: The pressure trend is such that it will exceed the Tech Spec Limit of 0.25 in at time ~~**05:05**~~ **05:06**. The Tech Spec Bases Safety Analyses section points out the LOCA accident that credit is taken for.

SRO per Criteria: 2

REQUIRED REFERENCES: None.

90 **Points: 1.00**

A LOCA has occurred on Unit 2, concurrently with a LOOP, with the following conditions:

- Reactor Pressure is 300 psig and LOWERING.
- HPCI and SBLC are the ONLY high pressure systems available AND injecting into the Reactor.
- RPV water level is -193" and LOWERING.
- BOTH loops of Torus Sprays are in operation.
- BOTH loops of Torus Cooling are in operation.
- Drywell sprays are NOT in operation due to valve binding on both loops.
- Drywell Pressure is 19 psig and RISING.
- Torus Bottom Pressure is 24 psig and RISING.
- Torus Level is 14 feet and STABLE.

Complete the following statements.

The SRO is required to direct the NSO to ___(1)___ and blowdown is required based upon ___(2)___ .

A. (1) CONTINUE to operate Torus Cooling AND Torus Sprays;
(2) Torus Bottom Pressure ONLY

B. (1) CONTINUE to operate Torus Cooling AND Torus Sprays;
(2) Reactor Water Level AND Torus Bottom Pressure

C. (1) STOP Torus Cooling AND Torus Sprays;
(2) Reactor Water Level ONLY

D. (1) STOP Torus Cooling AND Torus Sprays;
(2) Reactor Water Level AND Torus Bottom Pressure

Answer: C **or D** **[NOTE: Correct answer changed from "C" to accept either "C" or "D" based on Post-Examination comment]**

Question 90 Details

Comments:

Objective: DRE203LN001.06
Reference: DEOPs 100 and 200-1
K/A: 230000.A2.15 4.0 / 4.1
K/A: Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident.
Level: High
Pedigree: Bank
Explanation: With the conditions given, Torus sprays or cooling should NOT be used when needed for core cooling. Also blowdown should be performed based on when RPV level drops to -164 inches (DEOP 100). Torus pressure does not exceed the figure "L" on DEOP 200-1.

SRO Criteria: 5

REQUIRED REFERENCES: DEOP charts, with the entry conditions blanked out.

91 **Points: 1.00**

Unit 2 was operating at near rated power when the 2A EHC pump tripped and the 2B EHC pump will NOT start.

A Reactor Scram was attempted and the following conditions exist:

- Torus level is 10 feet.
- IRMs are reading on range 8.
- Drywell Pressure is 4.0 psig.

Then an RPV blowdown is initiated, with the following indications:

- 2 ADSVs are open.
- Torus temperature is 195^{o}F.
- RPV pressure is 500 psig and lowering.

What method is the Unit Supervisor required to direct to depressurize the Reactor?

A. Initiate Shutdown Cooling.

B. Continue to utilize the ADSVs.

C. Initiate HPCI in pressure control mode.

D. Open the Main Turbine bypass valves.

Answer: B

Question 91 Details

Comments:

Objective: 29502LP007
Reference: DEOP 400-2
K/A: 239002.G.1.06 3.8 / 4.8
K/A: Relief/Safety Valves: Ability to manage the control room crew during plant transients.
Level: High
Pedigree: New
Comments: With the conditions given, the correct actions are to continue to depressurize utilizing the ADSVs. Shutdown Cooling cannot be initiated since there is an ATWS present (IRMs on range 8). HPCI would not be utilized since Torus level is 10 feet and the vortex limits of table Y are exceeded. Using the bypass valves is unavailable since there is no motive force with the loss of both EHC pumps.

SRO per Criteria: 5

REQUIRED REFERENCES: DEOP charts, with the entry conditions blanked out.

92 **Points: 1.00**

To ensure Standby Liquid Control shuts down the reactor, a minimum concentration of ___(1)___ ppm boron at ___(2)___ °F must be achieved in the reactor coolant.

A. (1) 600;
(2) 68

B. (1) 600;
(2) 83

C. (1) 660;
(2) 68

D. (1) 660;
(2) 83

Answer: A

Question 92 Details

Comments:

Objective: DRE211LN001.07
Reference: Tech Spec Bases 3.1.7
K/A: 211000.G.2.25 3.2 / 4.2
K/A: Standby Liquid Control System: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
Level: Memory
Pedigree: Bank
Comments: Per the bases, the SBLC System injects borated water into the reactor core to add negative reactivity to compensate for all of the various reactivity effects that could occur during plant operations. To meet this objective, it is necessary to inject a quantity of boron, allowing for potential leakage and imperfect mixing in the reactor vessel which produces an equivalent concentration of 600 ppm boron at 68°F.to ensure Standby Liquid Control shuts down the reactor, a minimum concentration of 600 ppm boron at 68°F must be achieved in the reactor coolant. 83°F is the value that the system suction piping is required to be per Tech Specs.

SRO per Criteria: 2

REQUIRED REFERENCES: None.

93 **Points: 1.00**

Unit 2 was operating at near rated power when the 2A Reactor Feed pump ventilation supply damper failed CLOSED.

The WEC Supervisor recommended wiring the damper in the OPEN position.

Per CC-AA-112 Temporary Configuration Changes, what is the MINIMUM level of authorization required to perform this urgent plant action?

A. Unit Supervisor with concurrence of Site Engineering Director.

B. Unit Supervisor with concurrence of Shift Operating Supervisor (SOS).

C. Shift Manager with concurrence of Site Engineering Director.

D. Shift Manager with concurrence of Shift Operating Supervisor (SOS).

Answer: C

Question 93 Details

Comments:

Objective: 29900LK147
Reference: CC-AA-112
K/A: Generic.2.15 3.9 / 4.3
K/A: Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.
Level: Memory
Pedigree: Bank
Comments: Per CC-AA-112 section 4.1.5 the Shift Manager with concurrence of Site Engineering Director may allow installation of a temp change with paperwork completed in the next 24 hours.

SRO per Criteria: 3

REQUIRED REFERENCES: None.

94 **Points: 1.00**

Unit 2 is in refuel, with fuel moves in progress, when the following occurred:

- A failure of the grapple caused a fuel bundle to drop
- Refuel Floor Area Radiation Monitor (ARM) High Radiation alarmed.
- DAN 923-5 A-1, U2 RX BLDG VENT/EXH FAN TRIP alarmed.
- The Standby Gas Treatment System auto started.

The SRO is required to direct evacuation of the ___(1)____ and declare an ___(2)___ .

A. (1) Refuel Floor ONLY;
(2) Unusual Event

B. (1) Refuel Floor ONLY;
(2) Alert

C. (1) Drywell AND Refuel Floor;
(2) Unusual Event

D. (1) Drywell AND Refuel Floor;
(2) Alert

Answer: D

Question 94 Details

Comments:

Objective: 234F-05.06
Reference: DFP 0850-03, DOA 0010-08, DAN 923-5 A-1, EP-aa-1004
K/A: 295023.G.1.35 2.2 / 3.9
K/A: Refueling Accidents: Knowledge of the fuel-handling responsibilities of SROs.
Level: High
Pedigree: New
Comments: With a fuel handling accident (dropped bundle) and alarming local ARMs, the SRO is required to direct evacuation of BOTH the Drywell and refuel floors. This combined with a valid Reactor Building isolation signal (fans trip and SBGT starting) the correct classification is an ALERT.

SRO per Criteria: 5 and 7

REQUIRED REFERENCES: EP-AA-1004.

95 **Points: 1.00**

Unit 2 was operating at near rated power when a transient occurred, resulting in the following conditions:

- RPV pressure is 320 psig.
- RPV water level is -72 inches.
- Annunciator 902-3 A-4, LPCI LOOP SELECTION INITIATED alarmed.
- Annunciator 902-3 G-8, LPCI SYS B ACTUATED alarmed.
- Annunciator 902-8 E-3, 4KV BUS 23-1/24-1 VOLT LO alarmed.
- Annunciator 902-8 H-10, 4KV BUS 24-1 VOLTAGE DEGRADED alarmed.

Then the NSO reported:

- Bus 24-1 VOLTS is 3700 volts.
- There is NO injection flow for the LPCI system.
- The LPCI INJ VLV MO 2-1501-22B *failed* to open.

What action(s) is/are the SRO required to direct?

A. Manually transfer MCC 29-7/28-7 to Bus 28 from Bus 29.

B. Reposition LPCI valves to inject with the “A” train of LPCI.

C. Open the BUS 24 & BUS 24-1 TIE GCB and verify the U2 EDG loads onto Bus 24-1.

D. Cycle the LPCI INJ VLV MO 2-1501-22B control switch to the closed THEN open position.

Answer: C

Question 95 Details

Comments: Objective: DRE203LN001.12
Reference: DOA 6500-09, DAN 902-3 G-8
K/A: 700000.G.1.20 4.6 / 4.6
K/A: Generator Voltage And Electric Disturbances: Ability to interpret and execute procedure steps.
Level: High
Pedigree: New
Comments: With a decreasing RPV water level and RPV pressure, the candidate must understand that a LOCA has occurred. The LOCA has caused a reactor scram and transfer of all AC power to off-site. There is a degraded voltage condition in the switchyards as indicated by the low volts on Bus 24-1. The candidate must understand that the degraded voltage is NOT sufficient enough to cause the LPCI 22B valve to reposition (open) for injection. The correct action is to separate Bus 24-1 from off-site and allow the U2 EDG to load and power it, to allow the LPCI 22B valve to open.
Manually transferring the MCCs is not done unless all the conditions above exist AND the 24 & BUS 24-1 TIE GCB does not open.
Repositioning the LPCI valves to inject with the “A” train is incorrect because with 902-3 G-8, LPCI SYS B ACTUATED in alarm, this is an indication that the LPCI system has selected the “B” loop because the break (LOCA) has occurred in the “A” loop and injection through that loop cannot not be assured.
Cycling the LPCI INJ VLV MO 2-1501-22B control switch will not correct the problem since there is not sufficient voltage to open it.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

96 **Points: 1.00**

Unit 3 was operating at near rated power, with DOS 1400-05 CORE SPRAY SYSTEM PUMP OPERABILITY AND QUARTERLY IST TEST WITH TORUS AVAILABLE, in progress on the 3A Core Spray subsystem.

MO 3-1402-4A, FLOW TEST VLV had been throttled open for 15 seconds when the 3A Core Spray pump breaker experienced an overcurrent condition.

The Unit Supervisor is required to . . . . .

A. direct restoring the 3A LPCI Pump to OPERABLE status within 7 days.

B. direct immediately closing the MO 3-1402-4A and vent the 3A CS subsystem ONLY within 4 hours.

C. direct immediately closing the MO 3-1402-4A and vent BOTH Core Spray subsystems within 4 hours.

D. immediately enter into T.S. 3.0.3

Answer: B

Question 96 Details

Comments:

Objective: DRE209LN001.12
Reference: DOS 1400-05, I.T.S. 3.5.1
K/A: 209001.A2.03 3.4 / 3.6
K/A: Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. failures.
Level: High
Pedigree: New
Comments: With the MO 3-1402-4A, FLOW TEST VLV open and the 3A CS Pump tripped, the MO 3-1402-4A must be closed and the 3A CS subsystem ONLY (NOT both) is required to be vented (with the CS System required to be operable per I.T.S. 3.5.2 for Mode 1).
Being in Mode 3 in 13 hours and mode 4 in 37 hours is not required unless BOTH Core Spray subsystems were inoperable, in Mode 1.
Suspending OPDRVs is not required unless the reactor is in Mode 4.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

97 **Points: 1.00**

Question 97 is OFFICIAL USE ONLY – SECURITY RELATED INFORMATION and is not available for Public Viewing.

98 **Points: 1.00**

Unit 2 has the following conditions:

- RPV water temperature is 205°F.
- The REACTOR MODE SWITCH POSITION is in STARTUP.
- All Reactor Vessel head closure bolts are fully tensioned.

Given the above conditions, the SRO will declare the reactor is in what MODE?

A. Mode 2

B. Mode 3

C. Mode 4

D. Mode 5

Answer: A

Question 98 Details

Comments:

Reference: I.T.S. 1.1
K/A: Generic.2.35 3.6 / 4.5
K/A: Ability to determine Technical Specification Mode of Operation.
Level: High
Pedigree: New
Comments: Per the tech specs, the reactor is considered in Mode 2 if the REACTOR MODE SWITCH POSITION is in STARTUP/HOT STANDBY and ALL reactor vessel head closure bolts are fully tensioned.

SRO per Criteria: 2

REQUIRED REFERENCES: None.

99 **Points: 1.00**

Unit 2 was operating at near rated power, with Bus 25 out of service, when the ESS INVERTER voltage dropped to 110Vac.

The following 902-8 panel annunciators are received:

- B-8, 120/240V ESS BUS VOLT LO
- E-8, ESS UPS ON DC OR ALTERNATE AC
- E-10, ESS BUS ON EMERG SPLY
- F-8, ESS UPS TROUBLE

10 minutes later, the ESS INVERTER voltage climbed to 122Vac.

What is currently the power supply to the ESS Bus and what actions is the SRO required to direct to return the ESS to its NORMAL power supply?

A. Bus 29;
Close CB 201, RECTIFIER AC INPUT per DOA 6800-01, LOSS OF POWER TO ESSENTIAL SERVICE SYSTEM BUS.

B. MCC 28-2;
Close CB 201, RECTIFIER AC INPUT per DOA 6800-01, LOSS OF POWER TO ESSENTIAL SERVICE SYSTEM BUS.

C. MCC 28-2;
Place the AUTO BUS TRANSFER RESET toggle switch to RESET per DOP 6800-01, ESSENTIAL SERVICE SYSTEM.

D. 250Vdc MCC 2;
Place the AUTO BUS TRANSFER RESET toggle switch to RESET per DOP 6800-01, ESSENTIAL SERVICE SYSTEM.

Answer: C

Question 99 Details

Comments: Objective: DRE262LN005.12
Reference: DANs 902-8 B-8, 902-8 E-8, 902-8 E-10, 902-8 F-8, DOP 6800-01
K/A: 262002.A2.01 2.6 / 2.8
K/A: Ability to (a) predict the impacts of the following on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage.
Level: High
Pedigree: New
Comments: As the voltage of the inverter decreased to <114 volts AC, the above listed annunciators alarm. Normally this low voltage would cause a swap of power to Bus 25 (via the static switch), but with Bus 25 out of service, the power seeking ABT with swap to MCC 28-2. When voltage returns to a normal value AND to return the system to NORMAL power (via the inverter), the ABT will need to be reset by placing the AUTO BUS TRANSFER RESET toggle switch to RESET (which transfers the feed back to the inverter).
The distractors for Bus 29 and 250Vdc MCC 2 are incorrect, as they are supplying the inverter (common misconception) and will not be supplying power once the ABT swapped.
The distractors with closing CB 201 RECTIFIER AC INPUT via the DOA, are incorrect as this would be done if the ESS Bus was lost (it is not lost, since it is powered from MCC 28-2).

SRO per Criteria: 5

REQUIRED REFERENCES: None.

100 **Points: 1.00**

Unit 2 was operating at near rated power, when the following occurred:

- Annunciator 902-3 G-15, RX BLDG VENT CH B DOWNSCALE alarmed.
- Channel "B" Radiation monitor on the 902-10 panel indicates downscale.

What are the required Tech Spec actions?

A. Place Reactor Bldg Vent Monitor Channel B in trip within 12 hours or place the associated standby gas treatment subsystem in operation within the next 1 hour.

B. Restore Reactor Bldg Vent Monitor Channel B isolation capability within 12 hours or declare the associated standby gas treatment subsystem inoperable within the next 1 hour.

C. Place Reactor Bldg Vent Monitor Channel B in trip within 24 hours or place the associated standby gas treatment subsystem in operation within the next 1 hour.

D. Place Reactor Bldg Vent Monitor Channel B in trip within 24 hours or restore the monitor trip setpoint adjusted to less than or equal to 14.9 mR/h.

Answer: C

Question 100 Details

Comments:

Objective: DRE288LN001.07
Reference: I.T.S. 3.3.6.2, DAN 902-3 G-15
K/A: 288000.G.2.40 3.4 / 4.7
K/A: Plant Ventilation Systems: Ability to apply Technical Specifications for a system.
Level: High
Pedigree: New
Comments: With one of the required channel for Rx Bldg ventilation inoperable, the required action is to place the channel in trip within 24 hours (for functions other than 1 and 2 on table 3.3.6.2-1) and if not completed start the SBGT system within 1 hour.

SRO per Criteria: 2

REQUIRED REFERENCES: I.T.S. 3.3.6.2 with the less than one hour entry conditions blacked out.

DRESDEN March 2009 NRC ILT Written Examination Answer Key

- **Questions 1 through 75 are RO level questions.**
- **Questions 76 through 100 are SRO level questions.**

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

DRESDEN 2009 WRITTEN EXAMINATION
LIST OF REFERENCE HANDOUTS PROVIDED

Related Question #	REFERENCE HANDOUTS PROVIDED	REVISION NUMBER
3	DOA 0202-01, "Recirculation (Recirc) Pump Trip – One or Both Pumps"	Revision 34
39 68	All of the EOP Flow Charts (with the Entry Conditions blanked out)	Various
42	Technical Specification 3.3.6.1, with less than one hour times removed	Amendments Various
44	DEOP, "Containment Venting" DOP 1600-05, Primary Containment Inerting and Atmosphere Control"	Revision 12 Revision 44
64	DOS 100-01, "Standby Liquid Control Injection Test," except for Step I.1 and I.2	Revision 41
NOTE: The following reference handouts are for the SRO-only examination.		
76 80 82 83 91	All of the EOP Flow Charts (with the Entry Conditions blanked out)	Various
77	Technical Specification 3.1.7, with less than one hour times removed	Amendments Various
83	TSG, "Technical Support Guideline," Attachment G, "Optimized Limit Curves"	Revision 6

DRESDEN 2009 WRITTEN EXAMINATION
LIST OF REFERENCE HANDOUTS PROVIDED

Related Question #	REFERENCE HANDOUTS PROVIDED	REVISION NUMBER
85	Technical Specification 3.5.1, with less than one hour times removed	Amendments Various
90	Technical Specification 3.1.4, with less than one hour times removed	Amendments Various
94	EP-AA-1004, Emergency Action Level Matrix	Revision 24
100	Technical Specification 3.3.6.2, with less than one hour times removed	Amendments Various