EXAMINATION ANSWER KEY

Dresden Station 2019-301 NRC Exam - RO

1 **ID: 22590** **Points: 1.00**

If a Jet Pump failed, indicated total core flow would ____(1)____ and actual total core flow would ____(2)____.

A. (1) lower
(2) rise

B. (1) lower
(2) lower

C. (1) rise
(2) rise

D. (1) rise
(2) lower

Answer: D

Question 1 Info	
Topic:	01 - 295001.A2.03
Comments:	Objective: DRE202LN001.12 Reference: DOA 0201-01 K/A: 295001.A2.03 3.3/3.3 K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Actual core flow. CFR: 41.10 Safety Function: 1 & 4 Level: Memory Pedigree: Bank History: None Comments: A - Incorrect. Indications of a failed jet pump would be a rise in indicated total core flow, actual total flow would lower forcing the RO to raise flow. B - Incorrect. Indications of a failed jet pump would be a rise in indicated total core flow, actual total flow would lower. This is plausible due to actual total flow lowering. The second part is correct. C - Incorrect. The first part is correct because one of the indications of a failed jet pump would be an increase in indicated total core flow. There would be a DECREASE in core thermal power and a lowering of actual total flow. D - Correct. One of the indications of a failed jet pump would be an increase in indicated total core flow. Individual Jet pump flow indicator would be MORE, not less, stable than the other Jet pump flow indicators. Recirc pump flow would INCREASE, not decrease. There would be a lowering in actual total core flow, not an increase. **REQUIRED REFERENCES: None**

2 **ID: 12878** **Points: 1.00**

Unit 2 was operating at 100% power when a Scram and Turbine/Generator trip occurred.

Instrument Air is ____(1)____ the extraction steam non-return check valves to 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 2 Info	
Topic:	02 - 295005.K2.05
Comments:	Objective: DRE260LN001.12 Reference: DAN 902(3)-6 B-11 K/A: 295005.K2.05 2.6 / 2.7 K/A: Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Extraction steam system CFR: 41.7 Safety Function: 3 Level: Memory Pedigree: Bank History: 2002 Quad NRC, 2008 NRC, 2011 Cert Comments: A - Incorrect. 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. The first part is plausible because many of our air operated valves are air to actuate. The second part is correct. B - Incorrect. IA is vented off on a turbine trip to prevent steam flow from the FW heaters back to the main condenser, the issue is not condenser overpressurization. The first part is plausible because many of our air operated valves are air to actuate. C - Correct. 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. D - Incorrect. Part one is correct. While air is vented off the issue is not condenser overpressurization, the concern is turbine overspeed. Part two is plausible because if steam was not isolated to the condenser an overpressurize condition could occur. **REQUIRED REFERENCES: None**

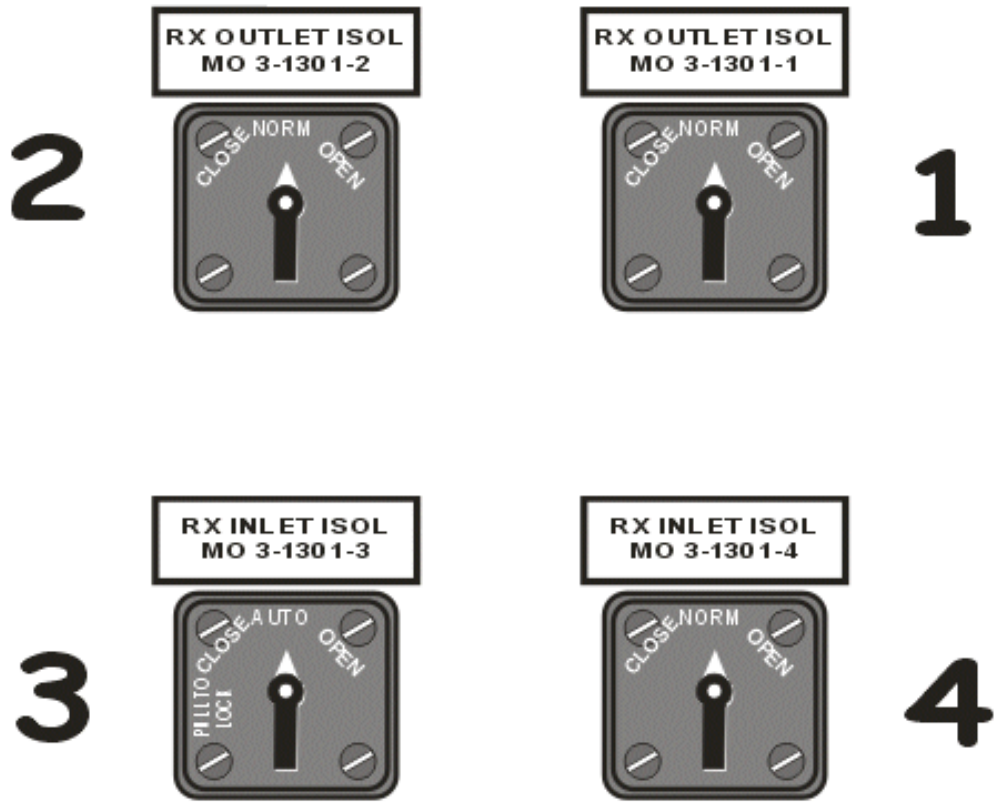
3 **ID: 23861** **Points: 1.00**

Unit 3 was operating at 100%.

DSSP 0100-CR, SHUTDOWN PROCEDURE - CONTROL ROOM EVACUATION, has been entered.

Unit Supervisor directs initiation of the U3 Isolation Condenser and evacuation of the Main Control Room.

Which of the following 903-3 panel switches must be re-positioned, at a **MINIMUM**, to initiate the U3 Isolation Condenser?



A. 1 ONLY

B. 3 ONLY

C. 1 AND 2

D. 3 AND 4

Answer: B

Question 3 Info	
Topic:	03 - 295016.A1.09
Comments:	Objective: DRE207LN001.05 Reference: DSSP 0100-CR, DOP 1300-03 K/A: 295016.A1.09 4.0 / 4.0 K/A: Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : Isolation/emergency condenser(s): Plant-Specific CFR: 41.7 Safety Function: 7 Level: Memory Pedigree: Bank History: 2011 NRC Comments: A - Incorrect. With the Iso Cond in a normal system lineup, both the outlet isolation valves (Drywell inboard and outboard) are open. This is plausible since this vlv must be in the open position to allow system flow. B - Correct. With the Iso Cond in a normal system lineup, both the outlet isolation valves (Drywell inboard and outboard) are open, along with the Drywell inboard inlet isolation valve. The Drywell outboard inlet isolation (3-1301-3) is in the normal closed position and will be the only valve that will need to be re-positioned. C - Incorrect. With the Iso Cond in a normal system lineup, both the outlet isolation valves (Drywell inboard and outboard) are open. This is plausible since this vlv must be in the open position to allow system flow. D - Incorrect. While both the Iso Condenser 3+4 vlv must be open for system flow, the 3-1301-4 is normally open and would not require repositioning This is plausible since this vlv must be in the open position to allow system flow. **REQUIRED REFERENCES: None**

4 **ID: 14631** **Points: 1.00**

Unit 2 is in MODE 4:

- 2C Shutdown Cooling train is aligned to Fuel Pool Cooling.
- 2A and 2B Shutdown Cooling trains are aligned to the RPV removing their RATED heat load.

2A SDC pump trips on overcurrent.

What action(s) is/are required to be taken to MAINTAIN the current RPV water temperature?

A. Raise CRD drive water flow.

B. Partially open 1 turbine bypass valve

C. Initiate the Iso Condenser and throttle flow as necessary

D. Start the RWCU system using the RWCU Aux pump and throttle system flow.

Answer: D

Question 4 Info	
Topic:	04 - 295021.K1.03
Comments:	Objective: DRE205LN001.08 Reference: DOA 1000-01 K/A: 295021.K1.03 3.9 / 3.9 K/A: Knowledge of the operational implications of the following concepts as they apply to LOSS OF SHUTDOWN COOLING : Adequate core cooling CFR: 41.10 Safety Function: 4 Level: High Pedigree: New Comments: A - Incorrect. Plausible because raising CRD drive water flow would add cool water, but not enough to overcome the loss from SDC. B - Incorrect. Plausible because opening the bypass valves would be an option in Mode 1 or 2, however there is no steam to be relieved in Mode 4. C - Incorrect. Per DOA 1000-01 this would be correct if bypass valves were unavailable, however with no steam present the IC is not a viable option. This would be correct for Mode 1 or Mode 2 above 900#. D - Correct. RWCU (10 MWth) would provide sufficient cooling to replace the lost cooling. Each train of SDC can remove 8 MWth. **REQUIRED REFERENCES: None**

5 **ID: 27444** **Points: 1.00**

Unit 3 is operating at 100% power.

- 3B and 3C RB vent fans are running
- 3B and 3C RB exhaust fans are running

A loss of Bus 38 occurs.

What is the **IMMEDIATE** impact on containment?

A. Steady Drywell to Torus D/P

B. Lowering Reactor Building D/P

C. Rising Drywell temperature

D. Rising Reactor Building temperature

Answer: C

Question 5 Info	
Topic:	05 - 295012.K2.02
Comments:	Objective: DRE262LN001.12 Reference: DAN 923-5 E-1, 12E-2306 K/A: 295012.K2.02 3.6 / 3.7 K/A: Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell cooling. CFR: 41.7 Safety Function: 5 Level: High Pedigree: Bank History: 2011 Cert Comments: A - Incorrect. Drywell pressure is maintained higher than torus pressure, initially as DW press goes up, DW to Torus D/P goes up. This is plausible because the pumpback system and vacuum breakers will try to maintain the DP setpoint. B - Incorrect. Reactor building D/P is measured against atmospheric pressure with loss of one vent fan but no exhaust fan loss, RX BLDG DP will become greater. C - Correct. The loss of Bus 38 de-energizes four of the seven Drywell Coolers (A, B, F, G) causing both temperature and pressure to rise in the Drywell. D - Incorrect. Plausible because RB Vent standby fans will auto start on low flow in running fans mitigating temp increase. **REQUIRED REFERENCES: None**

6 **ID: 27445** **Points: 1.00**

During a high power ATWS, why does the power leg of DEOP 400-5, FAILURE TO SCRAM, direct the lowering of Recirc pump speed back to minimum prior to tripping the pumps?

A. Minimize stratification in the lower head region.

B. Ensure adequate mixing of Boron if it is injected.

C. Minimize the potential for tripping the main turbine.

D. Disable the Recirc Pump speed/Feedwater Flow interlock.

Answer: C

Question 6 Info	
Topic:	06 - 295037.K3.01
Comments:	Objective: 29502LK046 Reference: DEOP 400-5, Failure to Scram, DEOP 400-5 bases K/A: 295037.K3.01 4.1 / 4.2 K/A: Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Recirculation pump trip/runback: Plant-Specific CFR: 41.5 Safety Function: 1 Level: Memory Pedigree: Bank History: N/A Comments: A - Incorrect. Plausible because operation with no Recirc pumps could cause stratification when the Unit is shutdown, but this is not the bases for running Recirc back to minimum prior to tripping the pumps. B - Incorrect. Plausible because operation with Recirc pumps at minimum speed would provide mixing for Boron, but the analysis for shutting down the reactor with boron does not require Recirc pumps running. C - Correct. Per EPG's, The most rapid flow rate reduction and, consequently, the most rapid power reduction, is achieved by tripping the recirculation pumps. However, if the recirculation pump trip is initiated from a high power level, the resulting rapid changes in steam flow, RPV pressure, and RPV water level may cause a trip of the main turbine-generator and a trip of RPV injection systems. If the main turbine-generator trips and reactor power exceeds the turbine bypass valve capacity, RPV pressure will increase until one or more SRVs open. Heat-up of the suppression pool then begins and boron injection may ultimately be required. If the RPV injection systems trip, the resultant RPV water level transient may require emergency depressurization of the RPV and operation of less desirable RPV injection sources. To effect a more controlled reduction in reactor power and thereby avoid main turbine-generator and RPV injection system trips and their associated complications, a recirculation flow runback is performed prior to tripping the recirculation pumps. If an automatic runback has occurred, the operator need only confirm the action. D - Incorrect. Running Recirc pump speed back to minimum does not remove the interlocks associated with feedwater flow. The interlock would be activated only if feedwater flow was greater than 20%, not at minimum speed. **REQUIRED REFERENCES: None**

7 **ID: 14512** **Points: 1.00**

Both units were operating at 100% power.
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 were received, which of the following is the expected indication for the Standby Gas Treatment System (SBGT)?

Figure A

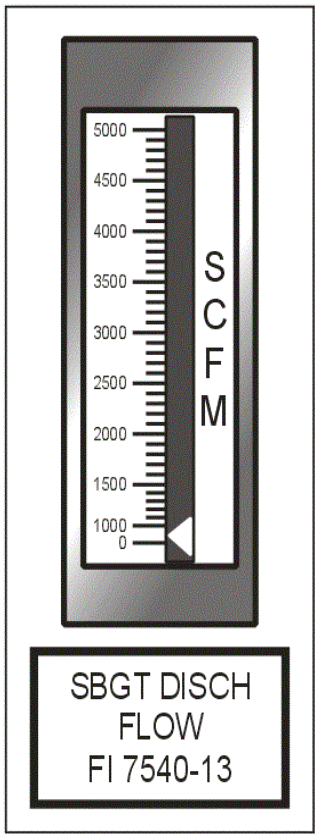


Figure B

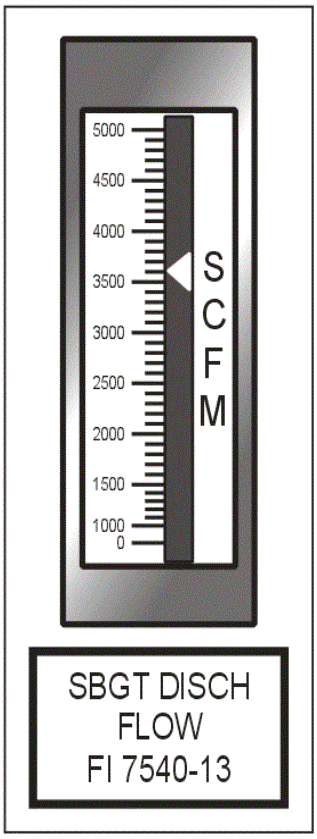


Figure C

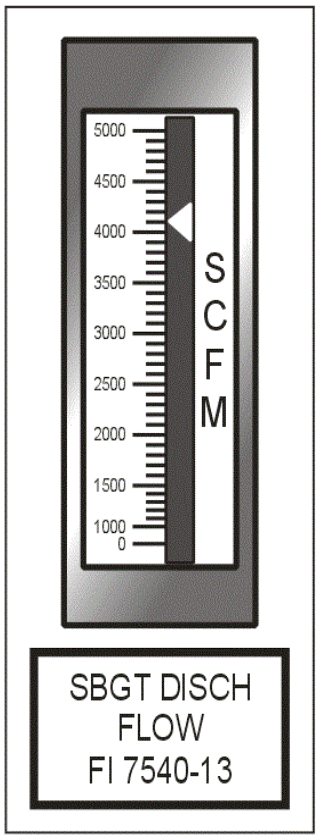
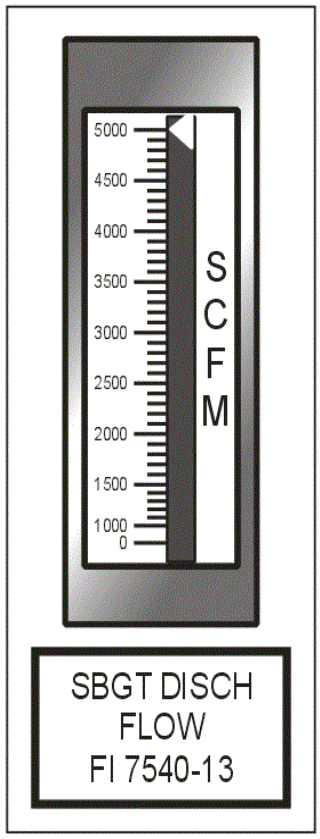


Figure D



A. Figure "A"

B. Figure "B"

C. Figure "C"

D. Figure "D"

Answer: C

Question 7 Info	
Topic:	07 - 295038.A1.06
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. CFR: 41.7 Safety Function: 9 Level: High Pedigree: Bank History: 2008 NRC, 2009 Cert Comments: A - Incorrect. With both channels Hi Hi, Rx Bldg Vent will trip and the selected SBGT train will start and flow will be approx 4200 scfm. This is plausible if it is not recognized that the setpoint for the 2 alarms in the stem are the same as the auto start setpoint of the SBGT system. B - Incorrect. 3600 is plausible due to the fact that if the individual subtracts the 300 scfm for ambient air instead of adding to the 3900 required range flow would indicate 3600 scfm. C - Correct. 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. D - Incorrect. Plausible because this is what flow indicates when reverse flow from the other train is added after swapping SBGT trains for cooling. **REQUIRED REFERENCES: None**

8 **ID: 24266** **Points: 1.00**

The following are in alarm on the XL3 fire computer.

- 51-20 2/3 FIRE PUMP RUNNING
- 71-24 MAIN TRANSFORMER T3 SYSTEM FIRE
- 71-27 U-3 TRANSFORMERS DELUGE TROUBLE

What are the expected conditions upon arriving at the scene?

A. The local area temperature recorder reading 175 degrees **ONLY**.

B. A local high temperature alarm sounding on fire panel 2253-45 **ONLY**.

C. Transformer 3 deluge system activated **WITHOUT** a local alarm sounding on fire panel 2253-45.

D. Transformer 3 deluge system activated **AND** local alarms sounding from system actuation **AND** high temperature on fire panel 2253-45.

Answer: D

Question 8 Info	
Topic:	08 - 600000.A2.04
Comments:	Objective: 286LN003.11 Reference: DAN XL3 71-24 and 71-27 K/A: 600000.A2.04 2.8 / 3.1 K/A: Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: The fire's extent of potential operational damage to plant equipment CFR: 41.7 Safety Function: 8 Level: High Pedigree: Bank History: 2015 NRC Comments: A - Incorrect. With annunciator 71-24 MAIN TRANSFORMER T3 SYSTEM FIRE in alarm water would be flowing as well as an audible alarm. Plausible because the temperature recorder would be reading higher than 175 degrees to cause the alarm B - Incorrect. The 2253-45 panel is for local actuation of the deluge system. The system should have auto initiated per the alarms stated in the question. Plausible because it is a partially correct answer. C - Incorrect. When actuation occurs automatically deluge is initiated as well as the local alarm on the 2253-45 panel. Plausible because it is a partially correct answer. D - Correct. With both alarms in, a deluge condition on TR3 has occurred and not just a trouble alarm. Therefore the actions of DAN XL-3, 71-24 are required to be verified: transformer 3 deluge system activated and local alarms sounding from system actuation and high temperature on fire panel 2253-45. **REQUIRED REFERENCES: None**

9 **ID: 27433** **Points: 1.00**

Unit 2 was operating at 100% power.

Annunciator 902-8 D-6, 480V BUS 20, 25 THRU 29 DC POWER FAILURE, is in alarm.

ONLY the control power feed breaker from the Normal 125 VDC bus to Bus 29 has tripped.

Bus 29 and 125VDC Bus 2B-1 remain energized.

Then, a Loss of Coolant Accident occurs.

Current conditions are as follows:

- HPCI has automatically started and is injecting at rated flow
- Reactor pressure is at 200 psig and lowering
- Reactor water level is -160 inches and lowering

Which LPCI pumps are injecting into the reactor?

A. NO LPCI pumps are injecting

B. ONLY the 2A and 2B LPCI pumps are injecting

C. ONLY the 2C and 2D LPCI pumps are injecting

D. ALL LPCI pumps are injecting

Answer: D

Question 9 Info	
Topic:	09 - 203000.K2.03
Comments:	Objective: DRE203LN001.08 Reference: DOP 1500-03 K/A: 203000.K2.03 2.7*/2.9* K/A: RHR/LPCI: Injection Mode: Knowledge of electrical power supplies to the following: Initiation logic. CFR: 41.7 Safety Function: 2 Level: High Pedigree: Bank History: 2017 NRC Comments: A - Incorrect. Plausible if the loss of control power to Bus 29 will cause the breakers on Bus 29 to trip. A failure of Bus 29 to supply MCC 28-7/29-7 would cause the LPCI injection valves to remain shut. B - Incorrect. Plausible if assumed that 125 VDC power to the LPCI B loop initiation logic was lost. If LPCI B loop logic power were lost, only the A and B LPCI pumps would start. 125 VDC Bus 2B-1 provides power to LPCI B initiation logic. 125 VDC Bus 2B-1 provides control power to Bus 29. C - Incorrect. Plausible if 125 VDC power to the LPCI A loop initiation logic was lost. If LPCI A loop logic power were lost, only the C and D LPCI pumps would start. 125 VDC Bus 2A-1 provides power to LPCI A initiation logic. D - Correct. 125 VDC control power to Bus 29 is used for all breakers on Bus 29, including the breaker going to MCC 28-7/29-7. Without control power, all of the breakers on those buses will remain in the state they lost power in. When the LOCA occurs, the Unit will scram and the Unit Aux Transformer (UAT) will de-energize. All electrical loads will automatically fast transfer to the Reserve Aux Transformer (RAT), without any loss of power. The LPCI Injection valves are powered from swing MCC 28-7/29-7, which is normally aligned to Bus 29. When Bus 29 loses control power, the MCC will no longer have control power to open the breaker from Bus 29. Because all LPCI pump buses are energized from the RAT and MCC 28-7/29-7's source bus has power, all LPCI pumps and LPCI injection valves operate correctly. With Reactor pressure less than 325 psig, the injection valves will open and all LPCI pumps will inject. **REQUIRED REFERENCES: None.**

10 **ID: 27446** **Points: 1.00**

The Unit is operating at 100% power.

Which of the following requires entry into TS 3.8.1 AC Sources - Operating?

A. Ultimate Heat Sink Temperature is 90°F

B. The Bus 23-1 to 33-1 cross-tie breaker is out of service.

C. 2/3 EDG Cooling water pump suction bay level less than 500 feet above sea level.

D. 2/3 EDG Cooling water pump suction bay level greater than 510.4 feet above sea level.

Answer: C

Question 10 Info	
Topic:	10 - 295003.G.2.2.42
Comments:	Objective: 262LN001.07 Reference: TS 3.8.1, 3.7.2, 3.7.3 K/A: 295003.G.2.2.42 3.9/4.6 K/A: Partial or Complete Loss of AC - Ability to recognize system parameters that are entry level conditions for Technical Specifications CFR: 41.7/41.10 Safety Function: 6 Level: Memory Pedigree: New Comments: A - Incorrect. This is plausible because this is an NPDES limit. B - Incorrect. This is plausible because if the DIV II (24-1 to 34-1) cross-tie breaker were out of service it would require entry into T.S. 3.8.1. C - Correct. With DGCWP suction bay level < 501.5 feet there is insufficient NPSH for the pump to operate properly. This will cause the EDG to become inoperable and both Units would be required to enter TS 3.8.1 D - Incorrect. This is plausible because this level (510.4') will require a reactor scram on both units but will not cause the diesels to go inop. Specific actions tied to EDGs are tied to this level, including actions to ensure water does not enter the Fuel Oil Storage tank. **REQUIRED REFERENCES: NONE**

11 **ID: 27447** **Points: 1.00**

Unit 2 is operating at 100% power.

The 2A 125 VDC Battery Charger has been removed from service for maintenance.

Unit 2 loss of off-site power (LOOP) occurs.

- The U2 125 VDC Battery Charger is damaged during the transient.
- Turbine Building loads are load shed within DGA time requirements

What is the **MINIMUM** time the Unit 2 125 VDC battery is expected to maintain essential loads of 62 amps?

A. 4 hours.

B. 4.5 hours.

C. 6 hours

D. 6.5 hours.

Answer: A

Question 11 Info	
Topic:	11 - 295004.K1.04
Comments:	Objective: 29501K083 Reference: DGA 13 K/A: 295004.K1.04 2.8 / 2.9 K/A: Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Effect of battery discharge rate on capacity CFR: 41.8 to 41.10 Safety Function: 6 Level: High Pedigree: New History: N/A Comments: A - Correct. With RX BLDG Distribution Panel loads not shed, the 125 VDC battery will supply a load of 62 amps for a period of 4 hours with a loss of battery chargers. B - Incorrect. This is plausible because this would be correct if the capacity of the batteries is 4 hour upon completion of load shedding. C - Incorrect. This is plausible because RX BLDG loadshed adds additional margin when completed with Turbine Building loadshed. The addition of RX Bldg loadshed will allow the battery to supply 62 Amps for 6 hours. D - Incorrect. This is plausible because this would be correct if the candidate assumed a 6 hour capacity upon completion of load shedding. **REQUIRED REFERENCES: None.**

12 **ID: 27448** **Points: 1.00**

Unit 2 was in MODE 4 when RPV pressure begins to rise unexpectedly.

The US has directed use of MSL drain valves to reduce RPV pressure in accordance with DOA 1000-01.

What are the expected Main Control Room MSL drain valve indications before and after the evolution?

(1) Initially all valve position indicating lights are...
(2) Upon completion all valve position indicating lights are...

A. (1) RED.
(2) GREEN. except the 2-220-3 MSL DRN VLV will be RED

B. (1) GREEN.
(2) RED. except the 2-220-3 MSL DRN VLV will be GREEN

C. (1) RED for valves inside the primary containment and GREEN for valves outside primary containment.
(2) RED.

D. (1) GREEN for valves inside the primary containment and RED for valves outside primary containment.
(2) RED.

Answer: B

Question 12 Info	
Topic:	12 - 295025.A1.01
Comments:	Objective: DRE239LN001.11 Reference: DOA 1000-01 K/A: 295025.A1.01 2.9 / 3.0 K/A: Ability to operate or monitor the following as they apply to HIGH REACTOR PRESSURE: Main steam line drains CFR: 41.7 Safety Function: 3 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This is the inverse of the correct lighting configuration. Also correct when starting up. B - Correct. The MSL drain valves are closed in Mode 4. When closed they indicate GREEN. When open they indicate RED. C - Incorrect. The valves inside the containment are green prior to initiation. D - Incorrect. The valves outside the containment are green prior to initiation. Note: Dresden utilizes a green board concept. Normal positions of valves are indicated by green lights. This tests the candidate's knowledge of the lineup at during normal operation and in different modes. **REQUIRED REFERENCES: None.**

13 **ID: 27509** **Points: 1.00**

Why are drywell sprays initiated when Torus pressure exceeds suppression chamber spray initiation pressure?

A. To preclude chugging.

B. The need for Torus Sprays no longer exists.

C. To ensure drywell integrity is not compromised.

D. To ensure all non-condensables are maintained in the Torus.

Answer: A

Question 13 Info	
Topic:	13 - 295024.K3.01
Comments:	Objective: 29501LK005 Reference: EPG B-7-34 K/A: 295024.K3.01 3.6/4.0 K/A: Knowledge of the reasons for the following as they apply to HIGH DRYWELL PRESSURE: Drywell spray operation: Mark-I&II CFR: 41.5 Safety Function: 5 Pedigree: New Level: Memory Comments: A - Correct. Once Suppression Chamber pressure exceeds the suppression chamber spray initiation pressure drywell sprays must be initiated to preclude chugging. B - Incorrect. This is plausible but incorrect because Torus Sprays must be attempted prior to drywell sprays. If the suppression chamber contains steam (by bypassing the suppression pool) in the airspace torus sprays will lower the pressure in containment. C - Incorrect. This is plausible but incorrect because this is the reason for not initiating drywell sprays within the shaded region of the drywell spray initiation limit curve. D - Incorrect. This is plausible but incorrect because the Torus is assumed to have amassed the non-condensables from the drywell. By lowering drywell pressure below Torus pressure the vacuum breakers will allow the non-condensables to return to the drywell. **REQUIRED REFERENCES: None.**

14 **ID: 27450** **Points: 1.00**

Both Units are operating at 100% power.

TSO has informed the station that the Low Contingency Voltage has reached the State Estimator Alarm Limit.

At what **MINIMUM** frequency is the operating crew required to contact the TSO, if at all?

A. Every hour.

B. Every 4 hours.

C. Every 8 hours.

D. The station does **NOT** initiate contact. The TSO will call with updates as available.

Answer: A

Question 14 Info	
Topic:	14 - 700000.G.2.4.30
Comments:	Objective: DRE103LN001.04 Reference: DOA 6500-12 K/A: 700000.G.2.4.30 2.7/4.1 K/A: Generator Voltage and Electric Grid Disturbances - Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator CFR: 41.10 Safety Function: 6 Pedigree: New Level: Memory Comments: A- Correct. The operator is required to contact the TSO and assess plant conditions every hour given the stem conditions. B - Incorrect. This is plausible based on the time the ECCS support systems are required to provide power. C - Incorrect. This is plausible based on TS 3.8.1 requirements. D - Incorrect. This is plausible based on the initial information on the grid condition being received from the TSO. **REQUIRED REFERENCES: None.**

15 **ID: 27451** **Points: 1.00**

Unit 2 was operating at 100% power when RPV level lowers to the RPS Reactor Scram setpoint.

BOTH Recirc Pumps have tripped.

Prior to the transients, RPV water level was ____(1)____ than **INDICATED** Fuel Zone RPV water level AND the difference will become ____(2)____ following the transients.

A. (1) lower
(2) smaller

B. (1) lower
(2) larger

C. (1) higher
(2) smaller

D. (1) higher
(2) larger

Answer: A

Question 15 Info	
Topic:	15 - 295031.K2.01
Comments:	Objective: DRE216LN001.10 Reference: DAN 902(3)-5 B-13, G-7 K/A: 295031.K2.01 4.4*/4.4* K/A: Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following: Reactor water level indication CFR: 41.7 Safety Function: 2 Pedigree: New Level: High Comments: A - Correct. Fuel Zone indications are affected by anything that causes flow through the monitored jet pump. Therefore, Recirc pump flow causes the Fuel Zone instruments to be inaccurate in the non-conservative direction (read higher than actual). B - Incorrect. Prior to the transient MR and NR water levels are lower than FZ indications, after the Recirc pumps trip flow decreases and the error decreases between indicated MR and FZ indications. Plausible because first part is correct C - Incorrect. Actual level is lower than indicated level on the FZ level indications. The difference will be smaller after core flow is lowered. Plausible because second part is correct. D - Incorrect. Actual level is lower than indicated level on the FZ level indications. The difference will be smaller after core flow is lowered. Plausible because level is off scale with Recirc pumps running, must determine what impact flow has on indicated level. **REQUIRED REFERENCES: None.**

16 **ID: 27452** **Points: 1.00**

What is the Technical Specification **LIMIT** for Average Drywell Air Temperature in MODE 1?

A. 105°F

B. 110°F

C. 150°F

D. 281°F

Answer: C

Question 16 Info	
Topic:	16 - 295028.G.2.2.38
Comments:	Objective: 223LN001.07.a Reference: TS 3.6.1.5 K/A: 295028.G.2.2.38 3.6/4.5 K/A: High Drywell Temperature - Knowledge of conditions and limitations in the facility license. CFR: 41.7, 41.10/43.1 Safety Function: 5 Pedigree: New Level: Memory Comments: A - Incorrect. This is the TS limit for Torus water temperature when performing testing that adds heat to the Torus. B - Incorrect. 110 is plausible since this is the temperature that would require boron injection during an ATWS. C - Correct. This is the TS limit for Drywell Air Temperature. D - Incorrect. 281 is plausible since this is the primary containment limit per DEOP 200-1. **REQUIRED REFERENCES: None**

17 **ID: 27453** **Points: 1.00**

Units 2 and 3 are operating at 100% power.

The 2/3 RBCCW pump is OOS for motor replacement.

- 2A RBCCW pump has tripped.
- 2B RBCCW pump amps are rising **SLOWLY**

What actions are required?

A. Valve **IN** RBCCW to the 2/3 RBCCW heat exchanger.

B. Valve **OUT** RBCCW to the 2A RBCCW heat exchanger.

C. Insert a manual scram **AND** trip Recirc pumps within 1 minute **ONLY**

D. Insert a manual scram **AND** trip Recirc pumps within 1 minute **AND** isolate RBCCW to the Drywell.

Answer: B

Question 17 Info	
Topic:	17 - 295018.A2.03
Comments:	Objective: DRE208LN001.08 Reference: DOA 3700-01, DOP 3700-02 K/A: 295018.A2.03 3.2/3.5 K/A: Partial or Complete Loss of Component Cooling Water: Ability to determine and/or interpret the following as they apply to Partial or Total Loss of CCW: Cause for partial or complete loss CFR: 41.10 Safety Function: 8 Level: High Pedigree: Bank History: 2015 NRC Comments: A. Incorrect - This would be correct if only one heat exchanger was in service and a TCV or RBCCW Heat Exchanger was not functioning. B. Correct - This action is dependent on determining that the RBCCW system is cavitating and with 2 heat exchangers in service, the correct action is to remove 1 RBCCW heat exchanger from service. C. Incorrect - This would be correct if RBCCW flow was lost. D. Incorrect - This would be correct if LOCA had occurred concurrent with a loss of RBCCW. Note: K/A Justification. The K/A is being evaluated due to the fact that the candidate must identify that the cause for the indications is the fact that with 2 Hx in service and only 1 pump running the system will cavitate and require the actions in the answer to be taken. **REQUIRED REFERENCES: None.**

18 **ID: 27454** **Points: 1.00**

Unit 2 was operating at 100% power.

A LOCA occurred with lowering Suppression Pool water level.

Which of the following MCR indications indicate inadequate NPSH to ECCS pumps?

1 Fluctuating drywell pressure
2 Erratic pump discharge pressure
3 Erratic pump amperage indications
4 Sustained LOW pump discharge pressure

A. 2, 3 and 4 ONLY

B. 1, 2 and 4 ONLY

C. 1, 2 and 3 ONLY

D. 1, 3 and 4 ONLY

Answer: C

Question 18 Info	
Topic:	18 - 295030.K1.02
Comments:	Objective: 29501LK003 Reference: DEOP 0100, DEOP 0010, OP-DR-103-102-1001 K/A: 295030.K1.02 3.5 / 3.8 K/A: Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: Pump NPSH CFR: 41.8 to 41.10 Safety Function: 5 Level: Memory Pedigree: New History: N/A Comments: A - Incorrect. Plausible because Drywell pressure fluctuations may cause inadequate NPSH to ECCS pumps but NPSH is not the cause of DW pressure fluctuations. The second part is correct. B - Incorrect. Plausible because Drywell pressure fluctuations may cause inadequate NPSH to ECCS pumps. Sustained discharge pressure would be an indication of adequate NPSH. C - Correct. With inadequate NPSH to ECCS pumps, pump discharge pressure and pump motor amperage will behave erratically. D - Incorrect. Sustained discharge pressure would be an indication of adequate NPSH. Erratic pump amps would be an indication of inadequate NPSH. **REQUIRED REFERENCES: None.**

19 **ID: 27455** **Points: 1.00**

Which of the following sets of parameters are within the capacity of the Torus to accept a Blowdown?

Torus water level of ____(1)____ ft
RPV pressure of ____(2)____ psig
Torus bulk temperature of ____(3)____ °F

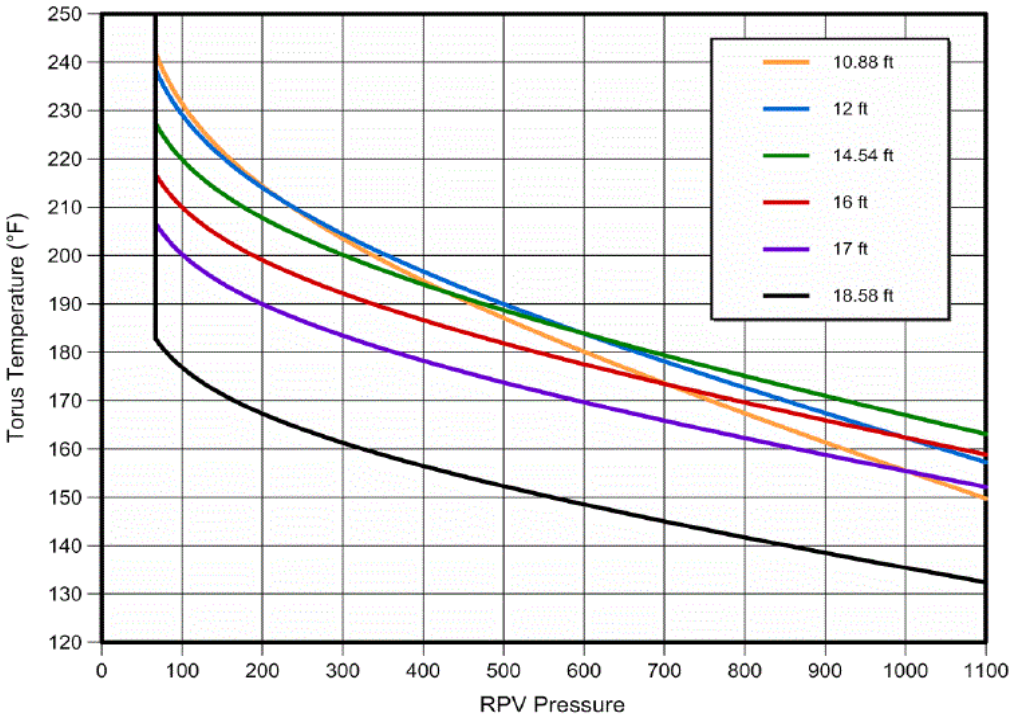


Figure B.4-1: Alternate Heat Capacity Limit Curves

A. (1) 16.5
(2) 500
(3) 180

B. (1) 16.5
(2) 600
(3) 175

C. (1) 17.5
(2) 350
(3) 170

D. (1) 17.5
(2) 400
(3) 150

Answer: D

Question 19 Info	
Topic:	19 - 295026.A2.03 (Print in Color)
Comments:	Objective: DRE223LN001.12 Reference: DEOP 200-01, TSG K/A: 295026.A2.03 3.9 / 4.0 K/A: Ability to determine and/or interpret the following as they apply to Suppression Pool High Water Temperature: Reactor Pressure CFR: 41.10 Safety Function: 5 Level: High Pedigree: Bank History: 2011 NRC, 2015 NRC Comments: The directions on how to interpret TSG tables is from Appendix C. A - Incorrect. This is plausible because the point falls between the 16 ft and 17 ft curves. The Heat Capacity curves cannot be interpolated. The 17 ft torus level curve must be used, which would put the point above the line. B - Incorrect. This is plausible because the point falls between the 16 ft and 17 ft curves. The Heat Capacity curves cannot be interpolated. The 17 ft torus level curve must be used, which would put the point above the line. C - Incorrect. This is plausible because the point falls between the 16 ft and 17 ft curves. The Heat Capacity curves cannot be interpolated. The 18.58 ft torus level curve must be used, which would put the point above the line. D - Correct. The only above set of parameters that are NOT outside the capacity of the Torus to accept a Blowdown are a Torus Water level of 17.5 ft, with an RPV pressure of 400 psig and a Torus bulk temperature of 150°F. The Applicant will have to utilize the Heat Capacity Limit curve to decide which set of parameters do NOT violate the curves. **REQUIRED REFERENCES: None.**

20 **ID: 27456** **Points: 1.00**

Unit 3 was operating at 75% power with the following FWLC conditions:

- 3A and 3B Main FRVs controlling in MASTER AUTO with a setpoint of +30 inches
- LFRV in AUTO and closed

A reactor scram occurs.
RPV water level is -25".

The FWLC system valves...

A. will continue to maintain RPV level at +30 inches with no interruption.

B. pulse to 30% of their initial demand **IMMEDIATELY** without regard for setpoint.

C. remain in their initial position for 1 second. After 1 second, they will maintain RPV level at -10 inches

D. remain in their initial position for 1 second. After 1 second the FRVs will be pulsed down to 30% of their current demand.

Answer: D

Question 20 Info	
Topic:	20 - 295006.K3.01
Comments:	Objective: DRE259LN002.06 Reference: DOA 0600-01 K/A: 295006.K3.01 3.8 / 3.9 K/A: Knowledge of the reasons for the following responses as they apply to SCRAM: Reactor water level response CFR: 41.5 Safety Function: 1 Level: High Pedigree: Bank History: N/A Comments: A - Incorrect. This is plausible because it would be correct if the setpoint setdown did not occur B - Incorrect. This is plausible because reactor water level is at -25". FWLC only performs the 30% calculation if reactor water level is $\geq$ -30" C - Incorrect. This is plausible because if FWLC determined RPV level to be less than -30" it would control at setpoint setdown setpoint. D - Correct. Reactor water level shrinks after a scram due to steam void collapse inside the vessel shroud that leads to level dropping in the downcomer area where RWL is measured. To compensate and prevent over-feeding the FWLC takes the setpoint to -10" and locks the FRVs in place for 1 second. At 1 second (T1) the programming evaluates reactor water level and makes one of the following decisions: If reactor water level is greater than -30", then the system pulses the FRVs to 30% of current demand. 25 seconds later (T26) the system releases the valves to control at the current setpoint. 19 seconds later (T45) the system ramps back to previous setpoint at rate of 10 in/min. If reactor water level is less than -30 inches (at T1) the system releases the FRVs to control at the current setpoint. **REQUIRED REFERENCES: None.**

21 **ID: 27457** **Points: 1.00**

Refueling outage is in progress.

- Refuel gates are installed
- 2 fuel pool cooling pumps are running

An irradiated bundle drops onto the fuel racks and is damaged.

Fuel pool temperature is 130 degrees and rising.

What actions must be taken to control fuel pool temperatures?

A. Line up SDC to the FPC system

B. Start additional SDC pumps.

C. Use RWCU system in blowdown mode.

D. Bypass FPC Hi suction temperature trips and restart FP pumps.

Answer: A

Question 21 Info	
Topic:	21 - 295023.K2.02
Comments:	Objective: DRE233LN.001.12.b Reference: DOA 1000-01 K/A: 295023 K2.02 2.9 / 3.2 K/A: Refueling Accidents Knowledge of the interrelations between REFUELING ACCIDENTS and the following: Fuel pool cooling and cleanup system. CFR: 41.7 Safety Function: 8 Level: High Pedigree: New History: N/A Comments: A - Correct. During periods of high heat load in the Fuel Pool, when FP cooling alone cannot provide sufficient cooling, SDC can be lined up to augment FP cooling flow. These actions are described in DOA 1000-01 Residual Heat Removal Alternatives. B - Incorrect. Due to the fact that the gates are installed, starting additional SDC pps would not help cool the fuel pool. The distracter is plausible since it would be the correct answer if the gates were not in. C - Incorrect. Due to the fact that the gates are installed, using RWCU would not help cool the fuel pool. The distracter is plausible because it would be the correct answer if the gates were not in. D - Incorrect. Fuel Pool cooling pps do not trip on high temperature. The distracter is plausible due to SDC cooling having a high temperature trip. **REQUIRED REFERENCES: None.**

22 **ID: 13114** **Points: 1.00**

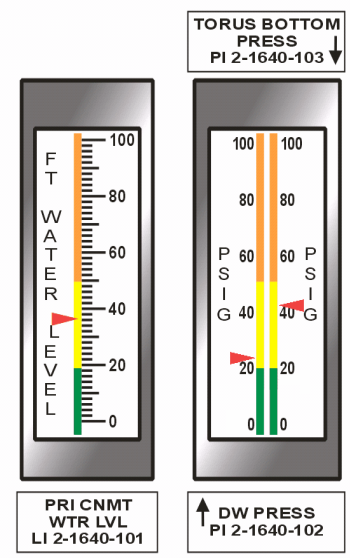
Unit 2 was operating at 100% power.

The reactor scrammed on high Drywell pressure.

- Drywell pressure is 23 psig and steady.
- Drywell Oxygen concentration is 3.0% and steady.
- Drywell Hydrogen concentration is 6.0% and steady.

The US has directed performance of DEOP 0500-04, CONTAINMENT VENTING.

Given the indications below, what actions are required?



A. Place the VENT ISOL SIGNAL BYPASS switch on the 902-5 panel to DRYWELL,
Open AO 2-1601-62, DW 2-INCH VENT VLV,
Open AO 2-1601-93 VENT TO APCV as needed to maintain Primary Containment pressure.

B. Place the VENT ISOL SIGNAL BYPASS switch on the 902-5 panel to TORUS,
Open AO 2-1601-61, TORUS 2-INCH VENT VLV,
Open AO 2-1601-63 VENT TO SBGT as needed to maintain Primary Containment pressure.

C. Place the VENT ISOL SIGNAL BYPASS switch on the 902-5 panel to DRYWELL,
Open AO 2-1601-62, DW 2-INCH VENT VLV,
Open AO 2-1601-63 VENT TO SBGT.

D. Place the VENT ISOL SIGNAL BYPASS switch on the 902-5 panel to TORUS,
Open AO 2-1601-61, TORUS 2-INCH VENT VLV,
Open AO 2-1601-63 VENT TO SBGT.

Answer: C

Question 22 Info	
Topic:	22 - 500000.K1.01 (Print in Color)
Comments:	Objective: 29502LK068 Reference: DEOP 200-01, DEOP 0500-04 K/A: 500000.K1.01 3.3 / 3.9 K/A: Knowledge of the operational implications of the following concepts as they apply to HIGH CONTAINMENT HYDROGEN CONCENTRATIONS: Containment Integrity CFR: 41.8 to 41.10 Safety Function: 5 Level: High Pedigree: Bank History: 2012 NRC Comments: A - Incorrect. APCV is not required until containment pressure approaches 60 psig. B - Incorrect. Plausible because venting from the Torus is preferred when possible due to the scrubbing action of the Torus water. Venting cannot be performed to the torus due to torus level being above 30 ft. C - Correct. The concentrations of H2 and O2 are sufficient to require Venting per DEOP 200-01. When driven to DEOP 500-04 CONTAINMENT VENTING, conditions require using attachment 2 and venting to SBGT from the Drywell. D - Incorrect. Plausible because venting from the Torus is preferred when possible due to the scrubbing action of the Torus water. Venting cannot be performed to the torus due to torus level being above 30 ft. This meets the K/A because the actions taken are to protect containment integrity. **REQUIRED REFERENCES: None.**

23 **ID: 27510** **Points: 1.00**

Unit 3 Reactor is SHUTDOWN.

- Reactor water level is at +30 inches and steady.
- 3A and 3B Recirculation pumps are OOS.
- 3A and 3B Shutdown Cooling loops are aligned to the Reactor.
- Reactor water temperature is 199 degrees F and trending down slowly.

Bus 34-1 experiences an overcurrent condition.

Per DOP 1000-3, SHUTDOWN COOLING MODE OF OPERATION what Reactor water level must be maintained?

A. +20 inches to prevent a spurious group II isolation of SDC system.

B. +30 inches to provide NPSH for the SDC pumps.

C. +40 inches to provide a natural circulation path through the moisture separators.

D. +48 inches to prevent RPV water stratification.

Answer: D

Question 23 Info	
Topic:	23 - 205000 K3.02
Comments:	Objective: 205LN001.08 Reference: DOP 1000-03 K/A: 205000 K3.02 3.2/-- K/A: Knowledge of the effect that a loss or malfunction of the Shutdown Cooling will have on following: Reactor water level. CFR: 41.7 Safety Function: 4 Level: High Pedigree: Bank History: N/A A. Incorrect This is plausible because +20 inches would keep level above the GR 2 setpoint of +8 inches, but stratification would occur B. Incorrect This is plausible because +30 inches would increase NPSH to the SDC pps but stratification would occur C. Incorrect This is plausible because raising level to provide a natural circulation path through the moisture separators is correct, but level must be raised to +48 to meet that goal. D. Correct IF reactor is in SHUTDOWN condition, AND IF Recirc Pumps are NOT running, AND IF there is less than full reactor water flow through two SDC Loops, THEN RPV water level should be maintained at or above +48 inches actual. Maintaining level at or above +48 inches would provide a natural circulation flow path through the moisture separator, and would prevent RPV water stratification. With the loss of bus 34-1 Only 1 SDC pumps is running. **Required References: None**

24 **ID: 22287** **Points: 1.00**

- Unit 2 Drywell pressure is 2.5 psig and rising slowly.
- Reactor water level is −90 inches and lowering slowly.
- HPCI system automatically initiated and is running at 3,800 rpm, injecting 5,600 gpm into the vessel
- CST level has decreased, but the automatic suction transfer for HPCI has failed

Annunciator 902-3 A-11, HPCI BOOSTER PUMP SUCTION PRESSURE LOW, has just alarmed

What is the response of the HPCI system?

A. The HPCI turbine will trip on low pump suction pressure.

B. Turbine speed will rise until the MGU reaches the high speed stop and HPCI pump flow will lower to zero.

C. The HPCI Controller will lower turbine speed restoring pump suction pressure by lowering pump flow.

D. The HPCI Controller, sensing rising speed, will drive the MGU to continually lower turbine speed until the MGU reaches the low speed stop

Answer: B

Question 24 Info	
Topic:	24 - 206000.K4.01
Comments:	Objective: DRE206LN001.08 Reference: DAN 902(3)-3 A-11 K/A: 206000.K4.01 3.8 / 3.9 K/A: Knowledge of HIGH PRESSURE COOLANT INJECTION SYSTEM design features and/or interlocks which provide for the following: Turbine trips CFR: 41.7 Safety Function: 2 & 4 Level: High Pedigree: Bank History: None Comments: A - Incorrect. The trip for HPCI BOOST PP SUCT PRESS LO is bypassed. This is plausible because it would be correct for a manual start. B - Correct. The Booster Pump low suction pressure trip is bypassed with an initiation signal present. The turbine speed control system CANNOT respond to turbine speed increases because it is positioned by a FLOW controller. As level in the CST drops turbine speed will increase but flow will continue to drop. As flow falls off, the MGU would go to the high speed stop but with no water to pump, HPCI will continue to operate (with the MGU at the HSS - NOT 4000 rpm but full steam power). C - Incorrect. The HPCI controller will attempt to increase flow based on setpoint. Plausible because regardless of demand, flow will continue to drop to zero. D - Incorrect. The HPCI speed control will go to High Speed stop not low speed stop in order to maintain flow. Plausible because flow would be lowering. **K/A Justification**: Even though the HPCI turbine will not trip based on the stem of the question, the knowledge of which turbine trips are bypassed and when is being tested. The design features being tested are MGU function as well as which turbine trips are bypassed on an auto start. **REQUIRED REFERENCES: None.**

25 **ID: 14674** **Points: 1.00**

The SRM “DRIVE IN” push button must be ____(1)____ to drive the SRM detectors into the core and the SRM “DRIVE OUT” push button must be ____(2)____ to drive the SRM detectors out of the core.

A. (1) continually held
(2) continually held

B. (1) continually held
(2) momentarily depressed

C. (1) momentarily depressed
(2) continually held

D. (1) momentarily depressed
(2) momentarily depressed

Answer: C

Question 25 Info	
Topic:	25 - 215004.A4.04
Comments:	Objective: DRE215LN004.11 Reference: DOP 0700-01 K/A: 215004.A4.04 3.2 / 3.2 K/A: Ability to manually operate and/or monitor in the control room: SRM drive control switches CFR: 41.7 Safety Function: 7 Level: Memory Pedigree: Bank History: 2006 NRC Comments: A - Incorrect. Since the drive in button has a design contact that locks in, the button does not need to be held in. B - Incorrect. Since the drive in button has a design contact that locks in, the button does not need to be held in. C - Correct. The "drive in" push button is a 'maintain' contact and the "drive out" is a 'momentary' contact. D - Incorrect. The drive out push button does not have a maintain contact feature, so it needs to be held continuously. Note: The distracters are plausible because the buttons operate opposite of each other. **REQUIRED REFERENCES: None.**

26 **ID: 27459** **Points: 1.00**

Which of the following indications is common to **BOTH** an Isolation Condenser tube leak **AND** an Isolation Condenser 3-valve leak?

A. A rise in shell water level ONLY

B. A drop in shell water level ONLY

C. A rise in shell water temperature ONLY.

D. A rise in shell side temperature and a rise in water level.

Answer: C

Question 26 Info	
Topic:	26 - 207000 K5.02
Comments:	Objective: DRE277LN001.08 Reference: DAN 902(3)-3 C-4, DOA 1300-01 K/A: 207000 K5.02 3.0/3.3 K/A: Knowledge of the operational implications of the following concepts as they apply to ISOLATION (EMERGENCY) CONDENSER: Heat exchanger operation CFR: 41.5/45.3 Safety Function: 4 Level: Memory Pedigree: Bank History: None Comments: Of the condition given only and increase in shell water temperature is common to both a tube leak and 3 valve leak. If only a 3 valve leak were to occur level would not go up. Temperature and level do not go down for either condition. A - Incorrect. The shell side water level would increase for a tube leak but not for a 3 vlv leak B - Incorrect. The shell side water level would not decrease due to a tube side leak C - Correct. A tube leak would leak into the shell side causing an increase in level and temperature. The 3 vlv would cause only the temperature to increase. D - Incorrect. A tube leak would leak into the shell side causing an increase in temperature and level. **REQUIRED REFERENCES: None**

27 **ID: 22716** **Points: 1.00**

A Unit 2 transient has resulted in the following conditions:

- Reactor Scram with all rods in.
- RPV completely depressurized.
- Torus bottom pressure is 15 psig.
- Torus water level is 9 feet 3 inches.
- Torus bulk water temperature is 150°F.
- RPV water level is being maintained at -160 inches with the 2B Core Spray pump, operating at rated flow.

The 2B Core Spray pump may experience pump damage due to violating its ____(1)____ AND ____(2)____ .

A. (1) Vortex limits ONLY;
(2) securing the 'B' Core Spray pump and flooding the containment is required.

B. (1) Vortex limits ONLY;
(2) continuing 'B' Core Spray pump operation regardless of potential pump damage is permitted.

C. (1) Vortex AND NPSH limits;
(2) securing the 'B' Core Spray pump and flooding the containment is required.

D. (1) Vortex AND NPSH limits;
(2) continuing 'B' Core Spray pump operation regardless of potential pump damage is permitted.

Answer: B

Question 27 Info	
Topic:	27 - 209001.K6.03
Comments:	Objective: 29502LP005 Reference: DEOP 100, table V and table W. K/A: 209001 K6.03 3.3 / 3.4 K/A: Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM: Torus/suppression pool water level. CFR: 41.7/45.7 Safety Function: 2 & 4 PRA: Yes Level: High Pedigree: Bank History: 2013 Cert Comments: With the Core Spray pump operating at rated flow (5000 gpm) the pump is only violating its vortex limit, NOT the NPSH. A - Incorrect. Plausible because Only Vortex limits are being violated. If the pump were secured flooding of containment would be required. The pump is allowed to be operated regardless of NPSH and Vortex limits. DEOP cautions exists to warn of possible equipment damage, but do not direct securing the pump. B - Correct. Vortex limits are being violated but Core Spray is still needed for RPV level. NPSH limits are not being exceeded. C - Incorrect. Plausible because Only Vortex limits are being violated. Continued operation of B Core spray is permitted. If the pump were secured flooding of containment would be required. The pump is allowed to be operated regardless of NPSH and Vortex limits. DEOP cautions exists to warn of possible equipment damage, but do not direct securing the pump. D - Incorrect. Only Vortex limits are being violated. Plausible because the second part is correct and first part must be determined from the graphs. **REQUIRED REFERENCE: DEOP 100 with entry conditions redacted.**

28 **ID: 13738** **Points: 1.00**

Unit 3 was operating at 100% power with Bus 36 out of service.

- The ESS UPS Inverter output voltage dropped to 75 volts.

2 minutes later the ESS UPS inverter voltage returned to 121 volts.

1. What is supplying power to the ESS Bus?

AND

2. What action is required to return the ESS Bus to the NORMAL power supply?

A. (1) MCC 38-2
(2) Close CB 001, RECTIFIER AC INPUT

B. (1) 250Vdc MCC 3
(2) Close CB 001 RECTIFIER AC INPUT

C. (1) 250Vdc MCC 3
(2) Place the AUTO BUS TRANSFER RESET toggle switch to RESET

D. (1) MCC 38-2
(2) Place the AUTO BUS TRANSFER RESET toggle switch to RESET

Answer: D

Question 28 Info	
Topic:	28 - 262002.A2.01
Comments:	Objective: DRE262LN005.12 Reference: DAN 902-8 F-8, DOP 6800-01, DES 8100-1 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. CFR: 41.5 Safety Function: 6 Level: High Pedigree: Bank History: None Comments: A - Incorrect. Plausible because MCC 38-2 is providing power, however the method to restore power would be correct if 250 VDC was available. B - Incorrect. Plausible because if the ABT was normal seeking and Bus 39 did not restore power then the 250 VDC would be providing power. Power from 250 VDC is unavailable after the transfer of the ABT. C - Incorrect. Plausible because if the ABT was normal seeking and Bus 39 did not restore power then the 250 VDC would be providing power. Power from 250 VDC is unavailable after the transfer of the ABT. D - Correct. As the voltage of the inverter decreases to <114 volts AC, alarm 902-3-F-8 ESS UPS TROUBLE annunciates. With Bus 36 out of service and low inverter output, the Power seeking ABT will swap to MCC 38-2. When voltage returns to a normal value and to return the system to NORMAL power (inverter), the ABT will need to be RESET (which transfers back to the inverter). **REQUIRED REFERENCES: None.**

29 **ID: 22742** **Points: 1.00**

A fire occurs in TR-86.

(1) How does this affect the plant?
(2) What action(s) can restore power to the affected component(s)?

A. (1) A loss of the normal power supply to 138KV Buses 1 & 2
(2) To re-power 138KV Buses 1-2 from its reserve source, close 345KV BT 4-8 CB per DOP 6400-13 ELECTRICAL YARD SWITCHING.

B. (1) A loss of the normal power supply to TR-22
(2) To power TR-22 from its reserve source, close 345KV BT 4-8 CB per DOP 6400-13, ELECTRICAL YARD SWITCHING.

C. (1) A loss of the normal power supply to 138KV Buses 1 & 2
(2) To power TR-22 from its reserve source, swap the TR-22 138KV TRANS DISCs per DOP 6100-27, TRANSFERRING TRANSFORMER 22 FEED DURING OPERATION.

D. (1) A loss of the normal power supply to TR-22
(2) To power TR-22 from its reserve source, swap the TR-22 138KV TRANS DISCs per DOP 6100-27, TRANSFERRING TRANSFORMER 22 FEED DURING OPERATION.

Answer: D

Question 29 Info	
Topic:	29 - 262001.K2.01
Comments:	Objective: 262LN003.12 Reference: DOP 6100-27 and DOP 6400-13 K/A: 262001.K2.01 3.3 / 3.6 K/A: Knowledge of electrical power supplies to the following: Off-site sources of power. CFR: 41.7 Safety Function: 6 Level: High Pedigree: Bank History: N/A Comments: A - Incorrect. The DAN for TR 86 Major Trouble does not provide guidance to repower TR 22 from 138KV Switchyard B - Incorrect. The normal feed to TR 86 is from the 345 KV switchyard, closing the cross-tie CB would not re-energize TR 22 C - Incorrect. The DAN for TR 86 Major Trouble does not provide guidance to repower TR 22 from 138KV Switchyard D - Correct. A fire in TR-86 will cause the sudden pressure relay to activate. TR-86 will de-energize upon a Sudden Pressure event. This causes a loss of NORMAL power to TR-22. The RESERVE power comes from 138KV Bus 1, via transfer disconnects. Note: A fire in TR-86 will cause the sudden pressure relay to activate. TR-86 will de-energize upon a Sudden Pressure event. This causes a loss of NORMAL power to TR-22. The RESERVE power comes from 138KV Bus 1, via transfer disconnects **REQUIRED REFERENCES: None.**

30 **ID: 27460** **Points: 1.00**

Unit 2 was operating at rated power when a scram occurred. The US has directed injection of SBLC for LEVEL.

What are the expected 902-5 panel squib valve indications after SBLC initiation?

A. BOTH Squib continuity lights are extinguished.

B. BOTH Squib continuity lights are illuminated white.

C. BOTH Squib continuity lights are illuminated green.

D. **ONLY** One Squib continuity light is illuminated white.

Answer: A

Question 30 Info	
Topic:	30 - 211000.A1.04
Comments:	Objective: DRE211LN001.11 Reference: DGP 02-03 K/A: 211000.A1.04 3.6/3.7 K/A: Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Valve operations CFR: 41.5 Safety Function: 1 PRA: Yes Pedigree: New Level: High History: N/A Comments: A - Correct. When injecting SBLC for level, both trains of SBLC are used. When the switch is taken to System 1&2 or 2&1 both Squib valves fire and continuity is lost. Both lights will extinguish. B - Incorrect. This is plausible because this is the standby condition of SBLC and unlike most valves, open indication is verified by lack of illumination. C - Incorrect. This is plausible because there is a SBLC valve (located in the drywell) with position indication on the 902-5 panel. This valve is normally open and illuminated green. D - Incorrect. This is plausible because this would be correct during an ATWS. **REQUIRED REFERENCES: None.**

31 **ID: 27190** **Points: 1.00**

While transferring Bus 21 to Div II power, annunciator 902-8 D-1, BUS 21 MAIN & RES BRK IN PARALLEL, alarms.

Per the DAN, what is the operational concern with leaving Bus 21 Main AND Reserve Feed Breakers closed simultaneously any longer than necessary?

A. A trip of the Main Generator while in this lineup would cause Bus 21 to de-energize.

B. A neutral ground condition, due to voltage differences, may result in an auto trip of both breakers.

C. A neutral voltage condition, due to phase angle differences, may result in an auto trip of both breakers.

D. Large circulating currents, due to voltage and/or phase differences, may result in an auto trip of both breakers.

Answer: D

Question 31 Info	
Topic:	31 - 262001.K5.01
Comments:	Objective: DRE262LN001.10 Reference: DAN 902-8 D-1, DOP 6500-01 K/A: 262001.K5.01 3.1 / 3.4 K/A: Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Principle involved with paralleling two A.C. sources. CFR: 41.5 Safety Function: 6 Level: Memory Pedigree: Bank History: N/A Comments: A - Incorrect. This is plausible because a trip of the Main Generator would cause a loss of normal power to Bus 21 to auto transfer to TR-22 B - Incorrect. This is plausible because this is a trip of the EDGs, but a neutral ground condition would not cause an auto trip of both breakers. C - Incorrect. This is plausible a phase angle is of concern; however this will not cause a trip of both breakers. D - Correct. A caution in the above DAN states: Do NOT operate any longer than necessary with main and reserve feed breakers closed simultaneously during power transfer. Large circulating currents may result in an auto trip of the breakers. While in parallel circulating currents cause a buildup of heat and cause damage to transformers and breakers. The breaker protection could cause both breakers to trip Per DAN 902-8 D-1. **REQUIRED REFERENCES: None.**

32 **ID: 27461** **Points: 1.00**

U3 is increasing power with control rods.

The RWM is bypassed.

Rod H-7 is being withdrawn from position 12 to position 36

- Rod H-7 fails to latch at position 36 and latches at position 38.
- Annunciator 903-5 A-7, RBM Hi/INOP is in alarm.

What automatic initiation occurs and why?

A. Rod Withdrawal Block **ONLY** to prevent reactor protection system action.

B. Rod Withdrawal and Insert blocks to prevent reactor protection system action.

C. Rod Withdrawal Block **ONLY** so that local fuel damage does not occur.

D. Rod Withdrawal and Insert blocks to stop erroneous movement of a control rod so that local fuel damage does not result.

Answer: C

Question 32 Info	
Topic:	32 - 295014 K3.02
Comments:	Objective: DRE215LN002.1 Reference: UFSAR 7.7.1.2.2, DAN 903-5 A-7 K/A: 295014 K3.02 3.7 / 3.7 K/A: Knowledge of the reasons for the following responses as they apply to INADVERTENT REACTIVITY ADDITION: Control rod blocks. CFR: 41.5 Safety Function: 1 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This is plausible but incorrect because this is the bases for the APRM high-flux alarm not the RBM Hi/INOP. B - Incorrect. This is plausible but incorrect because this is the bases for the APRM high-flux alarm not the RBM Hi/INOP. Also, there is not an Insert block for the conditions given. C - Correct. RBM high flux alarm functions to stop the erroneous withdrawal of a control rod so the local fuel damage does not result. An insert block is not initiated so that the rod can be moved back to the target position. D - Incorrect. This is plausible because if the rod was out of service an Insert Block would occur. **REQUIRED REFERENCES: None.**

33 **ID: 27462** **Points: 1.00**

When Torus water level is in its normal band, what is the initial operational effect of venting via the Torus with High Pressure in the Drywell?

A. Water level in the downcomers will remain unchanged.

B. Water level in the downcomers will rise and may allow Torus atmosphere to enter the drywell.

C. Water level in the downcomers will lower pushing Torus water through the vacuum breakers.

D. Water level in the downcomers will lower and may allow drywell atmosphere to enter the Torus airspace.

Answer: D

Question 33 Info	
Topic:	33 - 295010.K1.01
Comments:	Objective: DRE29502LK003 Reference: EPG B-7-43 K/A: 295010.K1.01 3.0/3.4 K/A: Knowledge of the operational implications of the following concepts as they apply to High Drywell Pressure: Downcomer submergence: Mark I&II CFR: 41.8-41.10 Safety Function: 5 Pedigree: New Level: Memory Comments: A - Incorrect. Venting from the Torus will lower Torus pressure and therefore draw water from the downcomers into the Torus. B - Incorrect. This would be correct if venting from the drywell and low torus water level exists. C - Incorrect. Torus vacuum breakers are located atop the torus. This is plausible if the candidate does not know the relative location of the vacuum breakers. D - Correct. When venting from the Torus, Torus airspace pressure lowers therefore causing the differential pressure between the Torus and Drywell to rise. As the differential pressure becomes greater the water level in the downcomers will be drawn into to Torus. **REQUIRED REFERENCES: None.**

34 **ID: 27463** **Points: 1.00**

Unit 2 is operating at 100% power.

- Annunciator 902-4 C-22, TORUS NARROW RANGE WTR LVL HI, is in alarm.
- 902-3 panel, LI 2-1602-3, Torus Narrow Range Level, indicates +1.0 inches.

What actions are required per DAN 902-4 C-22?

A. Enter DEOP 200-1 **ONLY**.

B. Dispatch an EO to verify Torus level locally **ONLY**.

C. Dispatch an EO to verify Torus level locally **AND** contact IMD to check calibration of the Torus narrow range instrument **ONLY**.

D. Enter DEOP 200-1, dispatch an EO to verify Torus level locally, **AND** contact IMD to check calibration of the Torus narrow range instrument.

Answer: D

Question 34 Info	
Topic:	34 - 295029.A2.01
Comments:	Objective: DRE223LN001.04 Reference: DAN 902(3)-4 C-22, DEOP 200-1 K/A: 295029.A2.01 3.9* / 3.9* K/A: Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Suppression pool water level CFR: 41.10 Safety Function: Level: High Pedigree: New History: N/A Comments: A - Incorrect. Plausible because DEOP 200-1 must be entered, but an EO must also be dispatched to verify local sight glass indications. B - Incorrect. DEOP 200-1 must be entered. Plausible because an EO must also be dispatched to verify torus level locally. C - Incorrect. Plausible because this would be the correct answer if Torus level indication in the control room was outside the DEOP entry band. D - Correct. Because level indication is above the DEOP entry threshold, DEOP 200-1 must be entered. Additionally, the EO must verify Torus level using the sight glass and IMD must be notified to calibrate the instrument. **REQUIRED REFERENCES: None.**

35 **ID: 13550** **Points: 1.00**

A start up is in progress on Unit 3 with all IRMs on range 3 or 4.

Power is rising SLOWLY and the NSO is attempting to keep IRMs on-scale per DOP 0700-02, INTERMEDIATE RANGE MONITOR OPERATION.

IRM 12 was reading 45 on range 4 when the NSO manipulated the range switch to range 6.

What is the expected system response and crew response to this action?

A. Annunciator 902-5 C-10, CHANNEL A IRM HI HI/INOP and a Channel A Half Scram, Position IRM 12 range switch to Range 5 ONLY.

B. Annunciator 902-5 C-3 ROD OUT BLOCK occurs, Position IRM 12 range switch to Range 5 and reset annunciators ONLY.

C. Annunciator 902-5 C-15, CHANNEL B IRM HI HI/INOP and a Channel B Half Scram, Position IRM 12 range switch to Range 5 ONLY.

D. Annunciator 902-5 C-10, CHANNEL A IRM HI HI/INOP and 902-5 C-15 CHANNEL B IRM HI HI/INOP, causing a Full Reactor Scram. Position Reactor Mode Switch to SHUTDOWN and complete the Reactor Scram actions.

Answer: B

Question 35 Info	
Topic:	35 - 215003.A3.02
Comments:	Objective: DRE215LN003.06 Reference: DOP 0700-02, DAN 902-5 C-3, DAN 902-5 C-5 K/A: 215003.A3.02 3.3 / 3.3 K/A: Ability to monitor automatic operation of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: Annunciator and alarm signals. CFR: 41.7 Safety Function: 7 Level: High Pedigree: Bank History: 2009 Cert Comments: A - Incorrect. This is plausible because the candidate must identify the correct IRM/APRM relationships. This is the correct channel of RPS for IRM 12. B - Correct. With the IRMs on range 3 and 4, the Rx mode switch must be in START UP. IRM downscale causes a Rod Block when the mode switch is in START UP and IRM not on range 1. Manipulating the range switch clockwise is ranging up. Ranging up twice will cause indication to go down twice. This error causes indication to go downscale. Using the DANs for Rod Out Block and IRM Downscale, the NSO identifies the cause of the rod block and corrects it. The cause is corrected by ranging down the IRM to bring its indication back up on scale. The rod block clears and the NSO resets annunciators. IRM downscale does not cause a Half Scram (Half Scram is wrong). A scram is not required for the given situation. Ranging to range 6 would cause a downscale on IRM 14 driving up a Rod Block alarm. By ranging back to 5 the Rod Block would clear and the annunciator can be reset. C - Incorrect. This is plausible because the candidate must identify the correct IRM/APRM relationships. This is the incorrect channel of RPS for IRM 12. D - Incorrect. This is plausible because based on Mode switch positioning during startup, without the shorting links installed an NI Hi-Hi will result in a full scram signal **REQUIRED REFERENCES: None.**

36 **ID: 12912** **Points: 1.00**

Unit 2 is operating at 100% power with Bus 26 O.O.S.

The 2B Instrument Air Compressor trips.

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 Instrument Air header pressure and what actions are required?

A. At the 902-3 Panel. When MSIVs begin drifting closed, insert a manual scram.

B. At the 901-2 Panel. When 901-2 Panel indications reach 55 psig, insert a manual scram.

C. At the 923-1 Panel. When 923-1 Panel indications reach 55 psig, insert a manual scram.

D. At the 902-5 Panel. When 902-5 Panel A-1, SCRAMVLV AIR SUPPLY PRESS LO, alarms, insert a manual scram.

Answer: C

Question 36 Info	
Topic:	36 - 300000.A4.01
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. CFR: 41.7 Safety Function: 8 Level: Memory Pedigree: New Comments: A - Incorrect. This is plausible because actions would be taken to take positive control of the MSIVs during certain situations (Loss of IA and non-ATWS), but pressure is not monitored per the DAN at the 902-3 panel. B - Incorrect. This is plausible because the actions threshold is correct but the panel is incorrect. The 901-2 panel is another panel common to both units. C - Correct. 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. D - Incorrect. This is plausible because this is an action threshold specified in the DOA, however 923-1 panel indications are used to monitor the IA header pressure. **REQUIRED REFERENCES: None.** **K/A Justification: Pressure gauges cannot be operated. In order to monitor the pressure gauges the student must identify the correct gauge and the panel location.**

37 **ID: 23867** **Points: 1.00**

U2 was operating at near rated power when the 125 VDC 2A-1 Distribution panel de-energized.

The Electrical Maintenance Department completed repairs and re-energized the 2A-1 Distribution panel.

What is the current power supply to the Unit 2 Safety Relief Valve 203-3A solenoid?

A. U2 ESS Bus

B. U2 Instrument Bus

C. 125 VDC Distribution Panel 2A-1

D. 125 VDC Distribution Panel 2B-1

Answer: C

Question 37 Info	
Topic:	37 - 239002.K2.01
Comments:	Objective: DRE239LN001.02 Reference: DOA 6900-T1 K/A: 239002.K2.01 2.8 / 3.2 K/A: Knowledge of electrical power supplies to the following: SRV solenoids. CFR: 41.7 Safety Function: 3 Level: High Pedigree: Bank History: 2011 NRC Comments: A - Incorrect. This is plausible because the ESS Bus is the power supply to the Acoustic monitor for the ERVs. B - Incorrect. This is plausible because the Instrument Bus is the power supply to the Tailpipe temperature monitor for the ERVs. C - Correct. The 203-3A SRV solenoid has two power supplies. The normal supply is the 2A-1 Dist Panel and the alternate supply is the 2B-1 Dist Panel. When the normal supply (2A-1) is lost a “normal seeking” automatic transfer device will transfer to the alternate supply (2B-1). Upon the normal supply being re-energized, the “normal seeking” automatic transfer device will transfer power back from the alternate supply (2B-1) to the normal supply (2A-1). D - Incorrect. This is plausible because 2B-1 would be the power supply if the automatic transfer device didn’t transfer back to the normal supply. **REQUIRED REFERENCES: None.**

38 **ID: 22558** **Points: 1.00**

On a loss of off-site power (LOOP) concurrent with a loss of coolant accident (LOCA), loads are started sequentially on the Emergency Busses because the...

A. EDGs may TRIP, due to high motor starting current.

B. EDGs may experience OVERLOADING, due to high motor starting current.

C. LPCI and Core Spray Pumps may cavitate due to transient suction pressure.

D. LPCI loop select logic may NOT be able to decide which Recirc loop to select for injection.

Answer: B

Question 38 Info	
Topic:	38 - 264000.K5.06
Comments:	Objective: 29800LK040 Reference: DAN 902-3 E-8 and G-4, UFSAR 8.3-10 K/A: 264000.K5.06 3.4 / 3.5 K/A: Knowledge of the operational implications of the following concepts as they apply to EMERGENCY GENERATORS (DIESEL/JET): Load sequencing. CFR: 41.5 Safety Function: 6 Level: Memory Pedigree: Bank History: 2009 NRC, 2011 Cert Comments: A - Incorrect. This is plausible because that is what the Diesel would do on a normal start. The Diesel will experience an overload condition but would not trip. B - Correct. The EDGs may experience overloading, due to high motor starting current, if loads are allowed to "block" start on the buses powered by the EDGs. Given the auto start signal provided in the stem (LOCA and LOOP), the only trips that are still active and would trip the EDG, is differential current and overspeed. C - Incorrect. This is plausible because loads are sequentially started, however there is no concern for the pumps cavitating. D - Incorrect. This is plausible given the auto start of the EDG begins the sequential loading timing. This comes from ECCS logic as does loop select. **REQUIRED REFERENCES: None.**

39 **ID: 27464** **Points: 1.00**

DOS 6600-08, DIESEL GENERATOR COOLING WATER PUMP QUARTERLY AND COMPREHENSIVE/PRESERVICE TEST FOR OPERATIONAL READINESS AND IN-SERVICE TEST (IST) PROGRAM is in progress.

Annunciator 902-8 A-4 U2/3 DIESEL GEN TROUBLE.is in alarm

The EO at panel 2223-33, DG Local Panel reports the following.

- C-3 DIESEL CLG WTR PUMP FAILURE OR LOCKED OUT is in.
- The red and green lights from MCC 28-3 for the EDGCWP are both out.
- All other local indications are normal.

Drywell Pressure rises to 2.5 psig on U2.
DOS 6600-08 Attachment A, Contingency Actions for Reactor Scram or Loss of Offsite Power to Restore D/G Operability/Availability during D/G Surveillance Testing, has been completed.

The NSO monitoring the EDGs would determine:

A. 2/3 EDG is running with no cooling water, U2 EDG is running normally.

B. U2 and 2/3 EDGs running normally from normal cooling water pump power supplies.

C. U2 and 2/3 EDGs are both running, with 2/3 cooling water pump powered from 38-3

D. U2 and 2/3 EDGs are both running, 2/3 cooling water pump must be MANUALLY swapped to 38-3.

Answer: C

Question 39 Info	
Topic:	39 - 264000 A3.06
Comments:	Objective: DRE264LN004.12.b Reference: DOA 6600-01 K/A: 264000 A3.06 3.1 / 3.2 K/A: Ability to monitor automatic operations of the EMERGENCY GENERATORS (DIESEL/JET) INCLUDING: Cooling water system operation CFR: 41.7 Safety Function: 6 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This is plausible because Unit 2 EDG cooling water is supplied from 29-2. The applicant must recall the power supplies to the EDGCWP (this is commonly misconstrued amongst novice applicants) B - Incorrect. Unit 2 EDG cooling water is running from 29-2, but Unit 2/3 EDG cooling water has auto swapped to 38-3. This is plausible because it is partially correct. U2 will be operating normally and 2/3 will be operating with cooling come from its alternate supply. C - Correct. With an initiation signal of 2 psig the 2 and 2/3 EDGs will receive an auto start signal. When MCC 28-3 is lost, cooling water to the 2/3 EDG will auto swap to MCC 38-3. D - Incorrect. This is plausible because it is partially correct. U2 will be operating normally and 2/3 will be operating with cooling come from its alternate supply. The transfer of EDG cooling water is automatic and does not need to be taken Manually. **REQUIRED REFERENCES: None.**

40 **ID: 13814** **Points: 1.00**

Unit 2 was operating at near rated power with the 'B' Reactor Building Ventilation Radiation Monitor removed from service.

Bus 29 is de-energized on overcurrent.

This will cause the . . . . .

A. SBGT system to auto start.

B. RWCU Aux Pump to lose power.

C. ESS Bus ABT to swap to MCC 28-2.

D. Reactor building crane to be "locked" in its current position.

Answer: A

Question 40 Info	
Topic:	40 - 261000.K6.04
Comments:	Objective: DRE261LN001.12 Reference: DOA 0500-5, DOP 0500-03, DAN 903-3 G-14 K/A: 261000.K6.04 2.9 / 3.1 K/A: Knowledge of the effect that a loss or malfunction of the following will have on the STANDBY GAS TREATMENT SYSTEM: Process radiation monitoring. CFR: 41.7 Safety Function: 9 Level: High Pedigree: Bank History: 2013 Cert Comments: A - Correct A loss of power to Bus 29 de-energizes MCC 29-2, which is the power supply to 2B RPS MG Set, which feeds the 2A RPS Bus, which is the power supply to the 'A' Reactor Building Vent Monitor. With the loss of power, the 'A' Reactor Building Vent Monitor fails downscale. With the 'B' Reactor Building Vent Monitor removed from service, it is failed downscale. SBGT logic is one Rx Bldg Rad monitor upscale OR both Rx Bldg Vent monitors downscale. B - Incorrect RWCU Aux pp is powered from Bus 28, loads from Busses 28 and 29 are commonly confused. C - Incorrect This is plausible because ESS normal power supply will be lost when Bus 29 is lost. The ABT will not transfer because 250Vdc and Bus 25 are still available. D - Incorrect This is plausible because the RB Crane is supplied from Bus 27 not Bus 29. Bus 29 is the power supply to the Refuel Floor Jib crane. **REQUIRED REFERENCES: None.**

41 **ID: 27176** **Points: 1.00**

Unit 2 Off Gas oxygen concentration is 49% downstream of the off gas recombiner.

Which of the following is an expected system response?

A. 902-65 B-2, OFFGAS O2 CONC LO LO alarm **ONLY**

B. 902-65 B-1, OFFGAS O2 CONC HI HI alarm **ONLY**

C. 902-65 B-2, OFFGAS O2 CONC LO LO alarm **AND** Hydrogen Addition System will trip **IMMEDIATELY**

D. 902-65 B-1, OFFGAS O2 CONC HI HI alarm **AND** Hydrogen Addition System will trip after 5 minutes

Answer: D

Question 41 Info	
Topic:	41 - 271000.A3.01
Comments:	Objective: DRE271LN001.08 Reference: DOP 3390-01 K/A: 271000.A3.01 3.3/3.3 K/A: Ability to monitor operation of the OFFGAS SYSTEM INCLUDING: Automatic system isolations CFR: 41.7 Safety Function: 9 Level: High Pedigree: Bank History: None. Comments: A - Incorrect. This is plausible because this is the value for Lo Lo trip is $\leq$ 5% oxygen concentration which will trip the Hydrogen Addition System (HAS). This tests the candidate's knowledge of gas concentrations after the offgas recombiner. B - Incorrect. This is plausible because the alarm setpoint is reached (offgas oxygen concentration $\geq$ 45%). However, HAS trip will occur. C - Incorrect. This is plausible because the HAS system will trip for either HI-HI or Lo-Lo conditions. Value for Lo Lo trip is $\leq$ 5% oxygen concentration. This again tests the candidate's knowledge of HAS operation. D - Correct. Offgas oxygen concentration $\geq$45% will cause HAS to trip after a 5 minute delay. Note: This meets the K/A because the predicted operation and trips of HAS will directly impact the Hydrogen gas concentration in the offgas system. **REQUIRED REFERENCE: None.**

42 **ID: 27200** **Points: 1.00**

Unit 2 is operating at 100% power with Bus 25 OOS.

- Bus 24-1 experiences an overcurrent condition.
- A fire in 250VDC Turbine Building MCC 2 caused the MCC to become de-energized.

The ____(1)____ will transfer ESS Bus power from the ____(2)____ to MCC 28-2 via a Transformer.

A. (1) ABT
(2) Inverter

B. (1) ABT
(2) Voltage Regulator

C. (1) Static Switch
(2) Inverter

D. (1) Static Switch
(2) Voltage Regulator

Answer: A

Question 42 Info	
Topic:	42 - 262002.K4.01
Comments:	Objective: DRE262LN001.06 Reference: DOP 6800-01 K/A: 262002.K4.01 3.1 / 3.4 K/A: Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C/D.C)design features and/or interlocks which provide for the following: Transfer from preferred power to alternate power supplies CFR: 41.7 Safety Function: 6 Level: High Pedigree: Bank History: 2009 NRC Comments: A - Correct. With Bus 25 O.O.S. and the subsequent loss of Bus 24-1 and MCC 2, the ABT will transfer ESS Bus power from the Inverter to MCC 28-2 via a Transformer B - Incorrect. This is plausible because the first half of the answer is correct. The second half is incorrect but plausible because Bus 25 O.O.S. The Voltage Regulator is inline prior to the static switch C - Incorrect. This is plausible because with Bus 24-1 overcurrent, Bus 29 loses power and takes out the Static Switch due to Bus 25 OOS. D - Incorrect. This is plausible because this would be the correct answer if Bus 25 was not OOS. The Static Switch does not come into play **REQUIRED REFERENCES: None.**

43 **ID: 27465** **Points: 1.00**

Unit 2 is at 100% power.

The following annunciators are in alarm:

- 923-1 B-5 U2 OR U3 INST AIR COMP TRIP
- 923-1 D-1, U2 OR U3 RBCCW PRESSURE LO
- 923-1 F-1, U2 RBCCW HEAD TANK LVL HI-LO

The following conditions are present:

- U2 RBCCW outlet temperature is rising
- Attempts to start additional RBCCW pumps have failed
- U3 RBCCW outlet temperature is steady

What operator actions are required?

A. Cross-tie U2 and U3 RBCCW

B. Scram U2 **ONLY**, trip U2 Recirc pumps **ONLY** within 1 minute

C. Scram U2 **ONLY** and close the MSIVs.

D. Scram U2 **AND** U3, trip U2 **AND** U3 Recirc pumps within 1 minute

Answer: B

Question 43 Info	
Topic:	43 - 400000 G.4.45
Comments:	Objective: DRE208LN001.08 Reference: DOA 3700-01 K/A: 400000 G.2.4.45 4.1 / 4.3 K/A: Component Cooling Water System (CCWS): Ability to prioritize and interpret the significance of each annunciator or alarm CFR: 41.10 Safety Function: 8 Level: Memory Pedigree: New History: N/A Comments: A - Incorrect. Crosstie of RBCCW is not an option. There is a swing pump and heat exchanger. B - Correct. With a loss of RBCCW to Unit 2 damage to the RR pumps will occur if they are not tripped within one minute. Direction to Scram the Unit and secure Recirc pumps in that order is required per the DOA. C - Incorrect. This would be a correct action if the there was a loss of instrument air and IA header pressure dropped and could not be recovered. Without an Instrument Air low pressure alarm this is not a required action for the conditions given. D - Incorrect. Unit 2 RBCCW feeds some Unit 3 loads. These include the Pumpback air compressors that are cooled from U2 RBCCW loop. However scramming Unit 3 is not required because the Recirc pumps are not part of the same loop. U3 RBCCW system parameters remain unchanged. **REQUIRED REFERENCES: None.** **K/A Justification: A loss of RBCCW will cause multiple alarms and DOA entries. It is important to understand the significance of loss of cooling and imminent damage to the Recirc pumps and take those actions first. The trip of the air compressor is not a priority given the plant conditions. The IA system has a main receiver as well as another air compressor on the unit capable of supporting a majority of the loads.**

44 **ID: 27466** **Points: 1.00**

Unit 2 is at 100% power when a leak develops in the drywell.

Drywell pressure is trending up at the following rate.

0700 - 1.2 psig
0715 - 1.35 psig
0730 - 1.5 psig

At the current trend, what is the EARLIEST an automatic RPS actuation will have occurred?

A. 0745

B. 0815

C. 0830

D. 0845

Answer: B

Question 44 Info	
Topic:	44 - 212000 K1.13
Comments:	Objective: DRE212LN001.06.h Reference: DAN 902(3)-5 D-11 K/A: 212000 K1.13 3.5 / 3.6 K/A: Knowledge of the physical connections and/or cause-effect relationships between REACTOR PROTECTION SYSTEM and the following: containment pressure CFR: 41.2 to 41.9 Safety Function: 7 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This time corresponds to 1.65 psig, the actuation will occur at 1.81 psig. B - Correct. This time would correlate to 1.95 psig, the actuation would have occurred at 1.81 psig. C - Incorrect. This time would correlate to 2.10 psig, the actuation will occur at 1.81 psig. Plausible due to greater than 2 psig. D - Incorrect. This time would correlate to 2.25 psig, the actuation will occur at 1.81 psig. Plausible due to the fact a math error could correlate to the right answer. **REQUIRED REFERENCES: None.**

45 **ID: 13716** **Points: 1.00**

A control rod is selected, and the ROD OUT permit light illuminated,
The ROD MOVEMENT CONTROL switch is taken to ROD OUT (NOTCH) position and then released.

Using the list of phrases below, select the sequence of ALL of the rod movement control lights that would be observed. (Note: Each phrase may be used once, more than once, or not at all)

1) ROD IN
2) ROD OUT
3) NOTCH OVERRIDE
4) ROD OUT SETTLE

A. 1 and 4 **ONLY**

B. 2 and 4 **ONLY**

C. 1, 2, 4 **ONLY**

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

Answer: C

Question 45 Info	
Topic:	45 - 201002.A3.02
Comments:	Objective: DRE201LN002.10 Reference: DOP 0400-01 K/A: 201002.A3.02 2.8 / 2.7 K/A: Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Rod movement sequence lights CFR: 41.5 Safety Function: 1 Level: Memory Pedigree: Bank History: 2007 Cert Comments: A - Incorrect. Plausible because the candidate must recognize that the ROD OUT light will illuminate. B - Incorrect. Plausible because it must be recognized that Control Rods are first driven IN to unlatch them. Once the collet fingers are held in, then the rod is withdrawn C - Correct. Control Rods are first driven IN to unlatch them. Once the collet fingers are held in, then the rod is withdrawn. When released, the rod then settles into the next notch. The RMCS controls this and provides the status via the indicating lights D - Incorrect. Plausible because it must be recognized that Control Rods are first driven IN to unlatch them. Once the collet fingers are held in, then the rod is withdrawn **REQUIRED REFERENCES: None.**

46 **ID: 27467** **Points: 1.00**

While in 3-Element Automatic, which of the parameters below are the inputs for the Unit 2 FWLC system?

1) RPV Pressure
2) Total Feed Flow
3) Total Steam Flow
4) First Stage Pressure

A. 1 and 2

B. 2 and 3

C. 1 and 4

D. 3 and 4

Answer: B

Question 46 Info	
Topic:	46 - 259002.K4.10
Comments:	Objective: DRE259LN002.03 Reference: DAN 902(3)-5 G-8 K/A: 259002.K4.10 3.4 / 3.4 K/A: Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: Three element control (main steam flow, reactor feedwater flow and reactor water level provide input) CFR: 41.7 Safety Function: 2 Level: Memory Pedigree: Bank History: N/A Comments: A - Incorrect. This is plausible because it is partially correct. Total steam flow and RPV water level are Bailey inputs, but RPV Pressure does not input to the Bailey System B - Correct. The Feedwater level control combines inputs from steam flow, feed flow and RPV water level while in AUTO control mode. C - Incorrect. This is plausible because it is partially correct. Total steam flow and feed flow are correct, but First Stage Pressure does not input to Bailey D - Incorrect. This is plausible because it is partially correct. Total steam flow and RPV water level are Bailey inputs, but First Stage Pressure is not an input to Bailey system. **REQUIRED REFERENCES: None.**

47 **ID: 27468** **Points: 1.00**

Unit 2 power ascension is in progress.

Power is currently 33%, when one Turbine Bypass Valve fails open.

Main Control Room Turbine 1st Stage pressure indication will be an ___(1)___ representation of Reactor Power and a Scram ___(2)___ occur on a Turbine trip.

A. (1) accurate
(2) will

B. (1) accurate
(2) will not

C. (1) inaccurate
(2) will

D. (1) inaccurate
(2) will not

Answer: D

Question 47 Info	
Topic:	47 - 245000 A1.07
Comments:	Objective: DRE245LN001.12.a Reference: DAN 902(3)-5 H-4 K/A: 245000 A1.07 2.8 / 2.8 K/A: Ability to predict and/or monitor changes in parameters associated with operating the MAIN GENERATOR AND AUXILIARY SYSTEMS controls including: First stage turbine pressure. CFR: 41.5 Safety Function: 3 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This is plausible because it requires system knowledge of the tap off for the turbine bypass valves is prior to the first stage pressure indication. B - Incorrect. This is plausible because it requires system knowledge of the tap off for the turbine bypass valves is prior to the first stage pressure indication. C - Incorrect. This is plausible because it requires system knowledge of the tap off for the turbine bypass valves is prior to the first stage pressure indication making indicated pressure read low. D - Correct. Based on the location of the Bypass valves, the turbine first stage pressure would read low. First stage pressure would stay below RPS setpoint. **REQUIRED REFERENCES: None.**

48 **ID: 27469** **Points: 1.00**

A fault occurs causing the loss of MCC 38-3.

Which of the following Radiation Monitors has lost power?

1, 2/3 Chimney SPING
2. MSL Rad Monitor
3. Service Water Rad Monitor
4. GE Chimney Monitor

A. 1, 4 ONLY

B. 1, 3 ONLY

C. 2, 4 ONLY

D. 2, 3 ONLY

Answer: B

Question 48 Info	
Topic:	48 - 272000 K2.03
Comments:	Objective: DRE272LN002.03 Reference: DOP 1700-09 K/A: 272000 K2.03 2.5/2.8 K/A: Knowledge of electrical power supplies to the following: Stack gas radiation monitoring system. CFR: 41.7 Safety Function: 9 Level: Memory Pedigree: New History: N/A Comments: A - Incorrect. Plausible because the answer is partially correct. GE Chimney Monitors valves and pumps are powered from ESS and the recorders and detectors are powered from 24/48 VDC Dist Pnl 2A and 3A. B - Correct. The 2/3 Chimney SPING and the SW Rad Monitor are powered from MCC38-3 C - Incorrect. MSL Rad Monitors are powered from RPS A and GE Chimney Monitors are powered from 24/48 VDC. Although neither is powered from 38-3 power to RPS is from Bus 38 D - Incorrect. Plausible because it is partially correct. SW Rad monitors are powered from 38-3, MSL Rad Monitors are powered from RPS A. **REQUIRED REFERENCES: None.**

49 **ID: 27470** **Points: 1.00**

Unit 2 is operating at 100% power.
Instrument bus power fails to the Feed water heating system.

What is the system valve response?

A. Extraction steam AO's fail open

B. Extraction steam AO's fail as is

C. Extraction steam AO's fail closed

D. Heater Drain Bypass AO fails closed

Answer: A

Question 49 Info	
Topic:	49 - 239001 K6.01
Comments:	Objective: DRE260LN001.06 Reference: DOP 6800-02, DOA 3500-02 K/A: 239001 K6.01 3.1 / 3.3 K/A: Knowledge of the effect that a loss or malfunction of the following will have on the MAIN AND REHEAT STEAM SYSTEM; Electrical power. CFR: 41.7 Safety Function: 3 Level: Memory Pedigree: New History: N/A Comments: A - Correct. When power is lost to the solenoids the extraction valves will fail to the open position to prevent system trip. B - Incorrect. When power is lost to the solenoids the extraction valves will fail to the open position to prevent a turbine trip due to high feedwater heater level. Failed "as is" is plausible because Dresden has a number of AO valve that fail as is on a loss of Instrument Air or Instrument bus power to the solenoids. An example is the Off gas chimney isolation valves as well as the SJAE suction vlvs. C - Incorrect. The MOVs fail as is the AOVs fail open. This is plausible because there are a number of air operated valves that fail closed when air is taken away when power is lost to the solenoids. D - Incorrect. Opens on loss of power to the solenoids supplied by instrument bus. **REQUIRED REFERENCES: None.**

50 **ID: 27471** **Points: 1.00**

Unit 2 is in Mode 1 with power Ascension in progress.

- Six (6) of the Condensate Demineralizers are in service.
- Condensate Demineralizer D/P is above the normal band and trending up.

What action must be taken and what is the potential impact on the plant?

A. Perform an emergency load drop to reduce Unit load per DGP 3-1, to prevent channeling system resin.

B. Place an additional Service Unit on line per DOP 5500-01, to prevent chemical intrusion to the reactor

C. Remove a Service Unit from service per DOP 5500-01, to prevent chemical intrusion to the reactor.

D. Throttle open the Condensate/Condensate Booster Pump Min Flow Valve per DGP 1-1, to prevent channeling system resin.

Answer: B

Question 50 Info	
Topic:	50 - 256000 A2.16
Comments:	Objective: DRE259LN001.08 Reference: DAN 2252(3)-11 C-6, DOP 5500-01, DGP 1-1 K/A: 256000 A2.16 2.8 / 2.8 K/A: Ability to predict the impacts of the following on the REACTOR CONDENSATE SYSTEM: and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations. CFR: 41.5 Safety Function: 2 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This is plausible because this would be correct with all seven beds in service. With a standby bed a load drop is not necessary B - Correct. Each unit has 7 service units, therefore the standby service unit can be placed on line to lower system D/P to prevent breakdown of resin and a chemical excursion in the reactor. C - Incorrect. Removing a service unit would raise system D/P and increase the possibility of chemical excursion D - Incorrect. This is plausible because it requires knowledge of where the Condensate/Condensate Booster Pump minimum flow valve is in the system and therefore the impact it would have on demin D/P **REQUIRED REFERENCES: None.**

51 **ID: 24100** **Points: 1.00**

Which of the following conditions would cause the 902-5 A-3, ROD DRIFT, annunciator to alarm?

Reed switch closed at position ____(1)____, ____(2)____ a rod motion command signal present.

A. (1) 35
(2) with

B. (1) 35
(2) without

C. (1) 36
(2) with

D. (1) 36
(2) without

Answer: B

Question 51 Info	
Topic:	51 - 214000.K4.01
Comments:	Objective: 201LN002.06 Reference: DAN 902(3)-5 A-3 K/A: 214000.K4.01 3.0 / 3.1 K/A: Knowledge of ROD POSITION INFORMATION SYSTEM design feature(s) and/or interlocks which provide for the following: Reed switch locations CFR: 41.7 Safety Function: 7 Level: Memory Pedigree: Bank History: 2012 NRC Comments: A - Incorrect. requires odd reed switch without rod motion command signal. Plausible because the answer is partially correct. Position 35 with a movement signal would cause a drift alarm B - Correct. Per DAN 902(3)-5 A-3, ROD DRIFT, requires Control Rod moving past an ODD numbered reed switch (closed) with NO control rod motion requested. C - Incorrect. requires odd reed switch without rod motion command signal. Plausible because if a rod is being moved and attempted to stop at 36, when the switch was released if the rod continued to move a rod drift alarm would occur. D - Incorrect. requires odd reed switch without rod motion command signal. Plausible because the second half is correct, must be recognized that 36 would not cause the alarm. **REQUIRED REFERENCES: None.**

52 **ID: 27473** **Points: 1.00**

Which of the following is the **MINIMUM** required for ADS to initiate with sustained Drywell pressure above 2.0 psig?

1) RPV level less than- 59"
2) 1 LPCI AND 1 CS pump running
3) 8.5 minute timer timed out
4) 1 CS pump running **ONLY**

A. 1 and 2

B. 1 and 4

C. 2 and 3

D. 3 and 4

Answer: B

Question 52 Info	
Topic:	52 - 218000.K1.02
Comments:	Objective: DRE218LN001.6 Reference: DAN 902(3)-3 B-13 K/A: 218000.K1.02 4.0/4.1 K/A: Knowledge of the physical connections and/or cause-effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: Low Pressure Core Spray: Plant Specific CFR: 41.2-41.9 Safety Function: 3 Pedigree: New Level: Memory Comments: A - Incorrect. This would result in ADS actuation, but this is not the minimum required. B - Correct. With RPV Lo-Lo level and DW pressure above 2 psig and a CS pump, ADS will actuate. C - Incorrect. The 8.5 minute timer is applicable for conditions without high drywell pressure. This would be correct if there were a leak outside of the drywell. D - Incorrect. The 8.5 minute timer is applicable for conditions without high drywell pressure. This would be correct if there were a leak outside of the drywell. **REQUIRED REFERENCES: None.**

53 **ID: 22257** **Points: 1.00**

Unit 2 was operating at 100% power when a scram signal occurred.

- RPV pressure is 920 psig.
- RPV water level is +5 inches.
- Drywell pressure is 1.2 psig.
- APRMs are cycling between 8% and 10%.
- ALL RPS Channel 'A' and 'B' lights are illuminated.

Per DGP 2-3, REACTOR SCRAM, which of the following verbal reports will the Unit NSO make to the Unit Supervisor?

"Attention for an update, Rods did NOT go in, ARI actuated ...

A. It is a hydraulic ATWS, Reactor power is approximately 10%, End of Update."

B. It is an electrical ATWS. Reactor power is approximately 10%, End of Update."

C. It is a hydraulic ATWS, Reactor water level is +5 inches, Reactor pressure is 920 psig, Drywell pressure is 1.2 psig, and Reactor power is approximately 10%, End of Update

D. it is an electrical ATWS, Reactor water level is +5 inches, Reactor pressure is 920 psig, Drywell pressure is 1.2 psig, and Reactor power is approximately 10%, End of Update"

Answer: D

Question 53 Info	
Topic:	53 - Generic 2.1.17
Comments:	Objective: 29800LK065 Reference: DGP 2-3 attachment C K/A: Generic.2.1.17 3.9 / 4.0 K/A: Ability to make accurate, clear, and concise verbal reports. CFR: 41.10 Safety Function: N/A Level: High Pedigree: Modified History: 2010 NRC Comments: A - Incorrect. Hydraulic ATWS is plausible because there was rod motion; however, it was initiated by ARI. The report is plausible because power level is required to be reported and is a key parameter for US decision making in the event of an ATWS. B - Incorrect. The first part is correct: There is an electrical ATWS, but the second part is incorrect because RPV level, RPV Pressure and Drywell pressure are not included in the report. The second part is plausible because power level is required to be reported and is a key parameter for US decision making in the event of an ATWS. C - Incorrect. There is an electrical ATWS not Hydraulic. Hydraulic ATWS is plausible because there was rod motion; however, it was initiated by ARI. The report is correct. D - Correct. Must be able to determine that an ATWS exists, from the ARPMs reading 10%, and that it is an electrical ATWS, since none of the RPS lights are extinguished. Per the procedure attachment C Hard Card, the report must be in order of rods did not go in, ARI actuated, Electric ATWS, RPV level, RPV pressure, Drywell pressure, and power. **REQUIRED REFERENCES: None.**

54 **ID: 13779** **Points: 1.00**

Unit 2 has just finished a refuel outage.

A reactor startup is in progress in MODE 2.

Recirc loop temperature is 30°F higher than the temperature used by the QNE to predict the critical step/rod/notch.

What affect would this have on the actual critical step/rod/notch?

Per DGP 1-1, UNIT STARTUP, actual criticality will be . . . . .

A. later due to being over-moderated.

B. later due to the moderator temperature coefficient.

C. sooner due to being over-moderated.

D. sooner due to the moderator temperature coefficient.

Answer: B

Question 54 Info	
Topic:	54 - Generic 2.1.43
Comments:	Objective: 20102LK032 Reference: DGP 1-1 K/A: Generic.2.1.43 4.1 / 4.3 K/A: Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc. CFR: 41.10 Safety Function: N/A Level: High Pedigree: Bank History: 2010 NRC Comments: A - Incorrect. Plausible because it is correct that criticality will occur later and because an under-moderated condition would cause criticality later. Incorrect because the distractor specifies an over-moderated condition. B - Correct. A moderator temperature increase results in the moderator temperature coefficient being more negative, thus more positive reactivity from control rod withdrawal would need to be performed for criticality. C - Incorrect. A over moderated condition would cause criticality earlier, making this distractor plausible. D - Incorrect. A higher moderator temperature will cause more negative reactivity and a later criticality. **REQUIRED REFERENCES: None.** **K/A Justification: DGP 1-1 Step G.13.b is used by the operator to predict an estimated range of criticality prediction. In addition if moderator temperature has changed significantly then the QNE is required to run a new predict using NF-AB-715**

55 **ID: 14648** **Points: 1.00**

Unit 2 is at 100% power.

Calibration of the Nuclear Instruments as required by Tech Specs every 2000 effective full power hours (EFPHs) is scheduled to be performed.

What is the LATEST that a new calibration can be performed with no further actions required by Tech Specs?

A. 2000 EFPHs

B. 2500 EFPHs

C. 3000 EFPHs

D. 4000 EFPHs

Answer: B

Question 55 Info	
Topic:	55 - Generic 2.2.22
Comments:	Objective: DRE215LN005.07 Reference: T.S. SR 3.0.2, TS 3.3.1.3.SR 3.3.1.3.2 K/A: Generic 2.2.22 4.0 / 4.7 K/A: Knowledge of limiting conditions for operations and safety limits. CFR: 41.5 Safety Function: N/A Level: Memory Pedigree: Bank History: 2009 Cert Comments: A - Incorrect. 2000 hours would not take into consideration the 25 % allowance. Plausible because the surveillance is due every 2000 hours. B - Correct. TS allow 25% extension time for surveillances: (2000 x 25%) + 2000 = 2500, as long as the performance is not the initial performance. C - Incorrect. 3000 would mean a 50% allowance above the 2000 hrs. Plausible because it must be determined if the surveillance has a 25% or 50% allowance. D - Incorrect. 4000 would mean 2 year frequency vs 1 year. Plausible if the requirement can be extended to a 2 year periodicity. **REQUIRED REFERENCES: None.**

56 **ID: 8176** **Points: 1.00**

Select the **MINIMUM** water level allowed **ABOVE** irradiated fuel assemblies stored in the Unit 2 or Unit 3 spent fuel pool when moving fuel in the pools.

A. 13 feet 3 inches

B. 19 feet

C. 24 feet 6 inches

D. 32 feet 3 inches

Answer: B

Question 56 Info	
Topic:	56 - Generic 2..2.40
Comments:	Objective: DRE233LN001.7 Reference: T.S. 3.7.8 K/A: Generic 2.2.40 3.4 / 4.7 K/A: Ability to apply Technical Specifications for a system. CFR: 41.10 Safety Function: N/A Level: Memory Pedigree: Bank History: N/A Comments: A - Incorrect. Plausible because 13 feet 3 inches is equivalent to TAF in the fuel pool B - Correct. Per T.S. LCO entry condition fuel pool water level shall be greater than or equal to 19 feet over the top of irradiated fuel assemblies seated in the storage pool rack. C - Incorrect. Plausible because 24 feet 6 inches is fuel pool level above TAF when pool is at normal level of 37 feet 9 inches D - Incorrect. Plausible because 32 feet 3 inches is actual low T.S. level in the fuel pool based on 13 feet 3 inches added to the 19 feet above irradiated fuel. **REQUIRED REFERENCES: None.**

57 **ID: 14681** **Points: 1.00**

Unit 2 was operating at 100% power.

Annunciator 902-4 C-23, TORUS NARROW RANGE WATER LEVEL LOW, is in alarm.

Torus level at -4.0 inches.

What procedure(s) and/or Tech Specs must be entered?

1) DAN 902-4 C-23, TORUS NARROW RANGE WATER LEVEL LOW
2) DEOP 200-1, PRIMARY CONTAINMENT CONTROL
3) The Torus water level Technical Specification
4) DEOP 100 RPV CONTROL

A. 1 ONLY

B. 1 and 2 ONLY

C. 1,2, and 3 ONLY

D. 1,2,3, and 4

Answer: A

Question 57 Info	
Topic:	57 - Generic 2.4.31
Comments:	Objective: 29900LK104 Reference: DAN 902-4 C-23 K/A: Generic.2.4.31 4.2 / 4.1 K/A: Knowledge of annunciator alarms, indications, or response procedures. CFR: 41.10 Safety Function: N/A Level: Memory Pedigree: Bank History: N/A Comments: A - Correct. Answer is correct due to alarm setpoint is -4 inches, while DEOP entry condition is -4.5 inches and Tech Spec Entry is -1.5 inches (high) or -5.5 inches (low). The only threshold met is the DAN actions of 902-4 C-23 TORUS NARROW RANGE WATER LEVEL LOW. B - Incorrect. Plausible because DEOP 200-1 entry condition -4.5. C - Incorrect. Plausible because DEOP 200-1 entry condition -4.5 inches and T.S. entry -5.5 inches. D - Incorrect. Plausible because DEOP 200-1 entry condition -4.5 inches, T.S. entry is -5.5 inches, and DEOP 100 could be entered is a Scram were required in DEOP 200-1. **REQUIRED REFERENCES: None.**

58 **ID: 13321** **Points: 1.00**

A licensed NSO is being administered a JPM at a Unit 2 CRD accumulator as part of their Annual Requal Exam.

A continuous 2 minute siren sounds followed by an announcement directing all personnel NOT having emergency assignments, to report to the CLOSEST assembly area.

To what area must the NSO report?

A. Main Control Room

B. Operation Support Center (OSC)

C. Unit 2 Turbine Building Trackway

D. Administration Building Lunchroom/Foyer Area

Answer: C

Question 58 Info	
Topic:	58 - Generic 2.4.39
Comments:	Objective: 29501LP083 Reference: EP-AA-1004 K/A: Generic.4.39 3.9 / 3.8 K/A: Knowledge of RO responsibilities in emergency plan implementation. CFR: 41.10 Safety Function: N/A Level: Memory Pedigree: Bank History: 2006 NRC Comments: Per EP-AA-1004, upon hearing a 2 minute continuous siren (EP assembly siren) all personnel not having emergency assignments have been instructed to assemble in pre-designated assembly areas. Refer to figure 4-2. Per figure 4-2, the closest area from the Unit 2 accumulator banks is the Unit 2 turbine building main corridor. IF the licensed RO were on-shift, the assembly area would be the Main Control Room. A. Incorrect This would be the correct answer for a NSO if they were on-shift, but not while performing training activities. B. Incorrect Plausible because this is where the shift operators go that are not in tech spec required positions C. Correct The closest assembly area to the Reactor Building is the U2 Turbine Building Main Corridor. D. Incorrect This would be correct if the NSO was outside the plant. **REQUIRED REFERENCES: None.**

59 **ID: 27474** **Points: 1.00**

Unit 2 has scrammed due to a loss of high pressure feed, and the US has directed Scram Choreography Positions.

Per OP-DR-103-102-1002, STRATEGIES FOR SUCCESSFUL TRANSIENT MITIGATION, which of the following actions is correct?

A. ONLY the RO's can silence alarms.

B. The Unit Supervisor MUST announce Hard Card usage is authorized.

C. All control room alarms will be immediately acknowledged following the scram per Scram Choreography Hard Card.

D. During the initial report following the scram, crew members remain silent until the Unit NSO announces "END OF UPDATE".

Answer: D

Question 59 Info	
Topic:	59 - Generic 2.4.12
Comments:	Objective: 29501LP040 Reference: OP-DR-103-102-1002 K/A: Generic 2.4.12 4.0 / 4.3 K/A: Knowledge of general operating crew responsibilities during emergency operations. CFR: 41.10 Safety Function: N/A Level: Memory Pedigree: New History: N/A Comments: A - Incorrect. Per Strategies Document SROs are expect to silence annunciators per Scram Choreography. Plausible because this responsibility is delineated in the Strategies Document, and ROs normal silence annunciators. B - Incorrect. Hard Cards are authorized when a scram occurs or should have occurred, the US does not have to announce this. This is plausible because during transients such as DOA entries, the US must announce HC usage is allowed. C - Incorrect. Plausible because all control room alarms will be silenced immediately following a scram. Flashing annunciators will be acknowledged as soon as possible consistent with the current plant conditions. D - Correct. The Unit NSO takes the Scram actions per DGP 2-3 Hard Card and reports Rx Power, Level, Pressure and Containment Pressure. Per step 4.4.4 of Strategies Document all other crew members should remain silent until the Unit NSO says, END Of UPDATE. **REQUIRED REFERENCES: None.**

60 **ID: 24224** **Points: 1.00**

The Reactor Water Cleanup pump room was recently surveyed.

- General area radiation of 200 mrem/hr.
- Smearable contamination of 90 dpm/100cm^2 (beta-gamma)

How should the area be posted IAW NISP-RP-004 Radiological Postings, and Labeling?

A. "Caution - High Radiation Area" **ONLY**.

B. "Caution - Locked High Radiation Area" **ONLY**.

C. "Caution - High Radiation Area" **AND** "Caution - Contaminated Area"

D. "Caution - Locked High Radiation Area" **AND** "Caution - Contaminated Area"

Answer: A

Question 60 Info	
Topic:	60 - Generic 2.3.7
Comments:	Objective: ACAD 00-007.10 Reference: RP-AA-376, NISP-RP-004 K/A: Generic 2.3.7 3.5 / 3.6 K/A: Ability to comply with radiation work permit requirements during normal or abnormal conditions. CFR: 41.12 Safety Function: N/A Level: Memory Pedigree: Bank CFR: 41.12 History: 2015 NRC Comments: A - Correct. A high rad area is an area that could result in reception of deep dose rate equivalent in excess of 100 mrem/hr at 30 cm. B - Incorrect. Locked High Rad area is required for areas exceeding > 1000 mrem/hr C - Incorrect. Contaminated areas are areas in which contamination levels meet or exceed 1000 dpm/100cm^2. D - Incorrect. As explained above neither the requirements of locked high rad area nor contaminated area are met. Knowledge of radiation and contamination area markings is required to comply with RWPs. **REQUIRED REFERENCES: NONE**

61 **ID: 27475** **Points: 1.00**

When attempting to exit the RCA you received an alarm at the personnel monitor.

What is the NEXT action required?

A. Contact RP and await further instruction

B. Prevent other personnel from exiting the RCA.

C. Conduct a full body frisk using a Geiger-Muller probe.

D. Note the area of contamination and re-enter the monitor

Answer: D

Question 61 Info	
Topic:	61 - Generic 2.3.15
Comments:	Objective: ACAD 00-007.11 Reference: NISP-RP-006 K/A: Generic 2.3.15 2.9/3.1 K/A: Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. CFR: 41.12 Pedigree: New Level: Memory Comments: A - Incorrect. This is required after a second positive alarm is received. B - Incorrect. This is required to minimize the spread of contamination if RP determines contamination spread is likely. C - Incorrect. This is required to determine the location of the contamination after a second alarm is received. D - Correct. If a positive alarm for contamination is received, you must note the area of contamination and re-enter the portal. If the portal does not alarm again, no further action is required. **REQUIRED REFERENCES: NONE**

62 **ID: 27476** **Points: 1.00**

Unit 2 was at 100% power when 2A Reactor Recirc ASD cell bypass occurred.

TWO minutes later the RX scrams.

How will the Reactor Recirc pumps respond?

A. The A pump will remain at its current speed and B pump will runback to 30% speed.

B. Both A and B pumps will runback to 30% speed.

C. A will remain at current speed and B will runback to 68% speed.

D. Both A and B will runback to 68% speed.

Answer: A

Question 62 Info	
Topic:	62 - 202002.K3.05
Comments:	Objective: DRE202LN002.12.a Reference: DAN 902(3)-4 C-11 K/A: 202002 K3.05 3.2/3.3 K/A: Knowledge of the effect that a loss or malfunction of the RECIRCULATION FLOW CONTROL SYSTEM will have on following: Recirculation pump speed - plant specific CFR: 41.7 Safety Function: 1 Pedigree: New Level: High Comments: A - Correct. A recirc pump has entered speed hold and will remain at its current speed until the speed hold is reset or the pump is tripped. B - Incorrect. This would be correct if A RR pump were not in speed hold. C - Incorrect. This would be correct for a stator water cooling runback. D - Incorrect. This would be correct for a stator water cooling runback if A were not in speed hold per OP-DR-103-102-1001. **REQUIRED REFERENCES: None.**

63 **ID: 27477** **Points: 1.00**

Unit 2 was operating at 100% power.
A steam leak has developed in the HPCI room.

- Area temperatures are above MAX NORMAL.
- The US has directed operation of area coolers IAW DEOP 300-1.

What is the correct combination of coolers to start?

A. HPCI room cooler on Unit 2 **ONLY**,

B. Unit 2 and Unit 3 HPCI room coolers **ONLY**.

C. Unit 2 HPCI and Unit 2 LPCI room coolers **ONLY**.

D. Both Unit 2 and Unit 3 HPCI room coolers and ALL LPCI room coolers on Units 2 and 3

Answer: D

Question 63 Info	
Topic:	63 - 290001.G.2.4.6
Comments:	Objective: DRE223LN001.12.b Reference: OP-DR-103-102-1001, DEOP 300-1 K/A: 290001.2.4.6 3.7/4.7 K/A: Secondary Containment: Knowledge of EOP mitigation strategies. CFR: 41.10 Safety Function: 5 Pedigree: New Level: Memory Comments: A - Incorrect. This is plausible because of the location of the steam leak and the Unit HPCI room coolers will be started. B - Incorrect. This is plausible because U2 and U3 HPCI rooms are interconnected. Would be correct if the HPCI and LPCI rooms were interconnected. C - Incorrect. Plausible because although the leak is on Unit 2, all available room coolers must be started. Also plausible because the HPCI room is the location of the steam leak. D - Correct. All available room coolers must be started. The overall mitigative strategy is to operate all available room coolers when area temperatures are above Max Normal per OP-DR-103-102-1001. **REQUIRED REFERENCES: None**.

64 **ID: 27478** **Points: 1.00**

Both Units were operating at 100% power.
Fire header pressure reached 90 psig and is dropping at a rate of 5 psig/min.

If the trend is ~~not~~ never arrested and no operator action is taken, how will the plant respond?

A. In 2 minutes the 2/3 DFP will start **ONLY**.

B. In 2 minutes the U1 Screen wash pumps will start, the 2/3 DFP must be started manually.

C. The 2/3 DFP is already running. In 2 minutes the U1 DFP will start, and in 3 minutes the U1 Screen wash pumps will start.

D. In 2 minutes the 2/3 DFP will start. In 3 minutes the U1 DFP will start, and in 4 minutes the U1 Screen wash pumps will start.

Answer: D

Question 64 Info	
Topic:	64 - 286000.A4.04
Comments:	Objective: DRE286LN001.11 Reference: DOA 3900-01 K/A: 286000.A4.04 2.8/2.8 K/A: Ability to manually operate and/or monitor in the control room: Fire Main Pressure: Plant-Specific CFR: 41.7 Safety Function: 8 Pedigree: New Level: Memory Comments: A - Incorrect. Plausible because this will occur, but is not the only action to occur as pressure continues to drop. B - Incorrect. This plausible because the 2/3 DFP has an auto start function but must be manually secured. C - Incorrect. The 2/3 DFP has not yet auto started. This is plausible because both the setpoints and the trend must be used to determine the start sequence of equipment. D - Correct. When SW header pressure reaches 80 psig, the 2/3 DFP will auto start, at 75 psig, the U1 DFP will start, and at 70 psig the U1 screen wash pumps will start. **REQUIRED REFERENCES: None.**

65 **ID: 27479** **Points: 1.00**

Both Units are operating at 100% power with Control Room Ventilation "A" AHU running.

A loss of IA occurs.

Control room temperature is currently 75°F and rising 1°F/min.

TEN minutes later what is the status of CREVs?

A. "A" AHU is running **ONLY**.

B. "A" AHU and "A" RCU are running.

C. "B" AHU is running **ONLY**.

D. "B" AHU and "B" RCU are running.

Answer: D

Question 65 Info	
Topic:	65 - 290003.K1.06
Comments:	Objective: DRE288LN003.12.b Reference: DOA 5750-05, DAN 923-5 G-2 K/A: 290003.K1.06 2.6 / 2.7 K/A: Knowledge of the physical connections and/or cause-effect relationships between CONTROL ROOM HVAC and the following: Plant air systems CFR: 41.2 to 41.9 Safety Function: 9 Level: High Pedigree: New History: N/A Comments: A - Incorrect. "A" AHU will trip on low flow due to damper closure on loss of IA. This is plausible because it is partially correct with the trip of A and the auto start of B AHU. B - Incorrect. "A" AHU will trip on low flow due to damper closure on loss of IA. "A" RCU will not autostart. This is plausible because it is partially correct with the trip of A and the auto start of B AHU. C - Incorrect. This is plausible because this would be correct if control room temperature did not rise. D - Correct. With control room temp at 85°F "B" RCU will start. "B" AHU will auto start when "A" trips on low flow due to damper closure on loss of IA. **REQUIRED REFERENCES: None.**

66 **ID: 27480** **Points: 1.00**

Unit 2 was operating at 100% power with an IMD surveillance in progress.

An inadvertent PCIS Group 2 High drywell pressure actuation has occurred.

To what panel will the NSO proceed to monitor the status of drywell coolers?

A. At the 902-3 panel.

B. At the 902-5 panel.

C. At the 923-1 panel.

D. At the 923-5 panel.

Answer: D

Question 66 Info	
Topic:	66 - 295020.A1.02
Comments:	Objective: DRE223LN003.11 Reference: DAN 923-5 E-1 K/A: 295020.A1.02 3.2/3.2 K/A: Ability to operate and/or monitor the following as they apply to INADVERTENT CONTAINMENT ISOLATION: Drywell ventilation/cooling system CFR: 41.7 Safety Function: 5 and 7 Pedigree: New Level: Memory Comments: A - Incorrect. This is plausible because of the containment valve indications as well as containment pressure can be monitored from this location, however the function of drywell cooling cannot. B - Incorrect. This is plausible because of the annunciators for group isolations and reset switches. In addition drywell and torus pressure can be monitored from this location, however the function of drywell cooling cannot. C - Incorrect. This is plausible because the support functions of the coolers have indications on this panel. The proximity to the correct panel makes this very possible. D - Correct. This is the location of the DW cooler fan indications and control switches. K/A justification: Question tests an essential step of an applicant's ability to operate drywell coolers in the event of an inadvertent containment isolation. In order to monitor performance of the equipment it is necessary to locate the panel and the indications. **REQUIRED REFERENCES: None.**

67 **ID: 23852** **Points: 1.00**

Unit 2 was operating at 100% power.

MCC 29-2 experienced an overcurrent condition.

(1) What is the expected plant response?
(2) What is the required operator action?

A. (1) RPS Bus A will be de-energized;
(2) MANUALLY re-energize RPS Bus A from MCC 25-2 per DOP 500-03, REACTOR PROTECTION SYSTEM POWER SUPPLY OPERATION

B. (1) RPS Bus B will be de-energized;
(2) MANUALLY re-energize RPS Bus B from MCC 25-2 per DOP 500-03, REACTOR PROTECTION SYSTEM POWER SUPPLY OPERATION

C. (1) RPS Bus A will momentarily de-energize prior to AUTO transferring to the reserve power supply from MCC 25-2;
(2) Reset A channel Half Scram per DOP 500-7, INSERTION/RESET OF MANUAL HALF SCRAM.

D. (1) RPS Bus B will momentarily de-energize prior to AUTO transferring to the reserve power supply from MCC 25-2;
(2) Reset B channel Half Scram per DOP 500-7, INSERTION/RESET OF MANUAL HALF SCRAM

Answer: A

Question 67 Info	
Topic:	67 - 212000.A2.02
Comments:	Objective: DRE262LN005.12 Reference: DOA 0500-05, DOP 0500-03 K/A: 212000.A2.02 3.7 / 3.9 K/A: Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: RPS bus power supply failure CFR: 41.5 Safety Function: 7 Level: High Pedigree: Bank History: 2011 NRC Comments: A - Correct. Upon a failure (loss of power from MCC 29-2) of the 2B RPS MG Set, the RPS Bus A will become de-energized. This is a common misconception due to the cross powering of "B" MG Set to "A" Bus. The required action is to MANUALLY repower the bus from MCC 25-2. MCC 29-2 feeds RPS MG B which feeds RPS Bus A. There is no auto function to swap to alternate power. B - Incorrect. This is plausible because MCC 29-2 feeds RPS MG B which feeds RPS Bus A. RPS B Bus will not be affected. C - Incorrect. There is no auto function to swap to alternate power, An A channel half scram would have to be reset. This is plausible because of the number of backup power supplies and the normal and power seeking ABTs. D - Incorrect. There is no auto function to swap to alternate power, An B channel half scram would not occur. This is plausible because of the number of backup power supplies and the normal and power seeking ABTs. **REQUIRED REFERENCES: None.**

68 **ID: 27481** **Points: 1.00**

A transient has occurred resulting in a LOOP and Drywell pressure reaching a maximum of +4 psig.

- Drywell pressure is now 1 psig and steady
- RPV level is 18 inches and going down slowly
- RPV pressure is 230 psig and going down slowly
- Core Spray outboard injection valve 3-1402-24A is full Closed
- LPCI is aligned to Max Torus Cooling
- Core Spray inboard injection valve 3-1402-25A is full Open and will not close

To minimize EDG loading, the 3B CS pump has been placed is in PTL.

What actions are required to raise RPV water level using Core Spray?

A. Open the 24A valve, then throttle the 24A valve for level control.

B. Secure the 3A CS pump. Start the 3B CS pump to control RPV level.

C. Open the 24A valve. Place the 25A valve in PTL and throttle the 24A to control injection rate.

D. Place the 25A valve in PTL, then open the 24A valve. Then reopen the 25A valve and throttle the 24A valve to control level.

Answer: B

Question 68 Info	
Topic:	68 - 209001.K3.01
Comments:	Objective: DRE209LN001.06 Reference: DOP 1400-02 K/A: 209001.K3.01 3.8 / 3.9 K/A: Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on the following: Reactor water level CFR: 41.7 Safety Function: 2 & 4 Level: High Pedigree: Bank History: N/A Comments: A - Incorrect. This is plausible because with the 25 vlv open, opening the 24 vlv would provide a flowpath. An interlock exist that requires the 3-1402-25A must be full closed prior to opening the 3-1402-24A. B - Correct. Once the 3-1402-25A is closed the 3-1402-24A can be opened. Once the 24A is open then the 25A can be re-opened for injection. Below 350 psig Reactor pressure, both valves can be opened simultaneously, however, an interlock on these valves requires the 25 valve to be closed before the 24 valve can be opened. After the 24 valve is open, the 25 valve can be opened. Example: <350 psig, 25 valve open, 24 valve closed. In order to get both valves open: CLOSE the 25 valve, OPEN the 24 valve, then open the 25 valve. Because the 25A cannot be closed then the interlock will remain in effect. The only way to raise level is to swap pumps. C - Incorrect. The 3-1402-24A cannot be opened until the 3-1402-25A does not have a PTL feature. The CS pump suction valve has a PTC feature (same function as PTL). D - Incorrect. If the 3-1405-25A could be closed this would be the correct answer. Note: the 1402-24A/B valves cannot be throttled from the main control room. Core Spray logic does not seal in and thus not present with DW pressure below 2 psig. **REQUIRED REFERENCES: None.**

69 **ID: 27472** **Points: 1.00**

Unit 2 was operating at 100%
IMD reports the following LPRMS are out of tolerance:

- 11 LPRM inputs into APRM 1
- 8 LPRM inputs into APRM 3
- 8 LPRM inputs into APRM 5
- 11 LPRM inputs into APRM 6

What actions are required?

A. Bypass APRM 1 **ONLY**.

B. Bypass APRMs 1 and 6.

C. Insert a 1/2 scram on RPS channel B

D. Insert a full scram.

Answer: B

Question 69 Info	
Topic:	69 - 215005.G.2.1.20
Comments:	Objective: DRE215LN005.12.b Reference: DIS 0700-21 DOP 0700-04 K/A: 215005.G.2.1.20 4.6 / 4.6 K/A: Average Power Range Monitor/Local Power Range Monitor: Ability to interpret and execute procedure steps. CFR: 41.10 Safety Function: 7 Level: High Pedigree: New History: N/A Comments: A - Incorrect. This would be correct if APRM 1 only had 20 LPRM inputs B - Correct. More than 50% of the LPRM inputs to APRM 6 and APRM 1 are unavailable. Therefore the APRM must be placed in bypass. C - Incorrect. This would be correct if insufficient LPRM inputs were available to 2 APRMs in RPS channel B. This plausible because if both APRMs fed into the same RPS channel a 1/2 scram would be required. D - Incorrect. This would be correct if all 4 APRMs were inoperable. This is plausible because if it is determined that neither A or B channel of RPS has enough APRMs available a full scram would be required. **REQUIRED REFERENCES: None.**

70 **ID: 23876** **Points: 1.00**

Unit 3 was operating at 100% power with Bus 35 O.O.S. for maintenance.

A fire caused an overcurrent condition on Bus 38.

How will this affect the plant battery systems?

A. The U3 ESS Bus transfers to its DC source.

B. The 3B 250 VDC BOP battery charger has lost its AC source.

C. The U3 125VDC battery charger 3 has lost its AC power source.

D. All Unit 3 24/48 volt battery chargers have lost their AC power source.

Answer: D

Question 70 Info	
Topic:	70 - 263000.A1.01
Comments:	Objective: DRE263LN003.12 Reference: DOP 6800-02, DOA 6900-01, DOP 6700-11 K/A: 263000.A1.01 2.5/2.8 K/A: Ability to predict and/or monitor changes in parameters associated with operation the D.C.ELECTRICAL DISTRIBUTION controls including: Battery charging/discharge rate. CFR: 41.5 Safety Function: 6 Level: High Pedigree: Bank History: 2011 NRC Explanation: All 4 (2 positive and 2 negative) chargers are powered from the Instrument Bus. With Bus 35 OOS, MCC 35-2 has no power. With Bus 38 going overcurrent, MCC 38-2 loses power. Without these two MCCs, the Instrument Bus has no power, and subsequently all 4 chargers lose AC power. A. Incorrect The primary power supply to the ESS Bus (Bus 39) is not lost, therefore it will not transfer to its DC source (250 VDC). B. Incorrect 3B 250 VDC BOP battery charger is powered from Bus 36. C. Incorrect The U3 125 VDC charger is powered from MCC 39-2 and has not lost power (3A is powered from MCC 38-2 and would be de-energized). D. Correct All 4 (2 positive and 2 negative) chargers are powered from the Instrument Bus. With Bus 35 OOS, MCC 35-2 has no power. With Bus 38 going overcurrent, MCC 38-2 loses power. Without these two MCCs, the Instrument Bus has no power, and subsequently all 4 chargers lose AC power. **REQUIRED REFERENCES: None.**

71 **ID: 27482** **Points: 1.00**

Why is water level maintained in the Torus Downcomers?

To ensure adequate...

A. NPSH to HPCI pump.

B. NPSH to LP ECCS pumps.

C. condensation of HPCI exhaust steam.

D. condensation of steam discharged from the drywell into the Torus.

Answer: D

Question 71 Info	
Topic:	71 - 223001.K.5.03
Comments:	Objective: DRE223LN001.03.h Reference: EPG Bases B-7-48 K/A: 223001.K5.03 2.8/2.9 K/A: Knowledge of the operational implication of the following concepts as they apply to Primary Containment and Auxiliaries: Downcomer operation CFR: 41.5 Safety Function 5 Level: Memory Pedigree: New Comments: A - Incorrect. HPCI suction is normally aligned to the CST. The Torus is an alternate suction source. Plausible because HPCI can be lined up to the torus and without water in the downcomer area steam could pass to drywell space. B - Incorrect. Torus level provides adequate NPSH to LP ECCS pumps vice level in the downcomers. NPSH to LP ECCS pumps restrictions are based on a function of Torus bottom pressure and torus temperature. Vortexing would not occur at maximum LP ECCS pump operation until torus level was below 10.5 feet. The downcomers are empty at 11 feet. C - Incorrect. HPCI exhaust is located at 12 feet in the Torus. Plausible because HPCI can be lined up to the torus and without water in the downcomer area steam could pass to drywell space D - Correct. In the event of a steam leak in the drywell, the steam would be forced into the Torus and the level in the downcomers will prevent overpressurization of the Torus airspace. **REQUIRED REFERENCE: None.**

72 **ID: 27483** **Points: 1.00**

Unit 2 is operating at 100% power.

- 2B Instrument Air Compressor is OOS.
- 3C Instrument Air Compressor is lined up to Unit 3.

Annunciator 923-1 F-4, U2 INST AIR PRESS LO, alarmed.

Subsequently, IA Pressure has returned to normal.

What in-plant action must be directed to return Unit Air Systems to normal alignment?

A. Close the 2-4701-501A, U2 SERV AIR TO INST AIR X-TIE MANUAL ISOL VLV, North of 2A IA dryer.

B. Verify 2-4608-500, U2 TO U1 SERV AIR XTIE BYP VLV, closed across for AEER Halon cylinders.

C. Close AO 2-4701-500, U2 SERV AIR TO INST AIR X-TIE VLV, by depressing RESET on control box West of U2 Main IA Receiver.

D. Close AO 2-4701-500, U2 SERV AIR TO INST AIR X-TIE VLV, by depressing RESET on control box North of 2B Instrument Air Compressor.

Answer: C

Question 72 Info	
Topic:	72 - 295019.G.2.1.30
Comments:	Objective: DRE278LN001.08 Reference: DOA 4700-01 K/A: 295019 G.2.1.30 4.4/4.0 K/A: Ability to locate and operate components, including local controls. Instrument Air Loss CFR: 41.7 Safety Function: 8 Level: High Pedigree: New History: N/A A. Incorrect The U2 Service air to instrument air manual isolation vlv is a normally open valve that would not be repositioned. This is plausible because this would be correct if pressure did not return to normal. B. Incorrect Plausible because per DAN 923-1 F-4 U2 Instrument air pressure LO, if U2 SA is crosstied to U1 the the U2 to U1 Service Air Xtie Byp Vlv must be verified closed. But, this is not part of a normal lineup. C. Correct With the U2 Instrument Air Pressure Lo alarm in the U2 service air to instrument air auto x-tie opens. The reset button at the Main Instrument Air receiver must be depressed to return system lineup to normal D. Incorrect the action is correct. The location is incorrect but plausible because the U2 Service air to instrument air xtie vlv is located near the 2A IAC not the 2B IAC. **REQUIRED REFERENCES: None.**

73 **ID: 24229** **Points: 1.00**

Unit 2 was at rated power when a control power fuse blew inside a Control Room Panel. The Shift Manager has declared that the event did NOT create an emergency situation. A replacement fuse has been located and determined to be like-for like.

IAW CC-AA-206, Fuse Control, which of the following is correct?

A. The Operator may NOT install the fuse.

B. ONLY EMD may install the fuse with NO further engineering evaluation.

C. The Operator may install the fuse with NO further engineering evaluation.

D. The Operator may install the fuse ONLY after the fuse is evaluated by the Fuse Engineer.

Answer: C

Question 73 Info	
Topic:	73 - Generic 2.14
Comments:	Objective: 29900LK081 Reference: CC-AA-206 K/A: Generic 2.2.14 3.9 / 4.3 K/A: Knowledge of the process for controlling equipment configuration or status. CFR: 41.10 Safety Function: N/A Level: Memory Pedigree: Bank History: 2015 NRC Comments: A - Incorrect. This is plausible because the maintenance department is assigned the responsibility to install fuses per Work Orders and Work Requests, but this does not preclude operations department from replacing fuses in plant equipment. B - Incorrect. This is plausible because a maintenance/engineering evaluation is required to verify fuses not assigned an EPN in black box systems (AVR, DEHC). Control room panel fuses are assigned EPNs and identified in station drawings. C - Correct. Since the plant was at rated power when a control room fuse blew and the new fuse is like-for like with the old fuse IAW the reference, Operations may install the fuse with no further engineering evaluation required. D - Incorrect. This is plausible because this would be correct for any non-emergency situation if the fuse were not like for like. **REQUIRED REFERENCES: None**

74 **ID: 27484** **Points: 1.00**

Unit 3 is operating at 100% power when a spurious Group 1 isolation occurs.

Which of the following will occur and cause Reactor Building radiation levels to rise?

A. IC Initiation

B. RBV Isolation

C. HPCI Initiation

D. RWCU Isolation

Answer: A

Question 74 Info	
Topic:	74 - 223002 K3.04
Comments:	Objective: DRE223LN005.12.a Reference: DAN 902-5 D-4, DAN 902-4 A-15, UFSAR 15.2.4.1.3 K/A: 223002 K3.04 3.4/3.6 K/A: Knowledge of the effect that a loss or malfunction of the PCIS/NSSSS will have on following: Reactor building radiation level. CFR: 41.7 Safety Function: 5 Level: High Pedigree: New History: N/A A. Correct A Scram at rated power due to a Group 1 Isolation would cause reactor pressure to increase to the point that Isolation Condenser would initiate causing area radiation levels to increase. B. Incorrect Plausible because RBV will isolate due to a Group 2 Isolation on Rx Water Lvl, but this will decrease Rx Bldg radiation by starting SBGT in the Turbine Bldg. C. Incorrect Feedwater level control will not take level below -59 inches. Without a steam leak DW pressure will not exceed even if a Relief valve momentarily lifts. This is plausible because if HPCI initiation were to occur, RB radiation levels would rise. D. Incorrect Plausible because a Group 3 isolation will occur when level drops to +8 inches; however, this will bottle up RWCU system and not raise Rx Bldg radiation levels. **REQUIRED REFERENCES: None.**

75 **ID: 27486** **Points: 1.00**

Unit 3 was operating at 100% power, when a HPCI steam line ruptured. Attempts to isolate the leak have been unsuccessful.

The following parameters are reported:

- Drywell Temperature is 150˚F.
- HPCI pump room temperature is 200°F
- Clean Up Demin Room temperature is 187°F
- HPCI Cubicle radiation level is 1400 mr/hr.
- West LPCI Pump radiation level is 1000 mr/hr.
- West CRD module radiation level is 1000 mr/hr.

Based on parameters given, which DEOP entry thresholds have been exceeded?

1) DEOP 100, RPV CONTROL
2) DEOP 200-1, PRIMARY CONTAINMENT CONTROL
3) DEOP 300-1, SECONDARY CONTAINMENT CONTROL
4) DEOP 300-2, RADIOACTIVITY RELEASE CONTROL

A. 3 **ONLY**

B. 1 AND 3 **ONLY**

C. 2 AND 3 **ONLY**

D. 3 AND 4 **ONLY**

Answer: A

Question 75 Info	
Topic:	75 - 295033.G.2.4.2
Comments:	Objective: 29502LP017 Reference: DEOP 300-1 K/A: 295033.G.2.04.02 4.5 / 4.6 K/A: High Secondary Containment Area Radiation Levels: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions. CFR: 41.7 Safety Function: 9 Level: High Pedigree: New Comments: A - Correct. Only the threshold of DEOP 300-1 has been exceeded. B - Incorrect. This is plausible if the candidate determines 2 areas are above max safe and a reactor scram is required. C - Incorrect. This is plausible if the candidate does not correctly recall the DEOP entry conditions for DEOP 200-1 D - Incorrect. This is plausible if the candidate assumes that all DEOP 300-1 and 300-2 are to be executed simultaneously (They are on the same board in the MCR), since all legs of entered DEOPs must be executed regardless of entry condition. **REQUIRED REFERENCES: DEOP 0300-01**