EXAMINATION ANSWER KEY

Dresden Station 2017-301 NRC Exam

1 **ID: 27351** **Points: 1.00**

Unit 3 was operating at near rated power when the 3A Recirc Pump tripped. The following indications are observed:

- Reactor power is 60%.
- Total Core Flow is 43%.
- Flow Control Line is 98%.
- 3B Recirc Pump speed is 65%.
- OPRM GREEN lights are NOT illuminated.
- Feedwater temperature is 325°F and dropping slowly.

Which of the following actions is required?

(Reference Provided)

A. Insert control rods to exit the BSP Proximity Region.

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

C. Raise 3B Recirc pump speed to exit the BSP Proximity Region.

D. Insert CRAM Rods per DGP 03-04, CONTROL ROD MOVEMENTS, to reduce Rx power to 35 to 40%.

Answer: B

Question 1 Info	
Topic:	01 - 295001.K1.02
Comments:	Objective: 29501LK045 Reference: DOA 0202-01, DOA 0500-01, DGP 03-03, DGA-02, DOP 0700-10 K/A: 295001.K1.02 3.3/3.5 K/A: Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Power/flow distribution. CFR: 41.7 Safety Function: 1 & 4 Level: High Pedigree: New Comments: A - Incorrect. This action is correct for inadvertent entry into the unstable power-flow region and is not a priority given the conditions in the stem. B - Correct. Per the DOA 0202-01 flowchart with running recirc pump speed $\leq$ 68% and FCL $\geq$ 67.8% the correct action is to immediately scram the reactor and enter DGP 02-03. The OPRMs are incapable of initiating a trip based on core oscillations as indicated by green light not illuminated on 903-5 panel C - Incorrect. This action (with QNE evaluation) is correct for inadvertant entry into the unstable power-flow region. D - Incorrect. This is plausible if the candidate incorrectly executes the DOA 0202-01 flowchart. **REQUIRED REFERENCES: DOA 0202-01 pages 3 and 4**

2 **ID: 27352** **Points: 1.00**

Unit 2 was operating at rated power when power was lost to the INSTRUMENT BUS.

How is the Isolation Condenser immediately affected?

A. A complete PCIS Group V isolation will occur.

B. A half PCIS Group V isolation signal will be received.

C. The 2-1301-17 and 2-1301-20, VENT VLV(s), valves will close **ONLY**.

D. The 2-1301-17 and 2-1301-20, VENT VLV(s), valves will close. The 2-1301-3, RX INLET ISOL, valve will open.

Answer: C

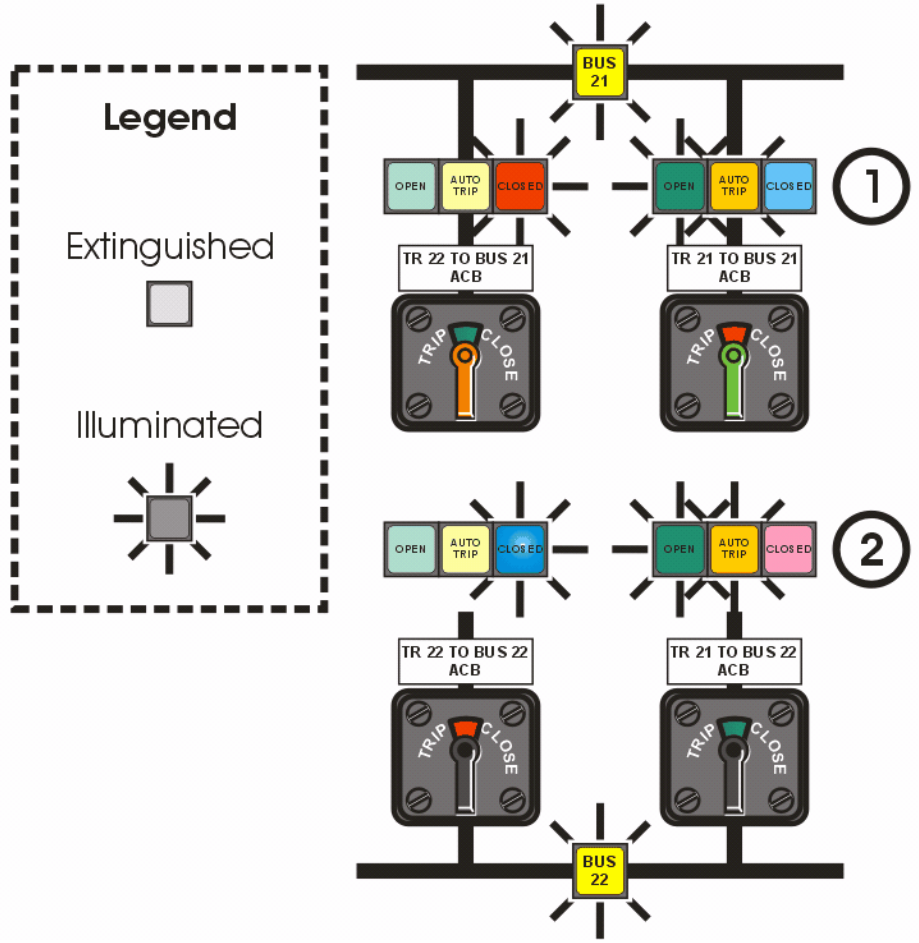
Question 2 Info	
Topic:	02 - 295003.K2.05
Comments:	Objective:26207LK001 Reference: DOA 6800-01, DOA 4700-01, 12E-2506, 12E-2502, 12E-2512 K/A: 295003.K2.05 3.8*/4.0 K/A: Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: Isolation Condenser CFR: 41.7 Safety Function: 6 PRA: Yes Level: Memory Pedigree: New Comments: A - Incorrect. PCIS Group V will occur on a loss of DC not AC. B - Incorrect. This is correct for PCIS Group I given the stem conditions. C - Correct. On a loss of instrument bus, the 2-1301-17&20 valves go closed on a loss of power to the solenoids D - Incorrect. This is the system response to an initiation signal. **REQUIRED REFERENCES: None.**

3 **ID: 13789** **Points: 1.00**

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

Two minutes have elapsed.

On the drawing below, the indication for the breakers in Group 1 is ___(1)___ and the indication for the breakers in Group 2 is ___(2)___ .



A. (1) Correct;
(2) Correct

B. (1) Correct;
(2) Incorrect

C. (1) Incorrect;
(2) Correct

D. (1) Incorrect;
(2) Incorrect

Answer: B

Question 3 Info	
Topic:	03 - 295005.A1.07
Comments:	Objective: DRE245LN004.06 Reference: DOA 6000-01 K/A: 295005.A1.07 3.3/3.3 K/A: Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP: A.C. electrical distribution. CFR: 41.7 Level: High Pedigree: Bank History: 2007 NRC, 2013 Cert Explanation: The candidate must have the knowledge that in a full power lineup, the UAT (TR-21) supplies Buses 21 and 23, while the RAT (TR-22) supplies Buses 22 and 24. When a Turbine/Generator trip occurs, the MFBs (from TR-21) on Buses 21 and 23 trip open and subsequently the RFBs (from TR-22) close into Buses 21 and 23 (fast transfer). On the drawing: ♦ The lineup for Bus 21 (breaker lineup 1) is correct because TR-21 feed would have tripped and TR-22 feed would have closed in (fast transfer). ♦ The lineup for Bus 22 (breaker lineup 2) is only half correct because the TR-21 feed is not normally closed and would NOT be tripped, but the TR-22 feed would be NORMALLY closed in. **REQUIRED REFERENCES: None.**

4 **ID: 23608** **Points: 1.00**

Given the following conditions on Unit 3:

- Unit 3 Startup in progress
- Reactor mode switch in STARTUP
- 2 1/2 Bypass Valves are open
- Turbine Throttle pressure is 920 psi and steady

The Unit 3 NSO announces a full reactor scram has occurred.

Which of the following caused the full scram?

A. MSIV Closure - 2 steam lines with both valves closed

B. Turbine Stop Valve Closure - 3 or more valves closed

C. Scram Discharge Volume High Level - 1 volume flooded

D. IRM INOP Trip – IRMs 15 through 18 experienced loss of power

Answer: C

Question 4 Info	
Topic:	04 - 295006.A2.06
Comments:	Objective: 212LN001.06 Reference: 12E-2464 – 12E-2466, DAN 902(3)-5 D-14 K/A: 295006.A2.06 3.5/3.8 K/A: Ability to determine and/or interpret the following as they apply to SCRAM: Cause of reactor SCRAM CFR: 41.10 Safety Function: 1 Pedigree: Bank Level: High Comments: A - Incorrect. With the mode switch not in run, the MSIV closure scram signal is bypassed. B - Incorrect. This scram is bypassed when < 38.5% power. The conditions in the stem are sufficient to determine power is < 38.5%. C - Correct. Each SDIV has instruments that feed into both RPS channels therefore; one SDIV with water in it will give scram signals to both RPS A and B channels resulting in a full scram. SDV bypass switch only works when mode switch is in Refuel or Shutdown. D - Incorrect. These are all inputs to RPS channel B and at worse would give only a half scram. **REQUIRED REFERENCES: None.**

5 **ID: 27424** **Points: 1.00**

Which one of the following describes the reason for placing the ISOL COND RX INLET VLV 2-1301 local selector switch on panel 2202-76 in **VLV1** position?

A. To disconnect local control circuits from the valve.

B. To disconnect Control Room control circuits from the valve.

C. To isolate wire runs to meet divisional physical separation criteria.

D. To prevent overloading the associated DG during a design basis LOCA.

Answer: B

Question 5 Info	
Topic:	05 - 295016.G.1.28
Comments:	Objective: 29501LP083 Reference: DSSP 0100-CR, 12E-2507B K/A: 295016.G 2.1.28 4.1/4.1 K/A: Knowledge of the purpose and function of major system components and controls. Safety Function: 7 PRA: Yes Level: Memory Pedigree: Bank History: ILT 14-1 NRC Explanation: A - Incorrect. Operation of this switch does not change the physical routing or location of equipment B - Correct. Operation of this switch removes the control circuit from the Main Control Room (in the event of fire or evacuation) C - Incorrect. Operation of this switch does not change the physical routing or location of equipment D - Incorrect. This switch swaps valve power from MCC 28-1 to or from 38-1 (Both of which are powered from the 2/3 EDG. **REQUIRED REFERENCES: None.**

6 **ID: 24251** **Points: 1.00**

Unit 3 was operating at near rated power, when Bus 33-1 tripped on overcurrent.

The 3A Pumpback compressor will have . . . . .

A. NO cooling water flow supplied to it.

B. FULL cooling water flow supplied to it.

C. partial cooling water flow supplied to it from 3A RBCCW Pump ONLY.

D. partial cooling water flow supplied to it from 3B RBCCW Pump ONLY.

Answer: B

Question 6 Info	
Topic:	06 - 295018.K1.01
Comments:	Objective: 223LN001.03 Reference: DOA 3700-01, DOP 1600-19, M-20, M-353 K/A: 295018.K1.01 3.5 / 3.6 K/A: Knowledge of the operational implications of the following concepts as they apply to Partial or Total Loss of CCW: Effects on component / system operations. PRA: No Safety Function: 8 CFR: 41.8 to 41.10 Level: Memory Pedigree: Bank History: ILT 14-1 NRC Explanation: A - Incorrect. Loss of U3 RBCCW has no effect on Unit 2 or Unit 3 Pumpback air compressors B - Correct. When Bus 33-1 is de-energized, the 3A RBCCW pump would lose electrical power, but there is no loss of cooling to the Pumpbacks. C - Incorrect. Although the 3A RBCCW pump will trip, pumpback air compressors on Unit 2 AND Unit 3 are cooled by Unit 2 RBCCW D - Incorrect. 3B RBCCW pump power is not effected by the transient. Additionally, Unit 3 RBCCW does not provide cooling to ANY pumpback air compressors Justification of K/A: This question meets the K/A because a partial loss of CCW has occurred on Unit 3 however, the Unit 3 Pumpback air compressors are cooled by Unit 2 RBCCW which is not effected. This examines the knowledge of the effect (or lack thereof) on Unit 3 pumpback air compressor operations. If Unit 2 experienced a loss of RBCCW, Unit 2 and 3 pumpback air compressors would lose cooling. This question also tests the differences between the Units at Dresden Station, as cooling water for the Unit 3 Pumpback air compressors can ONLY be supplied from UNIT 2 (not Unit 3). **REQUIRED REFERENCES: None.**

7 **ID: 27354** **Points: 1.00**

Given a complete loss of **Unit 2** INSTRUMENT AIR header pressure, how will the HPCI system be affected?

2-2301-64, U2 HPCI TURB SV ABOVE SEAT DRN AOV will...

A. fail OPEN.

B. fail CLOSED.

C. remain CLOSED.

D. remain OPEN.

Answer: B

Question 7 Info	
Topic:	07 - 2950193.K2.17
Comments:	Objective: 278001LN.12 Reference: DOA 4700-01 K/A: 295019.K2.17 2.7/2.7 K/A: Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: High pressure coolant injection: Plant Specific CFR: 41.7 Safety Function: 8 PRA: Yes Pedigree: New Level: Memory Explanation: A - Incorrect. This valve fails closed on a loss of instrument air. B - Correct. This valve is normally open but fails closed via spring pressure upon a loss of instrument air. C - Incorrect. This valve will fail closed upon a loss of instrument air. D - Incorrect. This valve is normally open. Note: Not all HPCI AOVs change position on a loss of instrument air. The candidate is required to recall the normal position of the valve and in addition determine the failure mode upon a loss of instrument air. **REQUIRED REFERENCES: None.**

8 **ID: 27355** **Points: 1.00**

A hydraulic ATWS has occurred and the following conditions exist on Unit 2:

- RPV pressure is being controlled with the ERVs
- PCIS Group I, II, III and V isolations have occurred.
- Torus Bulk Temperature is 94°F and rising 1°F/min
- SBLC is NOT injecting

When is SBLC injection **FIRST REQUIRED** to preclude HCTL from being exceeded?

A. In 1 minute.

B. In 11 minutes.

C. In 16 minutes.

D. In 27 minutes.

Answer: C

Question 8 Info	
Topic:	08 - 295037.A2.04
Comments:	Objective: Reference: EPG B-18-4, DEOP 400-05 K/A: 295037.A2.04 4.0*/4.1* K/A: Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Suppression pool temperature CFR: 41.10 Safety Function: 1 Level: High Pedigree: New Explanation: A - Incorrect. This corresponds to 95°F bulk torus temperature. This is a DEOP 200-1 entry condition. B - Incorrect. This corresponds to 105°F bulk torus temperature. This is allowable limit for Torus temperature with testing in progress. C - Correct. When torus temperature reaches 110°F SBLC must be injected to allow hot shutdown boron weight to be injected before HCTL is reached. (BIIT) D - Incorrect. This corresponds to 121°F bulk torus temperature which would require depressurizing the RPV to < 150 psig within 12 hours. **REQUIRED REFERENCES: None**

9 **ID: 27356** **Points: 1.00**

Unit 2 was operating at rated power.

250VDC MCC 2A de-energized due to a fault.

An RPV water level transient occurred resulting in RPV level at -2" lowering at 1 inch every 2 minutes.

Reactor pressure is 920 psig and lowering 10 psig every 5 minutes.

Which of the following actions will raise reactor water level?

A. Initiate HPCI

B. Maximize CRD injection

C. Inject SBLC for level control

D. Start both core spray pumps

Answer: B

Question 9 Info	
Topic:	09 - 295031.A1.10
Comments:	Objective: Reference: TSG-2 K/A: 295031.A1.10 3.6/3.7 K/A: Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL: Control Rod Drive CFR: 41.7 Safety Function: 2 Level: High Pedigree: New Explanation: A - Incorrect. HPCI will not start due to 250VDC MCC 2A being de-energized, power supply to the aux oil pump. B - Correct. Based on the RPV level trend, maximizing injection with CRD pumps will result in RPV injection of 200 gallons/minute. 200 gallons equates to 1" RPV level. Therefore every 10 minutes RPV level will increase by 3" C - Incorrect. The capacity of the SBLC pumps is 40 gpm. Their combined output will not reverse the level trend. D - Incorrect. With the reactor starting at rated power, RPV pressure will be above the shutoff head of the core spray pumps (approximately 300 psig). **REQUIRED REFERENCES: None.**

10 **ID: 27357** **Points: 1.00**

Unit 2 was operating at rated power.
A transient occurred resulting in the following:

- Drywell Pressure is 1.22 psig and slowly lowering
- RPV Level is +30 inches and steady
- Feed Reg valves are operating in Auto
- Torus Level is 12.5 feet and lowering 1 inch every 5 minutes

Why is a reactor scram performed prior to Torus Water level reaching the downcomer opening?

A. To ensure boron injection requirements are met.

B. To prevent HPCI exhaust from pressurizing the suppression chamber.

C. To ensure the reactor is shutdown prior to Emergency Depressurization.

D. To ensure adequate NPSH for ECCS pumps after Emergency Depressurization is performed.

Answer: C

Question 10 Info	
Topic:	10 - 295030.K3.06
Comments:	Objective: 29502LK003 Reference: DEOP 200-1, EPG B-7-51 K/A: 295030.K3.06 3.6/3.8 K/A: Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: Reactor SCRAM CFR: 41.5 Safety Function: 5 Level: High Pedigree: New Explanation: A - Incorrect. This is the reason for a reactor scram if Torus Temperature were of concern. B - Incorrect. HPCI exhaust will be uncovered at 12 feet. HPCI is not running given the stem conditions. The EPGs require securing HPCI if not needed for core cooling at 12 feet. C - Correct. The direction to insert a reactor scram is based on addressing reactor power prior to the need for emergency depressurization. D - Incorrect. Adequate NPSH for ECCS pumps is a function of torus temperature and torus bottom pressure. **REQUIRED REFERENCES: None.**

11 **ID: 27423** **Points: 1.00**

Unit 2 is operating at near rated power, with the 2A 125 VDC Battery Charger removed from service for maintenance.

Then the following occurred:

Unit 2 experienced a loss of off-site power (LOOP).
The U2 125 VDC Battery Charger was damaged during the transient.
The Reactor Building is inaccessible due to a steam leak
Turbine Building loads were load shed within DGA time requirements

What is the **MINIMUM** time, after the LOOP, 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.K3.01
Comments:	Objective: 29501LK083 Reference: DGA-13 K/A: 295004.K3.01 2.6/3.1 K/A: Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Load shedding: Plant-Specific CFR: 41.5 Safety Function: 6 PRA: Yes Level: Memory Pedigree: Bank Pedigree: 2015 NRC Explanation: 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 would be correct if the candidate assumed a 4 hour capacity upon completion of load shedding. C. Incorrect - This would be correct if RX BLDG Distribution Panel loads were load shed. Not possible given conditions in stem. D. Incorrect - This would be correct if the candidate assumed a 6 hour capacity upon completion of load shedding. **REQUIRED REFERENCES: None.**

12 **ID: 27359** **Points: 1.00**

Core alterations are in progress on Unit 2 when:

- Control Rod C-10 drifts fully out of the core.
- Control Rod C-10 cell contains irradiated fuel.

Initially, which neutron monitor would indicate the greatest change?

A. SRM 21

B. SRM 22

C. SRM 23

D. SRM 24

Answer: A

Question 12 Info	
Topic:	12 - 295023.A1.06
Comments:	Objective: DRE215LN004.04 Reference: UFSAR Figure 7.6-3 K/A: 295023.A1.06 3.3/3.4 K/A: Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Neutron Monitoring CFR: 41.7 Safety Function: 8 Pedigree: New Level: High Explanation: A - Correct. SRM 21 is located in the Northwest quadrant of the core. B - Incorrect. SRM 22 is located in southwest quadrant of the core. C - Incorrect. SRM 23 is located in the northeast quadrant of the core. D - Incorrect. SRM 24 is located in the southeast quadrant of the core. SRM locations are commonly confused. This question is higher order because it requires the knowledge of CRD locations within the RPV and correlation to SRM detector locations. **REQUIRED REFERENCES: None.**

13 **ID: 9606** **Points: 1.00**

Unit 3 is operating at rated power.

Torus temperature has increased to 112ºF

Operators are required to _____(1)_____ to ensure that _____(2)_____ during a DBA LOCA.

A. (1) scram the reactor only
(2) sufficient net positive suction head is maintained for ECCS pumps.

B. (1) scram the reactor only
(2) the peak primary containment pressures and temperatures do NOT exceed maximum allowable values

C. (1) scram the reactor and emergency depressurize
(2) sufficient net positive suction head is maintained for ECCS pumps.

D. (1) scram the reactor and emergency depressurize
(2) the peak primary containment pressures and temperatures do NOT exceed maximum allowable values

Answer: B

Question 13 Info	
Topic:	13 - 295026.K1.02
Comments:	Objective: 29502LK011 Reference: EPG B-7-18 K/A: 295026.K1.02 3.5/3.8 K/A: Knowledge of the operational implications of the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Steam condensation CFR: 41.8 Safety Function: 5 Pedigree: Bank Level: High Explanation: A - Incorrect. NPSH is not affected at this temperature B - 3.6.2.1 action D requires that with torus average temperature greater than 110°F and reactor power greater than 1%, immediately place the mode switch in shutdown. This is done to ensure adequate margin for the torus to condense the steam from a full reactor blowdown from normal operating pressure. C - Incorrect. Emergency Depressurization is not required until HCTL violation has occurred. D - Incorrect. Emergency Depressurization is not required until HCTL violation has occurred. **Required References: None**

14 **ID: 27360** **Points: 1.00**

Unit 2 refueling outage is in progress with the following conditions present:

- Reactor Coolant Temperature is 155°F
- Cooldown is in progress
- 2 trains of SDC are aligned to the RPV
- Drywell Coolers are running in a normal lineup

MO 2-3704, RBCCW OUTLET VLV fails closed.

How will the plant respond?

Reactor coolant temperature will ____(1)____ and drywell temperature will ____(2)____.

A. (1) LOWER
(2) RISE

B. (1) RISE
(2) LOWER

C. (1) RISE
(2) RISE

D. (1) LOWER
(2) LOWER

Answer: B

Question 14 Info	
Topic:	14 - 295021.K3.03
Comments:	Objective: 208LN001.02 Reference: DOP 1000-03, DOA 3700-01, M-20 K/A: 295021.K3.03 2.9/2.9 K/A: Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING: Increasing drywell cooling CFR: 41.7 Safety Function:4 Pedigree: New Level: High Explanation: A - Incorrect. This would be correct for a failure of the drywell cooling isolation valve. MO-2-3704 controls the flow of RBCCW to the SDC Heat exchangers. With the loss of heat sink, coolant temperatures will rise. B - Correct. While flow of RBCCW is lost to loop 2 (SDC HX), flow will increase to all other RBCCW loads. With no change to RBCCW TCV, outlet temperature for all other RBCCW loads will lower. C - Incorrect. This is plausible if the candidate assumes all loads in the drywell are lost. D - Incorrect. This would be correct for an isolation of RBCCW Loop 3, which would remove cooling from the SDC pumps. **REQUIRED REFERENCES: None.**

15 **ID: 27361** **Points: 1.00**

Unit 2 was operating at rated power when Annunciator 902-4 F-16, CORE THERMAL PWR HI, alarmed.

The NSO reports: 8 hour Average CORE THERMAL POWER (CTP) (FCL_SELCTP_A8) is NOT in alarm.

The NSO reports the following trends for RPV Pressure:

TIME	RPV Pressure (psig)
00:02	1002.0
00:04	1003.0
00:06	1004.0
00:08	1005.0

Assuming the rate of RPV pressure change remains constant, when is the **LATEST** time that actions to lower pressure can be completed to comply with Technical Specification 3.4.10, Reactor Steam Dome Pressure?

A. 00:08

B. 00:10

C. 00:23

D. 01:08

Answer: C

Question 15 Info	
Topic:	15 - 295025.G.2.1.07
Comments:	Objective: 20102LK021 Reference: DAN 902(3)-4 F-16, TS 3.4.10 K/A: 295025.G.2.1.07 4.4/4.7 K/A: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation: High Reactor Pressure CFR: 41.5 Safety Function: 3 PRA: Yes Pedigree: New Level: High Explanation: A - Incorrect. This would correspond to the RPV pressure at the TS limit. B - Incorrect. This would not be the first required time. This is plausible because this is the first time after RPV pressure exceeds the action threshold. C - Correct. RPV pressure must be lowered to ≤ 1005 psig within 15 minutes of exceeding 1005 psig. Reactor power reduction will reduce RPV pressure. D - Incorrect. This corresponds to the 1 hour time from exceeding TS 3.4.10 **REQUIRED REFERENCES: None.**

16 **ID: 13969** **Points: 1.00**

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

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

Which of the following breakers (or breaker) will receive a Local Breaker Backup TRIP SIGNAL?

A. 345Kv BT 1-7 only

B. 345Kv BT 4-5 only

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

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

Answer: B

Question 16 Info	
Topic:	16 - 700000.K2.02
Comments:	Objective: DRE262LN009.06 Reference: DOP 6400-13 K/A: 700000.K2.03 3.0/3.1 K/A: Generator Voltage and Electric Grid Disturbances: Knowledge of the interrelations between GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES and the following: Sensors, detectors, indicators CFR: 41.4/41.5/41.7/41.10 Safety Function: 6 Level: High Pedigree: Bank History: 2008 NRC Comments: A - Incorrect. Breaker 1-7 would only be correct if breaker 6-7 failed to open. B - Correct. With a fault on L2311, breakers 5-6 and 6-7 BOTH should open to isolate the line. When 5-6 fails to open, a local breaker backup signal is sent to circuit breaker 4-5 only. C - Incorrect. Breakers 1-7 and 4-5 would only be correct if both breakers 5-6 and 6-7 failed to open. D - Incorrect. Breakers 3-4 and 4-8 would only be correct if the fault was on adjacent line L1220 and breaker 4-5 failed to open. A knowledge of the switchyard layout AND local breaker backup logic is required to answer this question. **REQUIRED REFERENCES: None.**

17 **ID: 27362** **Points: 1.00**

Unit 2 is at full power. Which of the following will cause drywell temperature to reach DEOP 200-1 entry thresholds?

A. SBGT initiation

B. ECCS initiation signal

C. PCIS Group II isolation

D. PCIS Group III isolation

Answer: B

Question 17 Info	
Topic:	17 - 295028.K2.04
Comments:	Objective: 223LN005.12.A Reference: DAN 902(3)-5 D-5, E-5, DAN 923-5 E-1, DOP 5750-11 K/A: 295028.K2.04 3.6/3.6 K/A: Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell Ventilation CFR: 41.7 Safety Function: 5 Pedigree: New Level: High Explanation: A - Incorrect. This would result in the isolation of RB Ventilation, not drywell ventilation B - Correct. Drywell coolers trip on ECCS initiation signal. Upon a loss of Drywell cooling, temperatures will continue to rise and eventually exceed DEOP 200-1 entry conditions. C - Incorrect. PCIS Group II isolation trips RB Vent and Exhaust fans on both units, but not drywell ventilation. D - Incorrect. This would be correct if SDC was in service and maintaining temperature. **REQUIRED REFERENCES: None.**

18 **ID: 27363** **Points: 1.00**

Unit 2 was operating at near rated power, with the FRV Backup Nitrogen Supply O.O.S., when the following occurred:

- An Instrument Air line ruptured, quickly reducing Instrument Air pressure to 35 psig.
- A manual Reactor Scram is successfully inserted.
- RPV water level dropped to -20 inches and is rising.

How can RPV water level be controlled?

A. Operate the MO 2-3206A(B), 2A(B) FW REG ISOL valves.

B. Operate the FWRV's in MANUAL mode from their individual control stations.

C. Operate the FWRV's in MANUAL BYPASS mode from their individual control stations.

D. Momentarily depress RESET, on the Master Level Controller, to reset the FWRVs, then restore the FWRV(s) to desired lineup.

Answer: A

Question 18 Info	
Topic:	18 - 295009.A1.02
Comments:	Objective: DRE259LN002.08 Reference: DOA 0600-01 K/A: 295009.A1.02 4.0/4.0 K/A: Ability to operate and/or monitor the following as they apply to LOW REACTOR WATER LEVEL: Reactor water level control CFR: 41.7 Safety Function: 2 Level: High PRA: Yes Pedigree: Bank History: 2009 NRC Explanation: A - Correct. With the FWRV nitrogen backup air supply O.O.S., at 40 psig the Main FWRVs and the Low Flow FWRV will be locked up AS-IS. Alternate methods must be used to control the feedwater flow, such as using the MOV isolation valves. B - Incorrect. Manual mode allows manual control of the FRVs but with no air pressure, this will not be effective. C - Incorrect. This mode of operation by passes the FWLC system and allows for direct adjustment of the FRVs. With no air pressure, this will not be effective. D - Incorrect. The FWRV lockup cannot be reset until air pressure is restored and the valves will stay at the position they were at the time of the lockup. **REQUIRED REFERENCES: None.**

19 **ID: 27364** **Points: 1.00**

Given the following trends on Unit 2, when is DEOP 200-1, PRIMARY CONTAINMENT CONTROL entry FIRST required?

TIME	DRYWELL PRESSURE	DRYWELL TEMPERATURE
00:00	1.40 psig	146°F
00:02	1.50 psig	151°F
00:04	1.60 psig	156°F
00:06	1.70 psig	161°F

(Reference Provided)

A. 00:02

B. 00:06

C. 00:12

D. 00:14

Answer: B

Question 19 Info	
Topic:	19 - 295012.A2.01
Comments:	Objective: 29502LK001 Reference: DEOP 200-1 K/A: 295012.A2.01 3.8/3.9 K/A: Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell Temperature CFR: 41.10 Safety Function: 5 Pedigree: New Level: High Explanation: A - Incorrect. This corresponds with the OP-AA guidance for insertion of a manual scram on drywell pressure high. B - Correct. This is the first time drywell temperature exceeds 160°F which is the entry condition for DEOP 200-1. C - Incorrect. This time corresponds with DEOP 200-1 entry on Drywell Pressure D - Incorrect. This temperature corresponds to the X-Area temperature setpoint for PCIS Group I isolation **REQUIRED REFERENCES: DEOP 200-1 with entry conditions redacted.**

20 **ID: 27365** **Points: 1.00**

Unit 2 was operating at rated power when the Isolation Condenser spuriously INITIATED.

How will the plant respond?

Core Thermal Power will initially ____(1)____ and steady state generator output will ____(2)____.

A. (1) RISE
(2) LOWER

B. (1) RISE
(2) REMAIN STEADY

C. (1) LOWER
(2) LOWER

D. (1) LOWER
(2) REMAIN STEADY

Answer: A

Question 20 Info	
Topic:	20 - 295014.K1.06
Comments:	Objective: 29501LK042 Reference: UFSAR 5.4.6 Isolation Condenser; BWR Reactor Theory Reactor Operation Physics Lesson Plan K/A: 295014.K1.06 3.8/3.9 K/A: Knowledge of the operational implications of the following concepts as they apply to INADVERTENT REACTIVITY ADDITION: Abnormal reactivity additions CFR: 41.8 to 41.10 Safety Function: 1 Pedigree: New Level: High Explanation: A - Correct. CTP will rise initially due to cold water addition. After the inadvertent reactivity addition, with steam being diverted from the main turbine, and the EHC setpoint remaining the same, steam flow to the main turbine will lessen, resulting in lower main generator output. B - Incorrect. Due to the diversion of steam to the IC, main generator output would be lower. C - Incorrect. This answer is plausible if the candidate does not recognize the inadvertant reactivity addition caused by the volume of relatively cold water contained in the IC piping. D - Incorrect. This answer is plausible if the candidate does not recall the EHC pressure control dominance of CTP. **REQUIRED REFERENCES: None.**

21 **ID: 27366** **Points: 1.00**

What are the operational implications of Torus Temperature reaching 180°F?

A. ECCS pumps may experience vortexing.

B. Torus shell has exceeded design temperature.

C. HPCI isolation may occur due to high temperature.

D. Inadequate cooling of HPCI lube oil system may result.

Answer: D

Question 21 Info	
Topic:	21 - 295013.G.2.04.20
Comments:	Objective: 29501LE007 Reference: PSTG C-1 K/A: 295013.G.2.04.20 3.8/4.3 K/A: High Suppression Pool Temperature: Knowledge of the operational implications of EOP warnings, cautions, and notes. CFR: 41.10 Safety Function: 5 Pedigree: New Level: Memory Explanation: A - Incorrect. Torus temperature is not a factor in ECCS vortexing, however it is a factor in determination of adequate NPSH. B - Incorrect. Torus shell design temperature is 281°F. C - Incorrect. HPCI system isolates on high room temperature, not high suction temperature. D - Correct. HPCI lube oil is cooled by the HPCI system when running. With suction temperature > 165°F, inadequate cooling of the lube oil may result in HPCI system damage. **REQUIRED REFERENCES: None.**

22 **ID: 27367** **Points: 1.00**

Unit 2 was operating at rated power when a DBA LOCA occurred.

- The Unit Supervisor has directed you to perform DEOP 500-04, Containment Venting due to high primary containment hydrogen concentration.
- Torus water level is 17 feet and steady.

How is the primary containment vented and why?

A. Vent from the Torus to SBGT to prevent deflagration.

B. Vent from the Drywell to SBGT to prevent deflagration.

C. Vent from the Torus to SBGT to lower primary containment pressure.

D. Vent from the Drywell to SBGT to lower primary containment pressure.

Answer: A

Question 22 Info	
Topic:	22 - 500000.K3.06
Comments:	Objective: 29502LK017 Reference: DEOP 0500-04 K/A: 500000.K3.06 3.1/3.7 K/A: Knowledge of the reasons for the following response as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Operation of the wet well vent CFR: 41.5 Safety Function: 5 Pedigree: New Level: High Comments: A - Correct. When venting containment for hydrogen concentration with torus water level less than 30 ft. the correct path is from the torus to SBGT. The reason is to prevent deflagration. B - Incorrect. This is the correct reason and flowpath for torus water level > 30 feet. C - Incorrect. Lowering primary containment pressure is a result of venting not the reason venting is required given the initial conditions. D - Incorrect. If torus level is > 30 feet, the drywell vent is used. RB vent is used during normal pressure control operations, when sample results indicate less than limits or when SBGT flow is insufficient. **REQUIRED REFERENCES: None.**

23 **ID: 27073** **Points: 1.00**

Both Units were operating at near rated power, when a trashcan fire is reported in the Lift Station.

The Operating Team entered DOA 0010-10, FIRE/EXPLOSION.

Which of the following are required Operator actions per DOA 0010-10?

1) Initiate the Plant Fire Siren
2) Notify Security Shift Supervisor
3) Notify Coal City Fire Protection District

A. 1 and 2 ONLY

B. 1, 2, AND 3

C. 2 and 3 ONLY

D. 3 ONLY

Answer: C

Question 23 Info	
Topic:	23 - 600000.K1.02
Comments:	Objective: 29501LK080 Reference: DOA 0010-10 K/A: 600000.K1.02 2.9 / 3.1 K/A: Knowledge of the operational implications of the following concepts as they apply to Plant Fire On Site: Fire Fighting CFR: 41.7 Safety Function: 6 PRA: Yes Level: High History: Bank Explanation: A. Incorrect - The Plant Siren announcement is not required when a Fire is outside the protected area. B. Incorrect - Notifying the local Fire Department and notifying Security are required, but the Plant Siren announcement is not required. C. Correct - The Lift Station is outside the protected are, and when a fire occurs outside the protected area, the required actions are to notify the Coal City Fire Protection District, and notify the Security Shift Supervisor that an outside Fire Department will be responding. D. Incorrect - Notifying the local Fire Department is required, but notifying the Security Shift Supervisor that an outside Fire Department will be responding is also required. **REQUIRED REFERENCES: None.**

24 **ID: 27369** **Points: 1.00**

A DBA LOCA has occurred.

You have been directed to start MAX TORUS COOLING.

What is the minimum differential pressure between CCSW and LPCI required to prevent leakage into the environment with MAX TORUS COOLING in operation?

A. CCSW pressure 7 psid greater than LPCI system pressure.

B. LPCI system pressure 7 psid greater than CCSW pressure.

C. CCSW pressure 20 psid greater than LPCI system pressure.

D. LPCI system pressure 20 psid greater than CCSW pressure.

Answer: C

Question 24 Info	
Topic:	24 - 203000.K4.13
Comments:	Objective: 203LN001.11 Reference: DOP 1500-02, UFSAR 6.2.2.2 K/A: 203000.K4.13 3.4/3.7 K/A: Knowledge of RHR/LPCI: INJECTION MODE design feature(s) and/or interlocks which provide for the following: The prevention of leakage to the environment through LPCI/RHR heat exchanger: Plant Specific CFR: 41.7 Safety Function: 2 PRA: Yes Pedigree: New Level: Memory Comments: A - Incorrect. This would be correct if 1 LPCI pump were running. B - Incorrect. LPCI pressure greater than CCSW pressure would leak into CCSW and into the environment. C - Correct. With 2 LPCI pumps running in each loop, the CCSW/LPCI differential pressure should be 20 psid or greater with CCSW at the higher pressure. D - Incorrect. The pressure is correct; however the LPCI system should be at the lower pressure. **REQUIRED REFERENCES: None.**

25 **ID: 27425** **Points: 1.00**

Unit 2 was in HOT SHUTDOWN, with the following conditions:

- 2A and 2B SDC loops are lined up to the 2A Recirc loop with 3000 gpm flow each.
- BOTH Recirc Pumps are shutdown.

Then an NSO opens the 2-1001-5B, OUTLET ISOL VLV.

The expected SDC flows would be ___(1)___ gpm in the 2A SDC loop and ___(2)___ gpm in the 2B SDC loop.

A. (1) 3000;
(2) 3000

B. (1) 3000;
(2) 4500

C. (1) 4500;
(2) 3000

D. (1) 4500;
(2) 4500

Answer: A

Question 25 Info	
Topic:	25 - 205000.K5.02
Comments:	Objective: 205LN001.06 Reference: DOP 1000-03 K/A: 205000.K5.02 2.8/2.9 K/A: Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): Valve operation CFR: 41.5 Safety Function: 4 Level: High Pedigree: Bank History: 2010 NRC Explanation: The SDC loop flows are controlled by the 2-1001-4, individual pump discharge valves. Opening the common 2-1001-5 header isolation valves will not allow an appreciable increase in loop flows, merely allow the present flow to be split among the other Recirc loop. **REQUIRED REFERENCES: None.**

26 **ID: 27371** **Points: 1.00**

How will HPCI turbine speed be controlled upon a HPCI automatic initiation signal?

A. HPCI Motor Speed Changer will ramp to the High Speed Stop and the Motor Gear Unit will control injection flow based on flow controller output.

B. HPCI Motor Gear Unit will ramp to the High Speed Stop and the Motor Speed Changer will control injection flow based on flow controller output.

C. HPCI Motor Speed Changer will ramp to 2000 rpm and control will transition to the Motor Gear Unit. The Motor Gear Unit will ramp to 4000 rpm and will control injection flow based on flow controller output.

D. HPCI Motor Gear Unit will ramp to 2000 rpm and stop. Control will transition to the Motor Speed Changer. The Motor Speed Changer will control injection flow based on flow controller output.

Answer: A

Question 26 Info	
Topic:	26 - 206000.K5.06
Comments:	Objective: Reference: DOP 2300-03 K/A: 206000.K5.06 2.6*/2.6 K/A: Knowledge of the operational implications of the following concepts as they apply to HIGH PRESSURE COOLANT INJECTION SYSTEM: Turbine speed measurement CFR: 41.5 Safety Function: 2 Pedigree: New Level: Memory Comments: A - This is correct. The motor speed changer ramps turbine speed from 0 to 4000 rpm. HPCI turbine speed is controlled by the lower of either the MGU or the MSC. The MGU is controlled by the flow controller output and adjusts turbine speed and injection flow B - Incorrect. This is the reverse of the operation. C - Incorrect. The normal position of the MGU is at the HSS. The transition does not occur until MSC reaches the HSS. D - Incorrect. The range of the HPCI MGU is 2000 to 4000 rpm. HPCI turbine speed is controlled by the lower of the 2. Upon automatic initiation, the MSC runs to the HSS and stays there. **REQUIRED REFERENCES: None.**

27 **ID: 27372** **Points: 1.00**

HPCI is running in a normal line-up when a leak develops from the Torus. What is the operational concern?

A. When Torus water level drops below 12 feet, HPCI exhaust will be uncovered.

B. When Torus water level drops below 12 feet, the downcomers will be uncovered.

C. When Torus water level drops below 12 feet, inadequate NPSH exists for HPCI operation.

D. When Torus water level drops below 15 feet, ADS valve T-Quenchers will be uncovered.

Answer: A

Question 27 Info	
Topic:	27 - 206000.K6.05
Comments:	Objective: 206LN001.12B Reference: TSG-2 K/A: 206000.K6.05 3.5/3.7 K/A: Knowledge of the effect that a loss or malfunction of the following will have on the HIGH PRESSURE COOLANT INJECTION SYSTEM: Suppression Pool Level: BWR-2,3,4 CFR: 41.7 Safety Function: 2 Pedigree: New Level: Memory Comments: A - Correct. At 12 feet, the HPCI exhaust becomes uncovered. Continued operation of HPCI will pressurize the torus airspace. B - Incorrect. The downcomers become uncovered when Torus level drops below 11 feet. C - Incorrect. Adequate NPSH is based on Torus Temperature and torus bottom pressure. D - Incorrect. ADS valve T-Quencher will become uncovered at 6 feet. **REQUIRED REFERENCES: None.**

28 **ID: 27433** **Points: 1.00**

Unit 2 was operating at rated power when Annunciator 902-8 D-6, 480V BUS 20, 25 THRU 29 DC POWER FAILURE, alarms.

EOs in the field report that **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.

Before 125 VDC control power to Bus 29 can be restored, 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 currently 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 28 Info	
Topic:	28 - 203000.K3.01
Comments:	Objective: DRE203LN001.08 Reference: DOP 1500-03 K/A: 203000.K3.01 4.3 / 4.4 K/A: RHR/LPCI: Injection Mode: Knowledge of the effect that a loss or malfunction of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) will have on following: Reactor water level. CFR: 4.3*/4.4* Safety Function: 2 Level: High Pedigree: Bank Comments: A - Incorrect. Plausible if assumed that 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 assumed that 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.**

29 **ID: 27373** **Points: 1.00**

Which of the following gamma dose rates will require entry into DEOP 0300-02, RADIOACTIVITY RELEASE CONTROL?

1) 5 mR/hr at the Meteorological Tower
2) 8 mR/hr in the 345 KV switchyard
3) 15 mR/hr at Lift Station
4) 20 mR/hr in the Training Building parking lot

(Reference Provided)

A. 3 **ONLY**

B. 2 and 3 **ONLY**

C. 3 and 4 **ONLY**

D. 1, 2, 3, **AND** 4

Answer: A

Question 29 Info	
Topic:	29 - 295038.G.2.04.01
Comments:	Objective: 29502LK056 Reference: EP-AA-1000, ODCM, DEOP 300-2, EP-AA-1004 Addendum 3 K/A: 295038.G.2.04.01 4.6/4.8 K/A: Knowledge of EOP entry conditions and immediate actions steps: High Off-site Release Rate CFR: 41.10 Safety Function: 9 Pedigree: 2016-301 Level: High Explanation: A - Correct. Although this is not the highest rad level, this is the only location outside the site-boundary (off-site). B - Incorrect. Although one of these rad levels is in excess of DEOP 300-2 entry conditions, the 345 kv switchyard is on site. This location is commonly thought of as off-site C - Incorrect. Although these rad levels are in excess of DEOP 300-2 entry conditions, this location is on site. This location is commonly thought of as off-site D - Incorrect. Although some of these rad levels are in excess of DEOP 300-2 entry conditions, some of these locations are on site. It is plausible a candidate may interpret off-site as outside the protected area. DEOP 300-2 entry conditions are release rates in excess of EAL Alert values as measured at the site boundary. Knowledge of the site boundary and EAL Alert levels is required to correctly answer the question. **REQUIRED REFERENCES: EP-AA-1004 Addendum 3 and ODCM Figure 1-2.**

30 **ID: 27436** **Points: 1.00**

Given the following conditions:

Unit 2 Drywell pressure has risen from 1.20 psig to 1.25 psig due to a slow leak.

As drywell pressure continues to rise due to the slow leak,

Torus narrow range level indication will ____(1)____; and this is due to ____(2)____.

A. (1) trend down slowly
(2) displacement of mass and rising pressure outside the downcomer legs

B. (1) trend up slowly
(2) displacement of mass and rising pressure outside the downcomer legs

C. (1) trend down slowly
(2) displacement of mass and rising pressure inside the downcomer legs

D. (1) trend up slowly
(2) displacement of mass and rising pressure inside the downcomer legs

Answer: D

Question 30 Info	
Topic:	30 - 295024.A2.03
Comments:	Objective: 29502LK063 Reference: DOP 1600-02, Tech Specs 3.6.2.2 and 3.6.2.5 K/A: 295024.A2.03 3.8/3.8 K/A: Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Suppression pool level CFR: 41.10 Safety Function: 5 Pedigree: Bank Level: High Explanation: A - Incorrect. Indicated level will go up. The drywell air space exerts force on the on the torus inside the downcomer legs. B - Incorrect. The drywell air space exerts force on the on the torus inside the downcomer legs. C - Incorrect. Indicated level will go up. D - Correct. As drywell pressure rises relative to torus pressure, the pressure inside the downcomer legs goes up; As the pressure goes up, torus water is expelled/removed from the inside of the downcomer legs (displaced/replace by nitrogen/air); the torus water level outside the downcomer legs rises; and even though the amount of mass of torus water does not change, the indicated level does change (goes up when drywell pressure goes up and vice versa), since the indicated level is provided by dp instruments which 'sense/measure' the pressure created by the height of the water as well as the ambient pressure being exerted via the drywell air space present on the inside of the downcomer legs. The dp instruments used for torus level indications (wide and narrow ranges) are all affected, but due to range of calibration/sensitivity, change is only 'readable/noticeable' on the narrow range instruments. **Required References: None**

31 **ID: 27374** **Points: 1.00**

Unit 2 cooldown was in progress with the Shutdown Cooling System, when a transient occurred.

Which of the following will stop the cooldown?

A. RPV level reaches 0 inches.

B. Drywell Pressure reaches 2.0 psig.

C. X-Area temperature reaches 200°F.

D. Drywell radiation levels reach 30 R/hr.

Answer: A

Question 31 Info	
Topic:	31 - 205000.K4.03
Comments:	Objective: 205LN001.12B Reference: DAN 902(3)-5 D-5, E-5 K/A: 205000.K4.03 3.8/3.8 K/A: Knowledge of SHUTDOWN COOLING SYSTEM/MODE design feature(s) and/or interlocks which provide for the following: Low reactor water level: Plant-Specific CFR: 41.7 Safety Function: 4 Pedigree: New Level: High Explanation: A - Correct. When RPV level drops below +8 inches a PCIS group 3 is initiated. SDC MOVs will close and the cooldown will be stopped. B - Incorrect. This is setpoint for a PCIS group II isolation. C - Incorrect. This is a setpoint for a Group I PCIS isolation. If the Cooldown was with the bypass valves this would stop the cooldown. D - Incorrect. This is a setpoint for a PCIS group II isolation. PCIS Group II and III setpoints and actions are commonly mistaken. **REQUIRED REFERENCES: None.**

32 **ID: 23616** **Points: 1.00**

Given the following conditions:

- Unit 3 is at rated power
- A fire was reported in 125 VDC Bus 3B-1 and the Bus was deenergized.

What is the Isolation Condenser response?

A. Unit 2 Isolation Condenser will automatically initiate.

B. Unit 2 Isolation Condenser will automatically isolate.

C. Unit 3 Isolation Condenser will automatically initiate.

D. Unit 3 Isolation Condenser will automatically isolate.

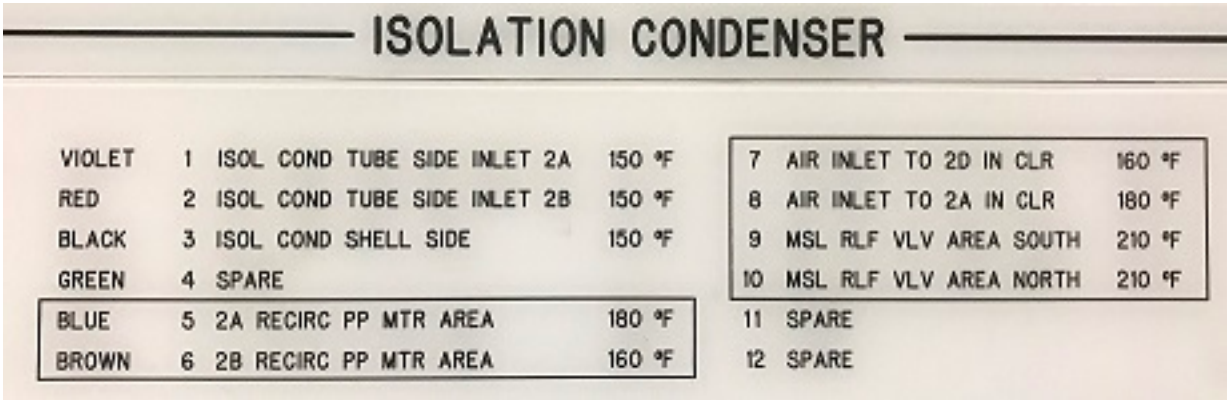
Answer: D

Question 32 Info	
Topic:	32 - 207000.K6.08
Comments:	Objective: DRE207LN001.12 Reference: DOA 6900-03, DOP 6900-02 K/A: 207000.K6.08 3.5/3.7 K/A: Knowledge of the effect that a loss or malfunction of the following will have on the ISOLATION (EMERGENCY) CONDENSER: D.C. power: BWR-2,3 CFR: 41.7 Safety Function: 4 Pedigree: New Level: High Explanation: A - Incorrect. Unit 2 IC will not be effected. This is plausible due to the divisional crossties between units. B - Incorrect. Unit 2 IC will not be effected. This is plausible due to the divisional crossties between units. C - Incorrect. The Isolation Condenser failure mode on loss of DC power is isolation. D - Correct. Upon a complete loss of Division 2 power, the Unit 3 isolation condenser will isolate on high flow (PCIS group V) **REQUIRED REFERENCES: None.**

33 **ID: 27375** **Points: 1.00**

The Unit Supervisor has directed you to initiate the Isolation Condenser and establish a 75°F/hr cooldown rate on Unit 2.

How will the cooldown rate be reflected on TR 2-1340-1, U2 ISOL CONDR/DW ATMOS TEMPS?



A. Points 1,2, and 3 will lower in value **ONLY**.

B. Points 1,2, and 3 will initially rise, then lower in value.

C. Points 5 and 6 will rise in value.

D. Points 9 and 10 will rise in value.

Answer: B

Question 33 Info	
Topic:	33 - 207000.A1.10
Comments:	Objective: 207LN001.11 Reference: M-28 K/A: 207000.A1.10 3.2/3.4 K/A: Ability to predict and/or monitor changes in parameters associated with operating the ISOLATION (EMERGENCY) CONDENSER controls including: Primary side temperature: BWR-2,3 CFR: 41.5 Safety Function: 4 Pedigree: New Level: Memory Explanation: A - Incorrect. This is plausible because the cooldown rate would cause temperatures to lower in the RPV. The candidate must understand the IC temperatures will rise with when placed in service. B - Correct. Upon initiation of the Isolation Condenser, IC tube side temperatures will rise and shell side temperature will rise. These temperatures are indicated on the 902-3 panel. Points 1 and 2 on TR 2-1340-1 reflect IC tube side temperature, while point 3 reflects IC shell side (heat sink) temperature. C - Incorrect. These points are used to determine Drywell temperature. D - Incorrect. These points reflect MSL RLF VLV areas. These points are used to determine if RPV level indication is valid. **REQUIRED REFERENCES: None.**

34 **ID: 27376** **Points: 1.00**

Unit 2 was operating at rated power when a catastrophic failure of the Instrument Air system occurred.

How and when will the MSIVs **FIRST** be affected?

A. The inboard MSIVs will fail closed when IA header pressure drops below 55 psig.

B. The outboard MSIVs will fail closed when IA header pressure drops below 55 psig.

C. The inboard MSIVs will fail closed when IA header pressure drops below 83 psig.

D. The outboard MSIVs will fail closed when IA header pressure drops below 83 psig.

Answer: B

Question 34 Info	
Topic:	34 - 300000.K1.05
Comments:	Objective: 278LN001.12A Reference: DOA 4700-01 K/A: 300000.K1.05 3.1/3.2 K/A: Knowledge of the connections and/or cause effect relationships between INSTRUMENT AIR SYSTEM and the following: Main Steam Isolation Valve air CFR: 41.2 to 41.9 Safety Function: 8 PRA: Yes Pedigree: New Level: Memory Explanation: A - Incorrect. Inboard MSIVs are held open with drywell pneumatics. B - Correct. When IA header pressure reaches 55 psig, positive control of the outboard MSIVs can no longer be assured (they are air operated with a spring assist shut). C - Incorrect. This is the pressure at which the FWRVs transition to backup air. D - Incorrect. This is the pressure at which the FWRVs transition to backup air. **REQUIRED REFERENCES: None.**

35 **ID: 12889** **Points: 1.00**

Unit 2 was operating at approximately 45% power, with the FWLC in **3 Element** control and the FW Reg valves in **AUTO**, when the 2C Steam Flow detector instantaneously failed downscale.

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

A. Single Element

B. Three Element

C. Master Manual

D. Individual Manual

Answer: A

Question 35 Info	
Topic:	35 - 259002.K6.03
Comments:	Objective: DRE259LN002.06 Reference: DAN 902-5 G-8 K/A: 259002.K6.03 3.1/3.1 K/A: Reactor Water Level Control System: Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Main steam flow input. CFR: 41.7 Safety Function: 2 Pedigree: 2008 NRC Level: Memory Explanation: A - Correct. With the Steam Flow detector failing downscale (bad quality) when > 33.5%, total Steam flow will automatically transfer the FWLC System to SINGLE ELEMENT control. B - Incorrect. With a failure of the steam flow input, FLWC will transition to single element. C - Incorrect. This would be a correct option if manual action was taken. D - Incorrect. This would be a correct option if manual action was taken. **REQUIRED REFERENCES: None.**

36 **ID: 27151** **Points: 1.00**

Unit 3 was operating at rated power when the Bus 39 feed breaker opened on a fault.

Which ESS indication(s) in the Main Control Room would alert the Operator to this fault?

A. 903-8 E-8, ESS UPS ON DC OR ALTERNATE AC, annunciator in alarm ONLY.

B. 903-8 E-10, 120/240V AC ESS BUS ON EMERG SPLY, annunciator in alarm ONLY.

C. 903-8 E-8, ESS UPS ON DC OR ALTERNATE AC, annunciator in alarm AND a momentary loss of power to the ESS loads.

D. 903-8 E-10, 120/240V AC ESS BUS ON EMERG SPLY, annunciator in alarm AND a momentary loss of power to the ESS loads.

Answer: A

Question 36 Info	
Topic:	36 - 262002.A3.01
Comments:	Objective: DRE262LN005.02 Reference: DAN 903-8 E-8, DOP 6800-01 K/A: 262002.A3.01 2.8/3.1 K/A: Ability to monitor automatic operations of the UNINTERRUPTABLE POWER SUPPY (A.C./D.C.) including: Transfer from preferred to alternate source CFR: 41.7 Safety Function: 6 Level: High Pedigree: Bank History: 2007 NRC Explanation: A - Correct. DAN 903-8 E-8, ESS UPS ON DC OR ALTERNATE AC, warns the operator that the ESS UPS is no longer being powered from Bus 39. The static switch automatically transfers between its two feeds without missing a cycle, thus making a bumpless transfer. B - Incorrect. DAN 903-8 E-10, 120/240V AC ESS BUS ON EMERG SPLY, indicates that the ABT has transferred and the ESS Bus is being supplied from MCC 38-2. C - Incorrect. There is no loss of power. D - Incorrect. This would be correct if power was being supplied from MCC 38-2. **REQUIRED REFERENCES: None.**

37 **ID: 27377** **Points: 1.00**

A transient has occurred on Unit 2 requiring RPV injection with low pressure ECCS systems.
The Unit Supervisor has directed you to maximize injection with Core Spray.

- LPCI is unavailable.
- NO high pressure injection sources are available.
- RPV pressure is 90 psig.

What is the expected **TOTAL** flowrate of injection into the RPV?

A. 4,500 gpm

B. 9,000 gpm

C. 18,000 gpm

D. 27,000 gpm

Answer: B

Question 37 Info	
Topic:	37 - 209001.A1.03
Comments:	Objective: 209LN001.03 Reference: TS 3.5.1 K/A: 209001.A1.03 3.8/3.9 K/A: Ability to predict and/or monitor changes in parameters associated with operating the LOW PRESSURE CORE SPAY SYSTEM controls including: Reactor water level CFR: 41.5 Safety Function: 2 PRA: Yes Pedigree: New Level: Memory Explanation: A - Incorrect. This would be correct for 1 CS pump B - Correct. Each CS pump is required to generate 4500 gpm flowrate against an RPV pressure of 90 psig. C - Incorrect. This would be correct for 4 LP ECCS pumps (i.e. LPCI) D - Incorrect. This would be correct for all LP ECCS pumps. **REQUIRED REFERENCE: None.**

38 **ID: 27406** **Points: 1.00**

Unit 2 was operating at rated power when a LOCA occurred.

- RPV level has been restored above TAF
- **ONLY** 2A Core Spray pump is injecting

Annunciator 902-3 E-5, 2A Core Spray HDR DP HI is in alarm.

What is the cause of this alarm, and what action are required (if any), to maintain RPV level above TAF?

A. No actions are required. This alarm is expected.

B. Neither Core Spray System is intact. Inject with LPCI system.

C. 2A Core Spray header is not intact. Inject with 2B Core Spray system.

D. RPV pressure has exceeded the shutoff head of LP ECCS pumps. Inject with High Pressure injections source.

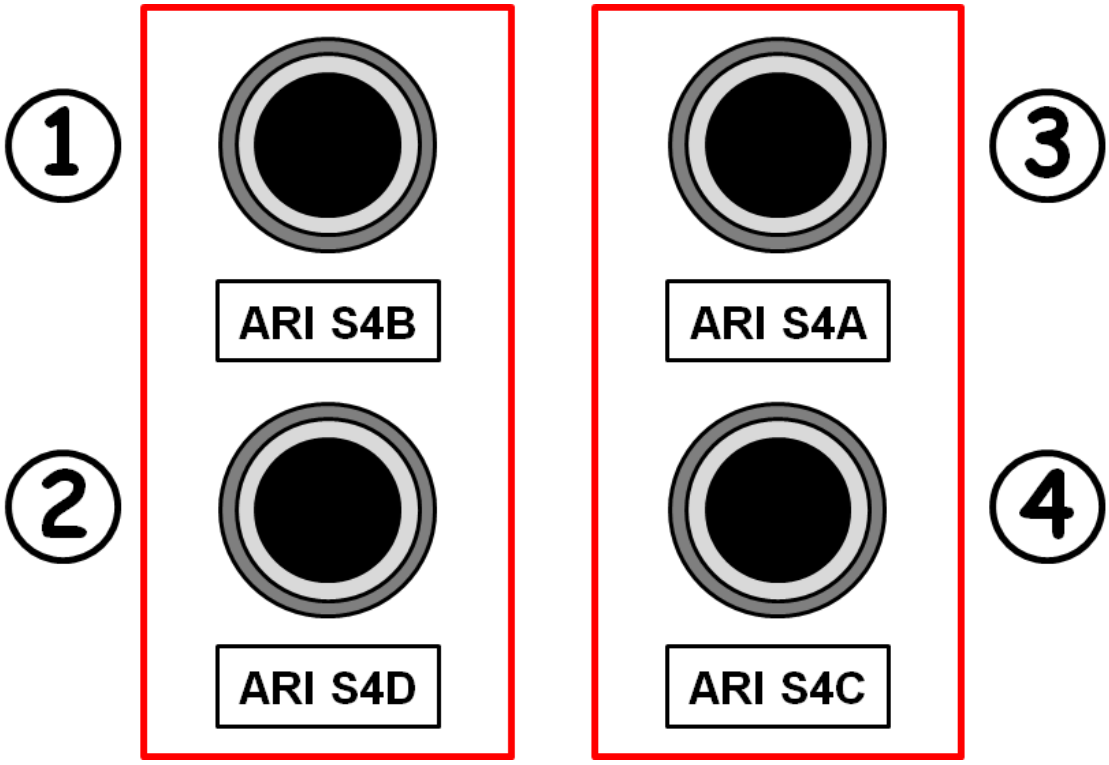
Answer: C

Question 38 Info	
Topic:	38 - 209001.A2.05
Comments:	Objective: 209LN001.12a Reference: DAN 902(3)-3 E-5 K/A: 209001.A2.05 3.3/3.6 K/A: Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate, the consequences of those abnormal conditions or operations: Core Spray Line break CFR: 41.5 Safety Function: 2 & 4 Pedigree: New Level: High Comments: A - Incorrect. This alarm indicates a break in the 2A Core Spray header. This alarm may actuate during shutdown and is considered expected under shutdown conditions. B - Incorrect. Core Spray system is comprised of 2 independent subsystems, each with their own spray header. This is plausible because LPCI (another LP ECCS system) is crosstied. C - Correct. With a leak in the 2A Core Spray system, DAN 902(3)-3 E-5 directs the operator to inject with 2B Core Spray system. D - Incorrect. This is plausible because the sensor is driven by differential pressure. This alarm is based on differential pressure between the core shroud and the header. **REQUIRED REFERENCES: None.**

39 **ID: 27379** **Points: 1.00**

You have been directed to initiate ARI on Unit 2.

Which of the following will initiate ARI?



A. ONLY depressing 1 and 2 simultaneously

B. ONLY depressing 1 and 3 simultaneously

C. Turning the collars, then depressing 1 and 2 simultaneously

D. Turning the collars, then depressing 1 and 3 simultaneously

Answer: C

Question 39 Info	
Topic:	39 - 212000.A4.16 (PRINT IN COLOR)
Comments:	Objective: 212LN002.03.E Reference: DAN 902(3)-5 D-8, A-8, K/A: 212000.A4.16 4.4*/4.4* K/A: Ability to manually operate and/or monitor in the control room: Manually activate anticipated transient without SCRAM circuitry/RRCS: Plant-Specific CFR: 41.7 Safety Function: 7 Pedigree: New Level: High Explanation: A - Incorrect. The collars must be turned clockwise to initiate ARI. B - Incorrect. The collars must be turned clockwise to initiate ARI. C - Correct. ARI collars must be turned clockwise. Division 1 ARI pushbuttons are labeled 1 and 2. ARI is 2 out of 2 logic by division. Depressing pushbuttons 1 and 2 simultaneously will initiate ARI. D - Incorrect. This will cause annunciator alarms, but no ARI initiation. Pushbuttons 1 and 3 are in different divisions. **REQUIRED REFERENCES: None.**

40 **ID: 13317** **Points: 1.00**

Unit 2 is operating at near rated power, when the following occurs:

- Bus 25 de-energizes due to a fire in the main feed breaker.
- Bus 29 experiences an overcurrent condition.

What effect, if any, does this have on the APRM channels?

Channels 1, 2, 3 will be ____(1)____ and channels 4, 5, 6 will be ____(2)____.

A. (1) Energized
(2) Energized

B. (1) Energized
(2) De-energized

C. (1) De-energized
(2) Energized

D. (1) De-energized
(2) De-energized

Answer: C

Question 40 Info	
Topic:	40 - 215005.K2.02 (3)
Comments:	Objective: DRE215LN005.02 Reference: DOA 0500-05 K/A: 215005.K2.02 2.6/2.8 K/A: Knowledge of electrical power supplies to the following: APRM channels. CFR: 41.7 Safety Function: 7 Level: High Pedigree: New Explanation: A - Incorrect. Bus 29 feeds MCC 29-2 which supplies power to RPS bus A. RPS Bus A supplies APRM channels 1,2, and 3. B - Incorrect. This is plausible because RPS MG set B is powered from MCC 29-2. RPS MG set B powers RPS bus A. C - Correct. With a loss of Bus 29, MCC 29-2 is de-energized. MCC 29-2 powers RPS MG set B which powers RPA Bus A. RPS Bus A supplies APRM channels 1,2, and 3. D - Incorrect. This is plausible because MCC 25-2 is a reserve power supply to the RPS MB sets. **REQUIRED REFERENCES: None.**

41 **ID: 27380** **Points: 1.00**

Which of the following indications are expected when injecting Standby Liquid Control for **LEVEL CONTROL**?

1. SBLC Squib A and B continuity lights LIT
2. SBLC Flow light LIT
3. SBLC Pumps A AND B Lights LIT
4. Annunciator 902(3)-5 H-6 SBLC SQUIB VLV CKT FAILURE in ALARM

A. 1, and 3 ONLY

B. 2, and 4 ONLY

C. 1,2, and 4 ONLY

D. 2,3, and 4 ONLY

Answer: D

Question 41 Info	
Topic:	41 - 211000.A3.07
Comments:	Objective: 211LN001.11 Reference: DOP 1100-01 K/A: 211000.A3.07 3.7/3.6 K/A: Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: Lights and Alarms: Plant-Specific CFR: 41.7 Safety Function: 1 Pedigree: New Level: Memory Explanation: A - Incorrect. This would be correct for pumps running, continuity lights go out when attempting to inject. B - Incorrect. This would be indication that SBLC is injecting into the RPV. This is not an all-inclusive list. C - Incorrect. The continuity lights are illuminated under standby conditions. They are extinguished when SBLC is initiated. D - Correct. When initiating SBLC for RPV level control, the continuity lights are extinguished, the pump lights are lit (both A and B), the flow light will illuminate and SBLC SQUIB VLV CKT FAILURE annunciator will alarm. **Required references: None**

42 **ID: 27381** **Points: 1.00**

The following conditions exist during a normal reactor startup:

- Reactor power - supercritical with a period of 500 seconds
- IRMs - all indicating on scale on range 4 or 5
- SRMs - shorting links are installed

SRM channels are indicating:

- SRM Channel 21 - 5.0 x 10^5 cps
- SRM Channel 22 - 5.1 x 10^5 cps
- SRM Channel 23 - 1.1 x 10^6 cps
- SRM Channel 24 - 6.2 x 10^5 cps

These SRM indications result in:

A. A full reactor scram

B. SRM HI and HI-HI alarms **ONLY**

C. SRM HI and HI-HI alarms and a rod block **ONLY**

D. SRM HI and HI-HI alarms, a rod block and a half-scram **ONLY**

Answer: C

Question 42 Info	
Topic:	42 - 215004.K1.02
Comments:	Objective: DRE215LN004.06 Reference: DAN 902(3)-5 A-4 and B-12, DGP 1-1, DOP 0700-01 K/A: 215004.K1.02 3.4/3.4 K/A: Knowledge of the physical connections and/or cause-effect relationships between SOURCE RANGE MONITOR (SRM) SYSTEM and the following: Reactor Manual Control CFR: 41.2 to 41.9 Safety Function: 7 Level: High Pedigree: New Comments: A - Incorrect. The SRM HI-HI scram is only functional when the Shorting Links are removed for refueling operations. B - Incorrect. SRM rod blocks are not bypassed until IRMs are on range 8 or above. C - Correct. SRM Hi-Hi and SRM Hi annunciator setpoint have been exceeded. Since IRMs are less than range 8, a control rod block will be received. D - Incorrect. This is plausible because only 1 SRM is greater than 10^6 (in excess of the TS allowable value). **REQUIRED REFERENCES: None.**

43 **ID: 27382** **Points: 1.00**

Which of the following supplies power to the MO 2-3702, U2 DW SUPPLY VLV?

A. MCC 28-1

B. BUS 24-1

C. 125VDC 2A-1

D. 250VDC TB 2

Answer: A

Question 43 Info	
Topic:	43 - 400000.K2.02
Comments:	Objective: 208LN001.12.B Reference: DOP 6700-18 K/A: 400000.K2.02 2.9/2.9 K/A: Knowledge of electrical power supplies to the following: CCW valves CFR: 41.7 Safety Function: 8 Pedigree: New Level: Memory Explanation: A - Correct. The power supply to RBCCW supply to the DW valve MO 2-3702 is MCC 28-1. B - Incorrect. 2B RBCCW pump is supplied from Bus 24-1. C - Incorrect. Control power to Bus 28 is from 125 VDC 2A-1. D - Incorrect. This is the power supply to the TBCCW isolation valves. **REQUIRED REFERENCES: None.**

44 **ID: 27383** **Points: 1.00**

Unit 2 was operating at rated power when LT 2-0263-58A, U2 RX LOW WTR SCRAM & LOW LOW WTR ISOL, failed downscale.

What is the expected response?

(Reference Provided)

A. PCIS Group I, II, and III isolation annunciators will alarm **ONLY**.

B. PCIS Group I, II, and III isolation annunciators will alarm and PCIS Group I, II, and III isolations will occur.

C. MR A RPV Level Instrument fails downscale **ONLY**.

D. MR A RPV Level Instrument fails downscale and PCIS Group I, II, and III isolation annunciators will alarm **ONLY**.

Answer: D

Question 44 Info	
Topic:	44 - 223002.K4.05
Comments:	Objective: 223LN005.06 Reference: DAN 902(3)-5 E-5, D-4, D-5, 12E-6822 K/A: 223002.K4.05 2.9/3.1 K/A: Knowledge of PCIS/NSSSS design feature(s) and/or interlocks which provide for the following: single failures will not impair the function ability of the system CFR: 41.7 Safety Function: 5 Pedigree: New Level: High Explanation: A - Incorrect. This condition will result however it is not the only plant response. B - Incorrect. This condition will result however it is not the only plant response. C - Incorrect. No actuations will occur. Additional failures must exist. D - Correct. Any sensor reaching setpoint will result in alarm, but trip logic is one out of two twice. LT 2-0263-58A is the input to A MR level instrument. One sensor failing downscale will not impair the ability of the system to cause protective actions. **REQUIRED REFERENCES: 12E-6822**

45 **ID: 24043** **Points: 1.00**

Given the following plant conditions:

- Unit 3 is at 73% power.
- Torus bulk temperature is rising.
- Div 2 torus water temperature Bay 1 is 95°F and rising.
- DOA 0250-01, RELIEF VALVE FAILURE, has been entered for 3-203-3B ERV open.
- Attempts to close the 3-203-3B ERV from the control room have failed.

The HVO has been directed to pull the 3-203-3B ERV control power fuses.

Which combination of the following can be used to verify the 3-203-3B ERV is closed?

1. Torus temperature recorder trend
2. Control switch valve position indication lights
3. Valve leak detection temperature recorder trend
4. Acoustic monitor valve position indicating lights

A. 1, 2, 3

B. 1, 2, 4

C. 1, 3, 4

D. 2, 3, 4

Answer: C

Question 45 Info	
Topic:	45 - 239002.K5.04
Comments:	Objective: 239LN001.03 Reference: DOA 0250-01; 12E-3461 & 3461A K/A: 239002.K5.04 3.3/3.5 K/A: Knowledge of the operational implications of the following concepts as they apply to RELIEF/SAFETY VALVES: Tail pipe temperature monitoring. CFR: 41.5 Safety Function: 3 PRA: Yes Level: High Pedigree: Bank Comments: A - Incorrect. Switch indicating lights are an indication of valve status but will be extinguished with the fuses pulled. B - Incorrect. Switch indicating lights are an indication of valve status but will be extinguished with the fuses pulled. C - Correct. Torus temperature would rise with a leaking ERV. The Acoustic monitor is not affected by pulling ERV fuses. Valve leak detection temperature recorder monitors ERV tail pipe temperature to determine if valve leak by is occurring. The indicating lights are extinguished with the fuses pulled. D - Incorrect. Switch indicating lights are an indication of valve status but will be extinguished with the fuses pulled. ERV Indicating lights are a commonly confused indication. **REQUIRED REFERENCES: None.**

46 **ID: 27384** **Points: 1.00**

SBGT was manually started due to RB Ventilation being OOS for planned maintenance.

How will the Reactor Building Differential Pressure be affected if the Drywell and Torus Purge Fans are started?

A. Reactor Building differential pressure will remain unchanged.

B. Reactor Building differential pressure will become LESS negative.

C. Reactor Building differential pressure will become MORE negative.

D. Reactor Building differential pressure will initially become LESS negative and then return to the previous value.

Answer: B

Question 46 Info	
Topic:	46 - 261000.A1.04
Comments:	Objective: 261LN001.06 Reference: DOP 7500-01 K/A: 261000.A1.04 3.0/3.3 K/A: Ability to predict and/or monitor changes in parameters associated with operating the SGTS controls including: Secondary Containment Differential Pressure CFR: 41.5 Safety Function: 9 Pedigree: New Level: High Comments: A - Incorrect. This would be correct if SBGT had received an auto-start signal. B - Correct. There is no logic restriction on operation of DW and Torus Purge fans during manual start of SBGT. Operating DW and Torus Purge Fans while SBGT is running and RB Vent isolated will cause RB (secondary containment) differential pressure to become less negative and result in a TS violation. C - Incorrect. This is plausible if the candidate does not understand the effects of ventilation and differential pressure, or the suction and discharge paths of DW and Torus purge fans. D - Incorrect. This would be correct for RB Vent as dampers would modulate to maintain differential pressure. **REQUIRED REFERENCES: None.**

47 **ID: 27385** **Points: 1.00**

- Annunciator 902-3 C-15, ADS MAIN DC PWR FAILURE is in alarm.
- ERV position indicating lights are OFF on the 902-3 panel.
- RPV pressure is 500 psig and lowering at 10 psig/minute.
- Drywell pressure is 1.8 psig and rising 0.1 psig/minute.
- ADS INHIBIT SWITCH is positioned to **AUTO.**
- RPV level is -30 inches and lowering 10 inches/minute.

When will Low Pressure ECCS pumps **FIRST** inject?

A. In 4 minutes

B. In 5 minutes

C. In 11 minutes

D. In 20 minutes

Answer: D

Question 47 Info	
Topic:	47 - 218000.K3.01
Comments:	Objective: 218LN001.12A Reference: DAN 902(3)-3 C-15, B-13, D-8 K/A: 218000.K3.01 4.4*/4.4* K/A: Knowledge of the effect that a loss or malfunction of the ADS will have on the following: Restoration of reactor water level after a break that does not depressurize the reactor when required CFR: 41.7 Safety Function: 3 PRA: Yes Pedigree: New Level: High Explanation: A - Incorrect. This time corresponds to ADS 2 minute timer being exceeded. B - Incorrect. This is the time at which ADS valves would open if they had power. C - Incorrect. This time corresponds to the timeout of the 8.5 minute ADS timer, which would initiate ADS if it had power. D - Correct. At this time, RPV pressure has lowered below the shutoff head of low pressure ECCS pump. **REQUIRED REFERENCES: None.**

48 **ID: 27386** **Points: 1.00**

The Unit 3 250 VDC battery charger is O.O.S with the Unit 3 250 VDC battery being supplied from the 2/3 charger powered from Unit 3.

Bus 39 trips and cannot be restored.

What are the expected control room indications?

A. 902-8 panel indications for 250 VDC battery voltage will begin rising.

B. 902-8 panel indications for 250 VDC battery voltage will begin lowering.

C. 903-8 panel indications for 250 VDC battery voltage will begin lowering.

D. 903-8 panel indications for 250 VDC battery voltage will remain constant.

Answer: C

Question 48 Info	
Topic:	48 - 263000.A4.03
Comments:	Objective: 263LN001.11 Reference: DOA 6900-04 K/A: 263000.A4.03 K/A: Ability to manually operate and/or monitor in the control room: Battery discharge rate: Plant-Specific CFR: 41.7 Safety Function: 6 Pedigree: New Level: High Explanation: A - Incorrect. This is plausible because Unit 3 250 VDC RB busses are powered from Unit 2. B - Incorrect. This is plausible because Unit 3 250 VDC RB busses are powered from Unit 2. C - Correct. With a loss of power to Bus 39, MCC 39-2 is lost. No power is supplied to the Unit 3 250 VDC chargers. Indications on the 903-8 panel will begin to decrease in value as battery voltage will lower as battery discharge rate increases. D - Incorrect. This would be correct if power had not been lost to the charger (i.e. had it been supplied from Unit 2) **REQUIRED REFERENCES: None.**

49 **ID: 27427** **Points: 1.00**

A prerequisite of DOS 6620-01, SBO 2 DIESEL GENERATOR ENDURANCE AND MARGIN/FULL LOAD TEST/FULL LOAD REJECT TEST, is to ensure *that the bus selected for this surveillance is powered from either Transformers TR 21 or TR 22 AND the associated Emergency Diesel Generator is NOT paralleled to this bus*.

What is the operational concern for this prerequisite?

A. A trip of either Diesel Generator while in this lineup, would cause the Bus to de-energize.

B. Large circulating currents, due to voltage differences, may result in an auto trip of both Diesel Generators.

C. A neutral ground condition, due to voltage differences, may result in an auto trip of both Diesel Generators.

D. A neutral voltage condition, due to phase angle differences, may result in an auto trip of both Diesel Generators.

Answer: B

Question 49 Info	
Topic:	49 - 264000.G.1.32
Comments:	Objective: DRE264LN001.10 Reference: BWR Fundamentals Ch. 5 Motors and Generators, DOS 6620-01 K/A: 264000.G.2.1.32 3.8 / 4.0 K/A: Ability to explain and apply system limits and precautions. CFR: 41.10 Safety Function: 6 PRA: Yes Level: Memory Pedigree: Bank History: 2012 NRC, 2013 Cert Comments: A. Incorrect - Upon a trip of either diesel generator, the bus would remain energized powered from the other diesel generator. B. Correct - A difference in voltages between generators will cause a circulating current to flow that could exceed breaker load limits. C. Incorrect - A neutral ground condition would be caused by a mechanical fault in the generator or associated wiring. D. Incorrect - Large circulating currents may cause a neutral voltage condition, but with the generators operating in parallel, the phase angles would be matched. **REQUIRED REFERENCES: None.**

50 **ID: 27388** **Points: 1.00**

Unit 2 was operating at rated power when:

- Annunciator 902-5 C-10, CHANNEL A IRM HI HI/INOP was received.
- IRM 13 DWSCL INOP light is illuminated.
- APRM 3 failed downscale.

What is the expected plant response, if any?

A. Control Rod Block **ONLY**.

B. RPS Channel A half scram **ONLY**.

C. RPS Channel A half scram **AND** a Control Rod Block.

D. NO RPS actuation and NO Rod Block will occur.

Answer: C

Question 50 Info	
Topic:	50 - 215003.G.2.4.21
Comments:	Objective: DRE215LN003.06 Reference: DOS 0500-03, DAN 902-5 C-6 K/A: 215003.G.2.4.21 4.0 / 4.6 K/A: Intermediate Range Monitor (IRM) System: Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. CFR: 41.7 Safety Function: 7 Level: High Pedigree: Bank Explanation: A - Incorrect. This would be correct if the IRM failure had not occurred. B - Incorrect. This is correct based on the concurrent failures, but not complete. C - Correct. APRM downscale with a concurrent companion IRM INOP will result in half scram. Control rod block will be received based on mode switch position. D - Incorrect. This would be the case for the IRM failure alone. **REQUIRED REFERENCES: None.**

51 **ID: 27390** **Points: 1.00**

Unit 2 startup was in progress in MODE 2 with the 2B CRD pump OOS when the 2A CRD pump caught fire.

At 0010 ACCUMULATOR TROUBLE light illuminated for a CRD at position 00
At 0020 ACCUMULATOR TROUBLE light illuminated for a CRD at position 00
At 0030 ACCUMULATOR TROUBLE light illuminated for a CRD at position 12

At what time is a manual reactor scram **FIRST** required to be inserted?

A. 0010

B. 0020

C. 0030

D. 0050

Answer: C

Question 51 Info	
Topic:	51 - 295022.K2.03
Comments:	Objective: 201LN001.08 Reference: DOA 0300-01 K/A: 295022.K2.03 3.4/3.4 K/A: Knowledge of the interrelations between LOSS OF CRD PUMPS and the following: Accumulator pressures CFR: 41.7 Safety Function: 1 Pedigree: New Level: High Explanation: A - Incorrect. This would be correct if the CRD was not at 00 B - Incorrect. This is plausible because there are additional requirements based on 2 or more inoperable accumulators in Mode 2. C - Correct. With an accumulator trouble light illuminated for a CRD not at 00, an immediate RX scram is required. D - Incorrect. There is allowance under certain conditions for a 20 minute time period to restore CRD pressure before a scram is required. **REQUIRED REFERENCES: None.**

52 **ID: 27391** **Points: 1.00**

Unit 2 was operating in Mode 1 when the Instrument Air Header pressure dropped to 0 psig.

What effect does this have on secondary containment?

RB Vent Supply and Exhaust dampers (RB VENT SUPPLY ISOL VLV) fail ____(1)____.
Torus to RB Vacuum breakers (TORUS TO RB VAC RELIEF AO VLV) fail ____(2)____.

A. (1) OPEN
(2) OPEN

B. (1) OPEN
(2) CLOSED

C. (1) CLOSED
(2) OPEN

D. (1) CLOSED
(2) CLOSED

Answer: C

Question 52 Info	
Topic:	52 - 290001.K6.08
Comments:	Objective: 278LN001.12 Reference: DOA 4700-01 K/A: 290001.K6.08 2.7/2.8 K/A: Knowledge of the effect that a loss or malfunction of the following will have on the SECONDARY CONTAINMENT: Plant air systems CFR: 41.7 Safety Function: 5 PRA: Yes Pedigree: New Level: Memory Explanation: A - Incorrect. This is the normal position of the RB vent dampers. IA is the mode of force to position the dampers. They are fail closed via accumulator. Torus to RB vacuum breakers fail open. B - Incorrect. This is the normal system line up. C - Correct. On a loss of IA, the RB vent dampers fail closed via accumulator pressure. The Torus to RB vacuum breakers fail open via accumulator. D - Incorrect. This is correct for RB vent dampers. It is plausible the vacuum breakers do not fail open as this would jeopardize secondary containment (secondary containment integrity is maintained via check valves inline with the vacuum breakers) **REQUIRED REFERENCES: None.**

53 **ID: 27434** **Points: 1.00**

Unit 2 is shutting down for a refueling outage, with the following equipment operation:

- 2A CRD Pump at 33 amps.
- CRD Head Spray is in service.
- CRD cooling water flow is 20 GPM.
- Head cooling flow is 185 GPM.

Based on these indications, what action (if any) must the Operating team take?

A. NO action is required

B. Lower Head Spray flow to get within head spray flow limits.

C. Lower CRD system flow to get within CRD system flow limits.

D. Lower CRD flow AND Head Spray flow to get 2A CRD pump to within its amp limitations.

Answer: B

Question 53 Info	
Topic:	53 - 201001.A1.04
Comments:	Objective: 21000LK001 Reference: DOP 0220-01, DOP 0300-01 K/A: 201001.A1.04 2.7/2.7 K/A: Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROD DRIVE HYDRAULIC SYSTEM controls including: head spray CFR: 41.5 Safety Function: 1 Pedigree: Bank Level: High Comment: A. Incorrect - Head spray limit is exceeded. B. Correct - Head spray limit is exceeded. Head spray flow shall NOT exceed 170 gpm. C. Incorrect - CRD system flow limits are not exceeded. D. Incorrect - 2A CRD pump amp limits are not exceeded. **REQUIRED REFERENCES: None.**

54 **ID: 13354** **Points: 1.00**

Unit 2 was operating at 7% power with a RPV pressure of 970 psig.

Control Rod H-5 did NOT move when given a withdraw signal from its current position of 12.

Drive water pressure has been adjusted to 300 psid.

Attempted Rod movement was unsuccessful.

Per DOP 0400-01, REACTOR MANUAL CONTROL SYSTEM, the next required action is to...

A. Attempt to move Control Rod H-5 by performing Double Clutching.

B. Individually scram Control Rod H-5, then disarm it electrically and hydraulically.

C. Raise Drive water pressure an additional 50 psid and attempt to withdraw Control Rod H-5.

D. Recommend to the SRO to declare Control Rod H-5 INOPERABLE, then disarm it electrically and hydraulically.

Answer: C

Question 54 Info	
Topic:	54 - 201003.A2.01
Comments:	Objective: DRE201LN001.12 Reference: DOP 0400-01 K/A: 201003.A2.01 3.4 / 3.6 K/A: Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Stuck rod. CFR: 41.5 Safety Function: 1 Level: High Pedigree: Bank History: 2006 NRC Explanation: A - Incorrect. This is only allowed for CRDs at 00. B - Incorrect. Stuck CRDs must be disarmed but not scrammed. C - Correct. Per DOP 0400-01, CRD drive water pressure should be raised an additional 50 psid and attempt to withdraw the CRD. D - Incorrect. This would be correct if the CRD was uncoupled. **REQUIRED REFERENCES: None.**

55 **ID: 27393** **Points: 1.00**

Unit 2 shutdown is in progress when a sequence deviation occurs resulting in CRD M-10 being inserted one notch past the target position.

How will CRD M-10 be displayed on the RWM and what actions are required per DOA 0300-12, MISPOSITIONED CONTROL ROD?

A. CRD M-10 will be displayed with a MAGENTA background. Withdraw CRD M-10 one notch.

B. CRD M-10 will be displayed CYAN background. Withdraw CRD M-10 one notch.

C. CRD M-10 will be displayed with a MAGENTA background. Enter a Substitute Position on the RWM for CRD M-10.

D. CRD M-10 will be displayed CYAN background. Enter a Substitute Position on the RWM for CRD M-10.

Answer: A

Question 55 Info	
Topic:	55 - 201006.A2.05
Comments:	Objective: 201LN006.08 Reference: DOA 0300-12, DOP 0400-01 K/A: 201006.A2.05 3.1/3.5 K/A: Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM (RWM); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Out of sequence rod movement: P-Spec (Not-BWR-6) CFR: 41.5 Safety Function: 7 Pedigree: New Level: High Explanation: A - Correct. If a control rod is move 1 notch past its target position, the operator must return the control rod to it's target position. Rods out of sequence are displayed in magenta numbers on the RWM. Rods selected (CRD-M-10) are shown in inverse video. B - Incorrect. This would be correct if CRD M-10 was OOS. C - Incorrect. This would be correct if a withdraw block was present. All other control rods have a withdrawal block at this time. D - Incorrect. All other control rods have a withdrawal block at this time. This would be correct coloring if CRD M-10 was OOS. **REQUIRED REFERENCES: None.**

56 **ID: 27392** **Points: 1.00**

Unit 2 is operating at full power when the following occurs.

- High rainfall causes grass to accumulate on the 2/3 cribhouse bar racks
- The SRO directed the crew to reduce power to 700 MWE

The reason a power reduction is performed during this transient is to allow more time to restore ____(1)__ and ensure the ____(2)____ do not lose NPSH.

A. (1) Feedwater heating
(2) Condensate pumps

B. (1) Feedwater heating
(2) Reactor feed pumps

C. (1) Condenser vacuum
(2) Condensate pumps

D. (1) Condenser vacuum
(2) Reactor feed pumps

Answer: C

Question 56 Info	
Topic:	56 - 295002.K3.09
Comments:	Objective: DRE275LN001.12 Reference: DRE275LN001 K/A: 295002.AK3.09 3.2 / 3.2 K/A:Knowledge of the reasons for the following responses as they apply to LOSS OF MAIN CONDENSER VACUUM : Reactor power reduction CFR: 41.5 Safety Function: 3 Level: Low Pedigree: Bank Explanation: A - Incorrect. A loss of condenser vacuum will raise the condensate temperature and therefore not cause a reduction in feedwater heating. B - Incorrect. A loss of condenser vacuum will raise the condensate temperature and therefore not cause a reduction in feedwater heating. C - Correct. Lowering power during a loss of vacuum gives you more time to restore condenser vacuum and ensures that the condensate pumps will have adequate NPSH. Degrading condenser vacuum will affect the amount of condensate depression achieved by the condenser. As conditions worsen the eye of the impeller of the condensate pumps will reach the point where cavitation will be achieved in the pump D - Incorrect. The cause of lowering suction to the feed pumps would be the lack of condensate pump discharge pressure. Though a reduction in suction pressure to the feed pumps would be seen in this condition the condensate pumps would be the first to lose NPSH and are therefore the cause. **REQUIRED REFERENCES: None.**

57 **ID: 27394** **Points: 1.00**

Unit 2 was operating at rated power when the 2C Condensate/Condensate Booster Pump tripped.

How will the plant respond?

A. Recirc pumps will **IMMEDIATELY** run back to 30% speed.

B. Recirc pumps will **IMMEDIATELY** run back to 68% speed.

C. Recirc pumps will run back to 30% speed **AFTER** RPV level reaches +25 inches.

D. Recirc pumps will run back to 68% speed **AFTER** RPV level reaches +25 inches.

Answer: B

Question 57 Info	
Topic:	57 - 202001.A3.03
Comments:	Objective: 202LN001.06 Reference: DAN 902(3)-4 F-5 K/A: 202001.A3.03 3.2/3.2 K/A: Ability to monitor automatic operations of the RECIRCULATION SYSTEM including: System flow CFR: 41.7 Safety Function: 1&4 Pedigree: New Level: Memory Explanation: A - Incorrect. This would be correct if feedflow dropped below 2 Mlbm/Hr. B - Correct. With feedflow beyond the capacity of 2 RFPs, a recirc runback to 68% is initiated upon the loss of a C/CB pump. C - Incorrect. The runback is to 68%. The RPV level input applies to loss of RFP not C/CB pump. D - Incorrect. This would be correct for loss of a RFP. **REQUIRED REFERENCES: None.**

58 **ID: 27408** **Points: 1.00**

Max Torus Cooling has been established in preparation for conducting HPCI surveillance when a small leak develops in the drywell.

How will the LPCI system respond if Drywell Pressure exceeds 2 psig?

A. LPCI pumps will stop then restart and Torus Cooling valves will shut.

B. LPCI pumps will continue running and Torus Cooling valves will shut.

C. LPCI pumps will stop then restart and Torus Cooling valves will remain open.

D. LPCI pumps will continue running and Torus Cooling valves will remain open.

Answer: B

Question 58 Info	
Topic:	58 - 223001.K1.06
Comments:	Objective: DRE201LN001.06 Reference: DOP 1500-02, DAN 902(3)- A-7, 12E-2437A, 12E-2437 Sheets 1 and 2 K/A: 223001.K1.06 3.4/3.6 K/A: Knowledge of the physical connections and/or cause-effect relationships between PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES and the following: RHR/LPCI CFR: 41.2 to 41.9 Pedigree: New Level: High Explanation: A - Incorrect. This would be the case given stem conditions if a loss of off-site power or failure of fast transfer occurred. B - Correct. Without the use of the 316 keylock switches, the torus cooling valves will close on a 2 psig signal. Since there is no loss of off-site power, a fast transfer will occur and power to the LPCI pumps will remain uninterrupted. C - Incorrect. This would be the case if off-site power were lost and Torus cooling were established per the hardcard. D - Incorrect. This would be correct if Torus Cooling were established per the hardcard (in a transient). **REQUIRED REFERENCES: None.**

59 **ID: 22562** **Points: 1.00**

Unit 3 is in Mode 4.

- 3A SDC Pump is running in Shutdown Cooling Mode.
- 3B SDC Pump is running in Shutdown Cooling Mode.
- 3C SDC Pump is lined up to Fuel Pool Cooling System.

Bus 34 trips on overcurrent.

Which pump(s) will lose power?

A. 3B SDC pump ONLY.

B. 3A and 3B SDC pumps ONLY.

C. 3A and 3C SDC pumps ONLY.

D. 3B and 3C SDC pumps ONLY.

Answer: D

Question 59 Info	
Topic:	59 - 233000.K2.02
Comments:	Objective: DRE205LN001.02 Reference: DOP 6500-18 K/A: 233000.K2.02 2.8*/2.9* K/A: Fuel Pool Cooling and Clean-up: Knowledge of the electrical power supplies to the following: RHR pumps. CFR: 41.7 Safety Function: 9 Level: Memory Pedigree: Bank History: 2009 NRC Explanation: A - Incorrect. 3B SDC pump does lose power, however 3C loses power as well. B - Incorrect. 3A SDC pump is powered from 33-1 C - Incorrect. 3A SDC pump is powered from 33-1. D - Correct. The power supply to the 3B and 3C is 34-1. With overcurrent of Bus 34, the U3 D/G will auto start but the SDC pumps load shed on undervoltage and do not auto restart. **REQUIRED REFERENCES: None.**

60 **ID: 27429** **Points: 1.00**

Unit 2 was in a startup with RPV pressure at 300 psig and the RWCU system in operation, when the air supply line to the RWCU system pressure control valve PCV 2-1217 completely broke off the valve, causing it to lose all its air supply.

Based on the above conditions, the NSO is required to verify that the U2 RWCU system . . . . .

A. Aux pump trips on low suction pressure.

B. Recirc pump trips on low suction pressure.

C. isolates on high pressure downstream of the PCV.

D. isolates on high temperature out of the non-regen heat exchanger.

Answer: B

Question 60 Info	
Topic:	60 - 204000.A4.06
Comments:	Objective: 204LN001.12 Reference: DOP 1200-03, DOA 4700-01, DOP 1200-01, DAN 902-4 A-10, M-30 K/A: 204000.A4.06 3.0/2.9 K/A: Ability to manually operate and/or monitor in the control room: System Flow CFR: 41.7 Safety Function: 2 Level: High Pedigree: Bank History: 2009 Cert Explanation: A loss of IA to the PCV causes it to fail CLOSED. With the PCV closed, the pressure downstream of the valve will go down, thereby causing a low suction pressure trip of the Recirc pump. The Aux pump does not have a low suction trip. With the PCV closed and no flow through the system, the outlet temperature of the non-regen heat exchanger will be stagnant (or go down). **REQUIRED REFERENCES: None.**

61 **ID: 27397** **Points: 1.00**

Unit 2 was operating at rated power when RBM channels 7 and 8 were declared inoperable.

What actions are **REQUIRED** per Tech Spec 3.3.2.1, Control Rod Block Instrumentation?

A. Place either RBM channel 7 **OR** 8 in trip within 1 hour.

B. Place either RBM channel 7 **OR** 8 in trip within 15 minutes.

C. Place **BOTH** RBM channels 7 **AND** 8 in trip within 1 hour.

D. Place **BOTH** RBM channels 7 **AND** 8 in trip within 15 minutes.

Answer: A

Question 61 Info	
Topic:	61 - 215002.G.2.02.39
Comments:	Objective: 215002.07 Reference: TS 3.3.2.1 K/A: 215002.G.02.39 3.9/4.5 K/A: RBM: Knowledge of less than or equal to one hour Technical Specification action statements for systems CFR: 41.7/41.10 Safety Function: 7 Pedigree: New Level: Memory Explanation: A - Correct. With both RBMs inoperable, one channel is required to be placed in trip within 1 hour. B - Incorrect. This is plausible as multiple less than one hour TS requirements are 15 minute action times. C - Incorrect. Only 1 channel must be placed in trip. D - Incorrect. Only 1 channel must be placed in trip. **REQUIRED REFERENCES: None.**

62 **ID: 27398** **Points: 1.00**

How is feedwater dispersed into the RPV?

A. Through 1 feedwater sparger.

B. Through 2 feedwater spargers.

C. Through 3 feedwater spargers.

D. Through 4 feedwater spargers.

Answer: D

Question 62 Info	
Topic:	62 -259001.K4.04
Comments:	Objective: 259LN001.02 Reference: UFSAR 3.9.5.1 K/A: 259001.K4.04 2.5/2.6 K/A: Knowledge of REACTOR FEEDWATER SYSTEM design feature(s) and/or interlocks which provide for the following: Dispersal of feedwater in the reactor vessel. CFR: 41.7 Safety Function: 2 Pedigree: New Level: Memory Explanation: A - Incorrect. This is plausible if the candidate does not understand the concept of dispersion. B - Incorrect. This is correct for core spray. C - Incorrect. This is plausible due to the number of feed pumps (3) D - Correct. Feedwater is dispersed through 4 70" spargers. **REQUIRED REFERENCES: None.**

63 **ID: 27399** **Points: 1.00**

Unit 2 cooldown was in progress with the bypass valves when 1 DEHC pressure controller processor lost power.

What effect (if any) will this have on the cooldown?

A. No effect.

B. RPV pressure control will transfer to throttle.

C. Bypass valves will close. Cooldown will be terminated.

D. Bypass valves will open further. Cooldown rate will increase.

Answer: A

Question 63 Info	
Topic:	63 - 241000.K3.25
Comments:	Objective: 241LN001.08 Reference: DOA 5650-02 K/A: 241000.K3.25 3.3/3.3 K/A: Knowledge of the effect that a loss or malfunction of the REACTOR/TURBINE PRESSURE REGULATING SYSTEM will have on the following: Reactor cooldown CFR: 41.7 Safety Function: 3 Pedigree: New Level; High Explanation: A - Correct. This is correct when a single processor controller fails or loses power. B - Incorrect. With bad quality pressure controller failure, pressure control will be transferred to throttle. C - Incorrect. This would be correct if the failure was controller output failing in the low direction. D - Incorrect. This would be correct if the failure was controller output failing in the high direction. **REQUIRED REFERENCES: None.**

64 **ID: 27400** **Points: 1.00**

Unit 2 was operating at rated power with Hydrogen Addition System operating in manual when a power reduction was directed.

What actions should be taken and why?

A. Oxygen injection flow should be raised to prevent MSL radiation monitors from spiking.

B. Oxygen injection flow should be reduced to prevent MSL radiation monitors from spiking.

C. Hydrogen injection flow should be raised to prevent MSL radiation monitors from spiking.

D. Hydrogen injection flow should be reduced to prevent MSL radiation monitors from spiking.

Answer: D

Question 64 Info	
Topic:	64 - 272000.K5.01
Comments:	Objective: 272LN002.08 Reference: DOP 3390-01 K/A: 272000.K5.01 3.2/3.5 K/A: Knowledge of the operational implications of the following concepts as they apply to RADIATION MONITORING SYSTEM: Hydrogen injection operation's effect on process radiation indications: Plant-Specific CFR: 41.7 Safety Function: 7 Pedigree: New Level: Memory Explanation: A - Incorrect. Oxygen flow automatically follows hydrogen flow. B - Incorrect. Oxygen flow automatically follows hydrogen flow. C - Incorrect. This would be correct for power increase. D - Correct. Hydrogen injection should be lowered prior to power reductions to prevent excess activity and subsequent spiking of the MSL radiation monitors. **REQUIRED REFERENCES: None.**

65 **ID: 12939** **Points: 1.00**

You are about to take the shift as a Unit 2 NSO.

The last time you were on shift was seven days ago.

What is the MINIMUM time that are you REQUIRED to read the Control Room logs back to, prior to completing relief?

A. 1 day.

B. 2 days.

C. 4 days.

D. 7 days.

Answer: C

Question 65 Info	
Topic:	65 - Generic.1.03
Comments:	Objective: 29900LK022 Reference: OP-AA-112-101 K/A: Generic.2.1.3 3.7/3.9 K/A: Knowledge of shift or short-term relief turnover practices. CFR: 41.10 Level: Memory Pedigree: Bank History: 2008 NRC Explanation: A - Incorrect - 1 day is based on days off during a normal rotation. B - Incorrect - 2 days are based on days off during a normal rotation. C - Correct - An on-coming Reactor Operator is required to read the Control Room logs through the last previous date on shift, or the preceding four days, whichever is less. D - Incorrect - 7 days would be assumed as the minimum days, since it is the amount of time the individual was not on shift. **REQUIRED REFERENCES: None.**

66 **ID: 24110** **Points: 1.00**

Unit 2 is operating at 50% power and expected to pick up load early next shift.

'D' Lift pump is being prepared to start after maintenance on the motor has been completed.

The NSO in the control room attempts to start the 'D' Lift pump.

The EO at the Lift Station reports the breaker failed to operate.

Based on these events, per DOP 6500-19, RACKING A LIFT STATION 4160 VOLT MANUALLY OPERATED CIRCUIT BREAKER, in regards to the 'D' Lift pump, the operating crew should _____.

A. leave the pump as is to support troubleshooting activities

B. attempt to restart the pump ONE more time ONLY

C. attempt to restart the pump a MAXIMUM of TWO more times

D. place the control switch in PULL TO LOCK at the local control panel in the Lift Station

Answer: A

Question 66 Info	
Topic:	66 - Generic.2.20
Comments:	Objective: 299L029 Reference: DOP 6500-19 K/A: Generic.2.2.20 2.6 / 3.8 K/A: Knowledge of the process for managing troubleshooting activities. CFR: 41.10 Level: Memory Pedigree: Bank History: 2012 NRC Comments: a) Correct - Per DOP 6500-19, if the equipment malfunction is not readily apparent and plant conditions permit, then leave conditions as is to aid in troubleshooting. b) Incorrect - One more restart is a restriction for Hot Restarts c) Incorrect - Two more restarts, is a restriction for cold starts. d) Incorrect - PTL is the action to take if the cause of the breaker trip is known. **REQUIRED REFERENCES: None.**

67 **ID: 22619** **Points: 1.00**

Per the UFSAR, why is it NOT permissible to run the Mechanical Vacuum Pump when the Reactor Mode Switch is in the RUN position?

A. This would bypass the Low Condenser Vacuum scram with the Reactor Mode Switch in RUN.

B. This would provide an untreated release pathway for non-condensibles to the Main Chimney.

C. Because of the potential of Hydrogen fires and/or explosions due to the gases being admitted to the main condenser.

D. Because the common suction line can NOT accommodate the required flow to both the Mechanical Vacuum Pump and the SJAE's.

Answer: B

Question 67 Info	
Topic:	67 - Generic.3.11
Comments:	Objective: DRE275LN001.03 Reference: UFSAR 11.3.2.3, DAN 902-7 H-3 K/A: Generic.3.11 3.8 / 4.3 K/A: Ability to control radiation releases. Level: Memory Pedigree: Bank History: 2009 NRC Explanation: A - Incorrect. The low condenser vacuum bypass is jumpered out. B - Correct. Not permissible in RUN due to bypassing the Off Gas System and discharging directly to the 310' chimney (which results in an untreated release pathway for non-condensibles). C - Incorrect. This is true for the discharge of the pump, not the suction. D - Incorrect. The mechanical vacuum pump discharges via the gland seal exhaust piping, not the SJAE piping. **REQUIRED REFERENCES: None.**

68 **ID: 12958** **Points: 1.00**

Chemistry has reported that high coolant activity exists on Unit 2 and a fuel element failure is suspected.

If site assembly is required, which of the following actions is required per DGA-16, COOLANT HIGH ACTIVITY - FUEL ELEMENT FAILURE, to prevent excessive personnel exposure?

A. Isolating HPCI steam lines

B. Isolating Recirc sample lines

C. Isolating the Isolation Condenser

D. Isolating HPCI steam drains to the condenser

Answer: D

Question 68 Info	
Topic:	68 - Generic.3.14
Comments:	Objective: 29501LK049 Reference: DGA 16 K/A: Generic.2.3.14 3.4 / 3.8 K/A: Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. CFR: 41.12 Safety Function: 9 Level: Memory Pedigree: Bank History: 2012 NRC Explanation: A. Incorrect - Isolating HPCI steam flow would block the leakage, but would render HPCI unavailable, so this action would not be appropriate B. Incorrect - Recirc sample drains also do not go to the Condenser. C. Incorrect - Isolation Condenser drains do not go to the Condenser. D. Correct - Per DGA 16 Caution. Assembly area inside the RPA is near the feed pumps, which is against the Condenser shield wall. Any flow of radioactive water to the Condenser would increase dose rates in this area. **REQUIRED REFERENCES: None.**

69 **ID: 27435** **Points: 1.00**

Unit 2 was at full power when a transient occurred causing an entry into an 'ALERT' EP classification.

The Main Control Room has Command and Control.

Who has the non-delegable responsibility for classification of emergencies and determination of PARs?

A. Unit Supervisor

B. Shift Manager

C. Station Emergency Director

D. Corporate Emergency Director

Answer: B

Question 69 Info	
Topic:	69 - Generic 4.37
Comments:	Objective: EP-G-105.2b Reference: EP-AA-112, EP-AA-112-100 K/A: Generic 4.37 K/A: Knowledge of the lines of authority during implementation of the emergency plan. CFR: 41.10 Level: Memory Pedigree: New Comments: A - Incorrect. Unit Supervisors are qualified Shift Emergency Directors, but the responsibility for classification of emergencies and determination of PARs belongs to the Shift Manager. B - Correct. The Shift Manager, as Shift Emergency Director, assumes command and control for the emergency response activities until relieved. The Shift Manager will be the initial person to recognize the emergency action level (EAL) condition and make the initial declaration of an emergency. C - Incorrect. Station Emergency Director will have this responsibility once command and control has been transferred to the TSC. D - Incorrect. Command and Control of overall emergency response and the non-delegable responsibility for PAR determination and the notification of off-site authorities can be transferred directly from the Shift Manager to the Corporate Emergency Director, but classification responsibility remains at the site. **REQUIRED REFERENCES: None.**

70 **ID: 24217** **Points: 1.00**

You are inspecting a Fire Extinguisher type that does **NOT** have a pressure gauge and discover that the seal is missing. What action is required per DFPS 4114-15, FIRE EXTINGUISHER INSPECTION?

A. Reseal the extinguisher ONLY.

B. Verify alternate fire suppression is available.

C. Verify correct weight of the extinguisher and replace the seal.

D. Establish fire watch until approved extinguisher is in place.

Answer: C

Question 70 Info	
Topic:	70 - Generic 4.25
Comments:	Objective: DRE286286LN001.14 Reference: DFPS 4114-15 K/A: Generic 2.4.25 3.3/3.7 K/A: Knowledge of fire protection procedures. CFR: 41.10 Level: Memory Pedigree: Bank History 2015-301 NRC Comments: Per DFPS 4114-15 Annual Fire Extinguisher Inspection, if you are performing extinguisher checks on an extinguisher type without a pressure gauge and discover that the seal is broken, then the correct action is to weigh the extinguisher and replace the seal per DFPP 4114-04. Replacing the extinguisher is not required. Only logging and continuing inspection is not the correct action. Verifying alternate fire suppression is not required by the procedure. **REQUIRED REFERENCES: None.**

71 **ID: 13823** **Points: 1.00**

A transient occurred, which caused the Unit Supervisor to enter several DEOP procedures.

Per OP-DR-103-102-1002, STRATEGIES FOR SUCCESSFUL TRANSIENT MITIGATION, when Drywell pressure approaches or reaches _____ psig, the NSO shall be aware of AND report the parameter.

A. 1.5 and 2.0 ONLY

B. 2.0 and 9.0 ONLY

C. 1.5, 2.0, and 9.0 ONLY

D. 1.5, 2.0, 9.0, and 12.0

Answer: C

Question 71 Info	
Topic:	71 - Generic.4.13
Comments:	Objective: 29800LK065 Reference: OP-DR-103-102-1002 K/A: Generic.4.13 4.0/4.6 K/A: Knowledge of crew roles and responsibilities during EOP usage CFR: 41.10 Level: Memory Pedigree: Bank History: 2007 NRC Explanation: A - Incorrect. This is the TS LCO for DW pressure and alarm setpoint, as well as DEOP 100 and 200-1 entry conditions B - Incorrect. This is the DEOP entry condition and threshold for drywell sprays in DEOP 200-1 C - Correct. OP-DR-103-102-1002 requires operators to be aware of and report Drywell pressure as it approaches or reaches 1.5, 2.0, AND 9.0 psig D - Incorrect. 12 psig is the torus bottom pressure when transition is required. **REQUIRED REFERENCES: None.**

72 **ID: 27437** **Points: 1.00**

Unit 2 was operating at near rated power when Bus 29 de-energized due to overcurrent.

The ____(1)____ will de-energize and may be re-energized manually from ____(2)____.

A. (1) ESS Bus
(2) MCC 28-2

B. (1) B RPS Bus
(2) MCC 25-2

C. (1) A RPS Bus
(2) MCC 25-2

D. (1) Instrument Bus
(2) MCC 25-2

Answer: C

Question 72 Info	
Topic:	72 - 262001.A2.10
Comments:	Objective: DRE262LN001.06 Reference: DGA-12, DAN 902-8 A-5 K/A: 262001.A2.10 2.9/3.4 K/A: Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Exceeding current limitations CFR: 41.5 Safety Function: 6 Level: High Pedigree: Bank Explanation: A. Incorrect - The ESS Bus does not lose power, because of the associated UPS. B. Correct - RPS Bus 'A' is powered from the 'B' RPS MG set, which is powered from MCC 29-2. With a loss of Bus 29, The 'B' RPS MG set coasts down, de-energizing the 'A' RPS Bus. A mechanical interlock exists allowing either (not both) RPS Bus to be re-energized manually. C. Incorrect - 'B' RPS Bus is powered from MCC 28-2 D. Incorrect - Can be re-energized from MCC 25-2, but is powered from MCC 28-2, NOT MCC 29-2. **REQUIRED REFERENCES: None.**

73 **ID: 27402** **Points: 1.00**

Which of the following describes the required sequence to follow when inserting Control Rods per control rod move sheets and CRAM rod move sheets?

A. Control Rod Move Sheets - Top to Bottom
CRAM rod move sheets - Top to Bottom

B. Control Rod Move Sheets - Bottom to Top
CRAM rod move sheets - Top to Bottom

C. Control Rod Move Sheets - Top to Bottom
CRAM rod move sheets - Bottom to Top

D. Control Rod Move Sheets - Bottom to Top
CRAM rod move sheets - Bottom to Top

Answer: B

Question 73 Info	
Topic:	73 - Generic 2.1.37
Comments:	Objective 20102LK032 Reference: DGP 03-04, DGP 03-01 K/A: Generic 2.1.37 4.3/4.6 K/A: Knowledge of procedures, guidelines, or limitations associated with reactivity management CFR: 41.1 Pedigree: Bank Level: Memory Explanation: A - Incorrect. This is correct for CRAM sheets. B - Correct. Control rod move sheets are inserted bottom to top and CRAM sheets are inserted top to bottom. C - Incorrect. This is the inverse of the correct method. D - Incorrect. This is correct for control rod move sheets. **REQUIRED REFERENCES: None.**

74 **ID: 26946** **Points: 1.00**

Per OP-DR-108-101-1002, OPERATIONS DEPARTMENT STANDARDS AND EXPECTATIONS, how are disabled alarms tracked?

A. Alarm is documented in IR, and a yellow dot placed on annunciator window

B. Alarm is documented in IR, and a salmon sticker is placed on annunciator window

C. Alarm is documented in the Turnover, and a green dot placed on annunciator window

D. Alarm is documented in the Turnover, and a salmon sticker is placed on annunciator window

Answer: C

Question 74 Info	
Topic:	74 - Generic.2.43
Comments:	Objective: 39900LK002 Reference: OP-DR-108-101-1002 K/A: G.2.2.43 3.0/3.3 K/A: Knowledge of the process used to track inoperable alarms CFR: 41.10 Level: Memory Pedigree: Bank History: None Comments: A - Incorrect. OP-DR-108-101-1002 directs documentation in the Turnover. Yellow dot is reserved for control rod abnormalities. B - Incorrect. OP-DR-108-101-1002 directs documentation in the Turnover. C - Correct. OP-DR-108-101-1002 directs documentation in the Turnover and application of a green dot to annunciator window. D - Incorrect. OP-DR-108-101-1002 directs application of green dot to annunciator window. **REQUIRED REFERENCES: None.**

75 **ID: 27403** **Points: 1.00**

Which of the following temporary directives can be issued and controlled by use of a STANDING ORDER?

A. Describe the preferred way of operating a system in place of an existing procedure.

B. Provide guidance on actions to take for inoperable equipment which conflict with the Technical Specification requirements.

C. Change the order of performance steps to a test procedure in lieu of a procedure change.

D. Require an increased monitoring surveillance to be utilized when remote indication of a radiation monitor is lost.

Answer: D

Question 75 Info	
Topic:	75 - Generic 2.1.15
Comments:	Objective: 29900LK180 Reference: OP-AA-102-104, AD-AA-101 K/A: G.2.1.15 2.7/3.4 K/A: Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, operations memos, etc. CFR: 41.10 Level: Memory Pedigree: Bank History: None Comments: A - Incorrect. OP-AA-102-104 directs Standing Orders: Shall not conflict with existing procedures. B - Incorrect. OP-AA-102-104 directs Standing Orders: Shall not conflict with technical specifications. C - Incorrect. Temporary changes to procedures (including test procedures) are controlled by AD-AA-101. OP-AA-102-104 directs Standing Orders: Shall not be used as a substitute for procedures. D - Correct. OP-AA-102-104 directs Standing Orders: Are longer-term, written directions from Operations Management to Shift Crews which include but are not limited to: Non-routine station/unit operating condition; Temporary administrative requirements; Authorities and responsibilities not included in procedures. **REQUIRED REFERENCES: None.**

76 **ID: 27404** **Points: 1.00**

What is the basis for the LCO 3.4.1 Recirculation Loops Operating requirement that states: "Two recirculation loops with matched flows shall be in operation"?

A. To prevent temperature stratification in the core.

B. To prevent excessive vibrations of the jet pump risers.

C. To prevent entering the “Instability Region” of core flow.

D. To ensure the assumptions of the LOCA analysis are satisfied.

Answer: D

Question 76 Info	
Topic:	76 - 295001.G.2.38
Comments:	Objective: DRE202LN001.07 Reference: Tech Spec Bases 3.4.1.1 K/A: 295001.G.2.38 3.6/4.5 K/A: Partial or Complete Loss of Forced Core Flow Circulation: Knowledge of conditions and limits in the facility license. CFR: 43.1 Safety Function: 1 Level: Memory Pedigree: Bank History: 2010 NRC Explanation: A - Incorrect. This is the reason for maintaining recirc flow while operating. B - Incorrect. This is the basis for recirc loop flow maximum and minimum limits. C - Incorrect. The instability region is a function of individual pump speed. D - Correct. Two recirculation loops are normally required to be in operation with their flows matched to ensure that during a LOCA caused by a break in the piping of one recirculation loop the assumptions of the LOCA analysis are satisfied. SRO per criteria: 2 **REQUIRED REFERENCES: None.**

77 **ID: 13660** **Points: 1.00**

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

(Reference Provided)

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

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

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

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

Answer: D

Question 77 Info	
Topic:	77 - 295026.A2.02
Comments:	Objective: 29501LP005 Reference: DEOP 200-1 K/A: 295026.A2.02 3.8 / 3.9 K/A: Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool level. Level: High Pedigree: Bank History: 2008 NRC Comments: Utilizing the DEOP 200-1 Heat Capacity Temperature Limit (HCTL) curve (table M), none of the distractors are correct. But since 'D' distractor has a Torus level above 17 feet, TSG figure B.4-1 must be utilized. It can then be determined that the correct answer is 'D' because the Heat Capacity Limit is being violated.and would require a blowdown. SRO per Criteria: 5 **REQUIRED REFERENCES: DEOP charts, with the entry conditions blanked out AND Figure B.4-1 of the TSGs.**

78 **ID: 27409** **Points: 1.00**

Unit 3 was in a startup with the Recirc flow input signal to the APRMs at 50%.

When Recirc flow is raised the output signal from the "A" Flow Unit remains at 50% and actual Recirc loop flows respond as expected.

As Recirc flow continues to be raised a control rod block will FIRST occur due to a ___(1)___ and the Unit Supervisor is required to direct ___(2)___ .

A. (1) flow Unit Comparator trip;
(2) contacting the Instrument Maintenance Department for assistance, per DOA 0700-03, ROD OUT BLOCKS.

B. (1) flow Unit Comparator trip;
(2) reducing Recirc flow to the original value per DAN 902-5 C-3, ROD OUT BLOCK, then continue startup.

C. (1) flow biased neutron flux high signal;
(2) contacting the Instrument Maintenance Department for assistance, per DOA 0700-03, ROD OUT BLOCKS.

D. (1) flow biased neutron flux high signal;
(2) reducing Recirc flow to the original value per DAN 902-5 C-3, ROD OUT BLOCK, then continue startup.

Answer: A

Question 78 Info	
Topic:	78 - 215005.A2.05
Comments:	Objective: DRE215LN005.06 Reference: DAN 902-5, DOA 0700-03 K/A: 215005.A2.05 3.5 / 3.6 K/A: Ability to (a) predict the impacts of the following on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of recirculation flow signal. Level: High Pedigree: Bank History: 2010 NRC Explanation: A control rod block due to a Flow Unit Comparator trip (not flow biased neutron flux signal) will occur upon a 7.5% mismatch, which causes annunciator APRM HI. The auto action on receipt of the alarm is a Rod Withdrawal Block. The ROD OUT BLOCK annunciator requires to stop all power increases until the problem with 'B' Flow Comparator Unit is corrected. IMD must be contacted to troubleshoot the problem. SRO Criteria: 5 **REQUIRED REFERENCES: None.**

79 **ID: 22743** **Points: 1.00**

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

The following 902-8 panel annunciators are received:

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

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

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

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

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

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

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

Answer: C

Question 79 Info	
Topic:	79 - 262002.A2.01
Comments:	Objective: DRE262LN005.12 Reference: DANs 902-8 B-8, 902-8 E-8, 902-8 E-10, 902-8 F-8, DOP 6800-01 K/A: 262002.A2.01 2.6 / 2.8 K/A: Ability to (a) predict the impacts of the following on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage. Level: High Pedigree: Bank History: 2008 NRC Comments: As the voltage of the inverter decreased to <114 volts AC, the above listed annunciators alarm. Normally this low voltage would cause a swap of power to Bus 25 (via the static switch), but with Bus 25 out of service, the power seeking ABT with swap to MCC 28-2. When voltage returns to a normal value AND to return the system to NORMAL power (via the inverter), the ABT will need to be reset by placing the AUTO BUS TRANSFER RESET toggle switch to RESET (which transfers the feed back to the inverter). The distractors for Bus 29 and 250Vdc MCC 2 are incorrect, as they are supplying the inverter (common misconception) and will not be supplying power once the ABT swapped. The distractors with closing CB 201 RECTIFIER AC INPUT via the DOA, are incorrect as this would be done if the ESS Bus was lost (it is not lost, since it is powered from MCC 28-2). SRO per Criteria: 5 **REQUIRED REFERENCES: None.**

80 **ID: 23886** **Points: 1.00**

Both units are operating at near rated power with the minimum shift staffing.

At 0430 the STA qualified individual is transported off-site to the Morris hospital and the Unit Supervisor placed a call to fill the vacant STA position.

If NO other STA qualified individual is able to make it into the site until 0900, what is the LATEST time that the Station will be in compliance with Tech Specs, with regards to shift staffing?

A. 0400

B. 0500

C. 0600

D. 0700

Answer: C

Question 80 Info	
Topic:	80 - Generic.1.04 (2)
Comments:	Objective: 29900LK014 Reference: Tech Spec 5.0 section 5.2.2 b. and 5.2.2.f K/A: Generic.1.04 3.3 / 3.8 K/A: Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, “no-solo” operation, maintenance of active license status, 10CFR55, etc. Level: Memory Pedigree: Bank History: 2010 NRC Explanation: Per the above Tech Spec, shift crew composition may be less than the minimum requirement for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements below the STA requirement for a time not to exceed 2 hrs for unexpected absence. The distractors are based on misconceptions of no time, 1 hour, and 3 hours (the start of next shift). SRO per criteria: 2 **REQUIRED REFERENCES: None.**

81 **ID: 13864** **Points: 1.00**

Given the following set of conditions on Unit 2:

- Primary containment is open.
- RPV Water level is 90 inches.
- RPV Water temperature is 190°F.
- The MODE switch is in SHUTDOWN.
- Reactor Vessel head bolts are tensioned.

An event occurred that caused RPV Water temperature to rise to and stabilize at 220°F.

Which of the following describes the current plant MODE and which procedure is required to be entered?

A. Mode 3, enter DEOP 300-1, Secondary Containment Control

B. Mode 4, enter DEOP 300-1, Secondary Containment Control

C. Mode 3, enter DOA 1000-01, Residual Heat Removal Alternatives

D. Mode 4, enter DOA 1000-01, Residual Heat Removal Alternatives

Answer: C

Question 81 Info	
Topic:	81 - Generic.1.14
Comments:	Objective: 29501LK093 Reference: DOA 1000-01, Tech Spec Bases 1.1 K/A: Generic.1.14 3.1 / 3.1 K/A: Level: High Pedigree: Bank History: 2005 NRC, 2007 NRC SRO per Criteria: 5 Explanation: When temp exceeds 212°F, the Rx will go from Mode 4 to Mode 3. Due to the temperature rise, DOA 1000-01, Residual Heat Removal Alternatives must be entered. **REQUIRED REFERENCES: None.**

82 **ID: 27438** **Points: 1.00**

A test of the Control Rod Drive system requested by Engineering has been determined to be a "Special Test" using OP-AA-108-110, Evaluation of Special Tests or Evolutions.

What level of brief is required by OP-AA-108-110, Evaluation of Special Tests or Evolutions?

A. Tailored Pre-Job Brief

B. Standard Pre-Job Brief

C. IPA (Infrequent Plant Activity) Brief

D. HLA (Heightened Level of Awareness) Brief

Answer: C

Question 82 Info	
Topic:	82 - Generic.2.07
Comments:	Objective: 29900LK071 Reference: OP-AA-108-110, HU-AA-1211 K/A: Generic.2.07 2.9 / 3.6 K/A: Knowledge of the process for conducting special or infrequent tests. Level: Memory Pedigree: New Comments: A - Incorrect. Tailored pre-job briefs are used for Jobs involving significant personnel safety hazards such as excessive heat stress, excavation, trenching and shoring, high energy feedwater/steam systems, permit required confined space entry, asbestos, lead, energized equipment, hydrogen systems, chlorine systems, line-clearance tree trimming, etc. B - Incorrect. Standard pre-job briefs are used for Non-routine switchyard activities, jobs unfamiliar to the worker(s), jobs requiring coordination of two or more people or departments, who will actually perform a portion of the task, jobs involving the simultaneous use of multiple procedures, jobs with potential effects on other equipment or areas in the plant, this includes positionable components that could be mispositioned within 2 Feet of work being performed. C - Correct. OP-AA-108-110 states The Senior Line Manager (SLM) shall ENSURE an IPA briefing is conducted in accordance with HU-AA1211 prior to performing the special test or evolution. This briefing shall cover all the applicable topics from HU-AA-1211 and should be attended by all personnel performing the activity. D - Incorrect. Heightened Level of Awareness (HLA) briefings are required for: Activities screened by the work control process and are performed less frequently than quarterly, Evolutions covered by either permanent or special procedures requiring the coordination of four or more people or multiple departments, Instances of multiple evolutions in progress, when performed by themselves each evolution is performed regularly; but, when performed together, require an increased level of awareness or coordination. SRO Per Criteria: 3 **REQUIRED REFERENCES: None.**

83 **ID: 27440** **Points: 1.00**

Unit 2 is in a refuel outage.

DOP 0500-10, INSTALLATION OF SCRAM BYPASS JUMPERS, is in progress.

IMD will be installing jumpers across relays 590-107 A, C, E & G with a procedurally controlled Temporary Configuration Change (TCC).

What scrams will be disabled after the jumpers are installed?

(Reference Provided)

A. ALL Channel A Scrams

B. ALL Channel B Scrams

C. Channel A Neutron Monitoring Scrams ONLY

D. Channel B Neutron Monitoring Scrams ONLY

Answer: C

Question 83 Info	
Topic:	83 - Generic.2.15 (2)
Comments:	Objective: 29900LK149 Reference: DOP 0500-10 K/A: Generic 2.2.15 3.9/4.3 K/A: Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. CFR: 41.10/43.5 Level: High Pedigree: New Explanation: A - Incorrect. Only the Channel A neutron monitoring scrams are bypassed. Plausible because the jumpers are installed on the last of a series of relays. Must know that the placement of the jumpers will only bypass the 107 relays. B - Incorrect. Only the Channel A neutron monitoring scrams are bypassed. Plausible because the jumpers are installed on the last of a series of relays. Must know that the placement of the jumpers will only bypass the 107 relays. Must determine from plant drawings that the relays are in the A channel. C - Correct. The Channel A neutron monitoring scrams are bypassed. The Procedurally Controlled TCC from DOP 0500-10 requires Unit Supervisor (SRO) review and approval prior to jumper installation and removal to ensure expected plant configuration is maintained. D - Incorrect. Only the Channel A neutron monitoring scrams are bypassed. Must determine from plant drawings that the relays are in the A channel. SRO per criteria: 3 **REQUIRED REFERENCES: DOP 0500-10 Attachments D & E**

84 **ID: 22678** **Points: 1.00**

During a refueling outage an LPRM detector is discovered in a trash barrel in the Reactor Building by a contractor.

Radiation Protection has determined that the contractor received the following dose:

- 4 Rem Whole Body
- 16 Rem to the eyes
- 25 Rem shallow dose to his right hand

What is (are) the required notification(s)?

1. A written report, specifying the exposure, to the contractor.
2. Notify the NRC Operations Center via the ENS immediately, but no later than 1 hour.
3. Notify the NRC Operations Center within 24 hours.
4. Submit a written report to the NRC within 30 days.

(Reference Provided)

A. 1 and 3 ONLY

B. 2 and 4 ONLY

C. 1, 2 and 4 ONLY

D. 1, 3 and 4 ONLY

Answer: D

Question 84 Info	
Topic:	84 - Generic.3.04
Comments:	Objective: 29900LK012 Reference: LS-AA-1120 K/A: Generic.3.04 3.2 / 3.7 K/A: Knowledge of radiation exposure limits under normal or emergency conditions. Level: Memory Pedigree: Bank History: 2009 NRC, 2011 Cert Comments: LS-AA-1120 Reportable Event RAD 1.2 states: Each licensee shall, within 24 hours of discovery of the event, report any event involving loss of control of licensed material possessed by the licensee that may have caused, or threatens to cause, any of the following conditions: (1) An individual to receive, in a period of 24 hours - (i) A total effective dose equivalent exceeding 5 rems (0.05 Sv); or (ii) A lens dose equivalent exceeding 15 rems (0.15 Sv); or (iii) A shallow-dose equivalent to the skin or extremities exceeding 50 rems (0.5 Sv); or (2) The release of radioactive material, inside or outside of a restricted area, so that had an individual been present for 24 hours, the individual could have received an intake in excess of one occupational annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot-cells or process enclosures). § 20.2203(a)(1): Each licensee shall submit a written report within 30 days after learning of ... any incident for which notification is required by § 20.2202. § 20.2205: When a licensee is required pursuant to the provisions of §§ 20.2203, 20.2204, or 20.2206 to report to the Commission any exposure of an identified occupationally exposed individual, or an identified member of the public, to radiation or radioactive material, the licensee shall also provide a copy of the report . . . to the individual. This report must be transmitted at a time no later than the transmittal to the Commission. SRO per criteria 4 **REQUIRED REFERENCES: LS-AA-1120, pages 1-25.**

85 **ID: 22683** **Points: 1.00**

Unit 3 was operating at near rated power when a scram occurred. The following reports were received:

- Time 00:00:00 - RPV pressure is 450 psig.
- Time 00:00:10 - Drywell pressure is 2.3 psig.
- Time 00:00:30 - RPV water level is -150 inches.
- Time 00:01:00 - The only source of injection is U2 CRD cross-tied to Unit 3.
- Time 00:02:00 - RPV water level is -160 inches.

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

DEOP 100, RPV CONTROL
DEOP 400-2, EMERGENCY DEPRESSURIZATION
DEOP 400-3, STEAM COOLING
DEOP 500-3, ALTERNATE WATER INJECTION SYSTEMS

(Reference Provided)

A. Exit ALL DEOPs and enter the SAMGs.

B. Exit DEOP 100 ONLY then enter DEOP 400-3.

C. Enter DEOP 400-2 while continuing in DEOP 100.

D. Exit DEOP 100 AND DEOP 500-3 then enter DEOP 400-3.

Answer: C

Question 85 Info	
Topic:	85 - Generic.4.06 (2)
Comments:	Objective: 29501LK029 Reference: DEOP 100 K/A: Generic.4.06 3.7 / 4.7 K/A: Knowledge of EOP mitigation strategies. Level: High Pedigree: Bank History: 2009 NRC Explanation: Given the set of conditions, with only single detail F injection source and RPV level approaching -164 inches, the DEOPs direct the SRO to enter DEOP 400-2, while continuing (not exiting) on in DEOP 100. SAMGs are not entered unless there is an injection source and a blowdown has been performed AND level cannot still be restored. SRO per Criteria: 5 **REQUIRED REFERENCES: DEOP Charts, with the entry conditions blanked out.**

86 **ID: 27442** **Points: 1.00**

A LOCA has occurred with all automatic isolations and actuations functioning as designed.
The Unit Supervisor has entered DEOP 100, RPV CONTROL, and DEOP 200-1, PRIMARY CONTAINMENT CONTROL.
Actions taken in DEOP 100 have stabilized RPV water level at -130 inches.
NO actions have been taken in DEOP 200-1.

- Drywell pressure 26 psig and rising
- Torus pressure 25 psig and rising
- Drywell temperature 270°F and rising
- Torus temperature 100°F and rising
- Torus level 14 ft. and steady
- Drywell/Torus H2 None detected

Which of the following DEOP 200-1 actions is required FIRST?

A. Blowdown the RPV

B. Vent the Drywell

C. Trip both Reactor Recirc Pumps

D. Initiate Drywell Sprays

Answer: D

Question 86 Info	
Topic:	86 - Generic.4.47 (2)
Comments:	Objective: 29502LK005 Reference: Tech Spec Bases 1.1, EPG Bases B-14-8, DEOP 100, DEOP 400-5, DGP 2-3 K/A: Generic.4.47 4.2 / 4.2 K/A: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. Level: High Pedigree: Bank Explanation: The given parameters are within the DSIL curve, therefore, initiating Drywell sprays is allowed. Since all automatic actions occurred as designed, the Reactor Recirculation pumps have tripped. Distractor 1 is incorrect: The given parameters (Torus pressure and level) exceed the PSP curve. However, Drywell /Torus Sprays, if available, must be established prior to concluding parameters "cannot stay below the PSP curve" before entering DEOP 400-2. Distractor 2 is incorrect: Venting of the drywell is performed if unable to stay below the PCPL. Distractor 3 is incorrect: Plausible because this would be correct for the first action to be taken in DEOP 200-1, however, with RPV water level at -130 inches, the Recirc pumps have already tripped. SRO per Criteria: 5 **REQUIRED REFERENCES: None.**

87 **ID: 27410** **Points: 1.00**

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

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

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

A. The normal feed breaker to the Unit 2 125VDC 2A-2 Dist Panel has tripped; the 2A Recirc ASD 4kv input breaker must be tripped at Bus 21.

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

C. The normal feed breaker to the Unit 2 125VDC Rx Bldg Dist Panel has tripped; the 2A Recirc ASD 4kv input breaker must be tripped at Bus 21.

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

Answer: D

Question 87 Info	
Topic:	87 - 295004.A2.04
Comments:	Objective: 26302LK002 Reference: DOA 6900-02 K/A: 295004.A2.04 3.2/3.3 K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : system lineups. CFR: 43.5 PRA: Yes Level: Memory Pedigree: Bank Comments: The components that lost indication are all powered from Bus 23-1. The control power that supplies Bus 23-1 has been lost and normally comes from the Rx Bldg Dist Panel. Per the above DOA, interlock doors must be blocked. SRO per Criteria: Requires specific procedure content knowledge **REQUIRED REFERENCES: None.**

88 **ID: 27411** **Points: 1.00**

Unit 3 was scrammed and the Control Room evacuated, due to a fire.

- RPV pressure is currently 450 psig and steady.
- RPV water level is currently -85 inches and lowering.

The available instrument racks that the Unit Supervisor is required to direct the U3 NSO to locally monitor RPV level are the 2203- ____(1)____ instrument racks, and the lowest **indicated** RPV water level allowed before a blowdown is required is ____(2)____.

(Reference Provided)

A. (1) 5, 6, 7, AND 8;
(2) -162 inches

B. (1) 5, 6, 7, AND 8;
(2) -185 inches

C. (1) 7 and 8 ONLY;
(2) -162 inches

D. (1) 7 and 8 ONLY;
(2) -185 inches

Answer: C

Question 88 Info	
Topic:	88 - 295016.G2.1.25
Comments:	Objective: DRE216LN001.12 Reference: DSSP-100CR, DEOP 0010-00, DEOP 100, TSG att L K/A: 295016.G2.1.25 3.9/4.2 K/A: Ability to interpret reference materials, such as graphs, curves, tables, etc. CFR: 43.5 Safety Function: 7 Level: High Pedigree: New Explanation: A - Incorrect. The 5 and 6 rack level indications are not valid below -60". B - Incorrect. The 5 and 6 rack level indications are not valid below -60". C - Correct. With RPV pressure < 500 psig, MSCRWL is -162". RPV level (fuel zone) indication is available on the 7 and 8 racks. D - Incorrect. The level indications are accurate at the 7 and 8 racks. This answer would be correct if RPV pressure was > 500 psig. SRO per criteria: 5 **REQUIRED REFERENCES: DEOP 100, with the entry conditions blanked out.**

89 **ID: 27275** **Points: 1.00**

Given the following:

- U2 is operating at full power
- Spurious Group 1 and Group 3 actuations occur

Which of the following actions must be taken for Reactor Pressure Control?

(Reference Provided)

A. ADSVs usng the ACEDB sequence

B. HPCI using Torus suction if you can

C. RWCU Recirc mode bypass demins per DOP 1200-3 ONLY

D. Bypass Valves ensuring not exceeding 100 degree/hr cooldown

Answer: A

Question 89 Info	
Topic:	89 - 295020.A2.04
Comments:	Objective: DRE205LN001.12 Reference: DEOP 100 K/A: 295020.G2.4.20 3.8/4.3 K/A: Knowledge of the operational implications of EOP warnings, cautions, and notes: Inadvertent Cont. Isolation. CFR: 43.5/45.13 Level: High Pedigree: Bank History: None Explanation: With both a Group 1 and Group 3 isolation a number of pressure control systems are not available. Under the pressure leg of DEOP 100 the Alternate systems are listed with cautions and notes on how they are to be used. The student must understand what systems are lost on a GR1 and a GR3 then follow the notes to determine operational implications. a. is correct the ASDVs are available and the ACEDB method should be used to control Torus temps. b. is incorrect RWCU system isolates on a GR3 bypassing the demins would have no effect on pressure control c. is incorrect HPCI is available, but the not states to use CST suction if you can. d. is incorrect Bypass valves are not available with a GR1 isolation. SRO per Criteria: 5 **REQUIRED REFERENCES: DEOP 100**

90 **ID: 27412** **Points: 1.00**

Units 2 and 3 were operating at rated power when RB Ventilation spuriously isolated.

SBGT cannot be started from the Main Control Room.

What actions are the SRO required to direct?

A. Place jumpers in the 2223-28A(B) panel to restart RB Vent per DOA 2300-03, HIGH PRESSURE COOLANT INJECTION SYSTEM LOCAL MANUAL OPERATION.

B. Place jumpers in the 2223-28A(B) panel to restart RB Vent per DOA 7500-01, STANDBY GAS TREATMENT SYSTEM FAN TRIP.

C. Place jumpers in the 2223-28A(B) panel to locally start SBGT per DOA 2300-03, HIGH PRESSURE COOLANT INJECTION SYSTEM LOCAL MANUAL OPERATION.

D. Place jumpers in the 2223-28A(B) panel to locally start SBGT per DOA 7500-01, STANDBY GAS TREATMENT SYSTEM FAN TRIP.

Answer: C

Question 90 Info	
Topic:	90 - 261000.G.2.4.35
Comments:	Objective: 261LN001.05 References: DOP 7500-01, DOA 2300-03 K/A: 261000.G.2.4.35 3.8/4.0 K/A: SGTS: Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects CFR: 43.5 Safety Function: 9 Level: Memory Pedigree: New Explanation: A - Incorrect. Jumpers to restart RB Vent are not located in the 2223-28A or B panel. This is plausible because restart of RB vent is allowed if vent radiation levels are < 4mr/hr. B - Incorrect. Jumpers to restart RB Vent are not located in the 2223-28A or B panel. This is plausible because restart of RB vent is allowed if vent radiation levels are < 4mr/hr. C - Correct. SBGT is required to be running and cannot be started from the control room. Direction to start SBGT is contained in DOA 2300-03. D - Incorrect. This action is correct, however the procedure is incorrect. **REQUIRED REFERENCES: None.**

91 **ID: 27413** **Points: 1.00**

During performance of DOS 1500-02, Containment Cooling Service Water Pump Test and In Service Test (IST), the following pump flows were recorded:

- Unit 2: 2B CCSW pump 3500 gpm
- Unit 3: 3B CCSW pump 3400 gpm

The Unit Supervisor will declare _____ .

A. BOTH 2B AND 3B CCSW Pumps NOT operable

B. BOTH 2B AND 3B CCSW Pumps operable

C. the 2B CCSW Pump operable
AND
the 3B CCSW Pump NOT operable

D. the 3B CCSW Pump operable
AND
the 2B CCSW Pump NOT operable

Answer: A

Question 91 Info	
Topic:	91 - 400000 G.2.37
Comments:	Objective: DRE277LN001.07 Reference: DOS 1500-02, DOS 1500-12, T.S. Bases 3.7.1, UFSAR 9.2 K/A: 400000 G.2.37 3.6 / 4.6 K/A: Ability to determine operability and/or availability of safety related equipment. Component Cooling Water. PRA: Yes CFR: 43.5 Level: Memory Pedigree: New Explanation: The Unit 2 CCSW Pumps must have a flowrate > 3621 gpm (121 gpm for CREVs). Unit 3 CCSW Pumps must have a flowrate of >3500. If these flow rates cannot be achieved, the associated pump must be declared inoperable. SRO per Criteria: 1 **REQUIRED REFERENCES: None.**

92 **ID: 27414** **Points: 1.00**

Unit 2 was operating at rated power with TIP traces in progress.

Power was then lost to Bus 29.

A LOCA in the Drywell causes Drywell pressure to reach 2.5 psig.

What actions will the SRO direct?

(Reference Provided)

A. Fire the shear valve within 4 hours.

B. Fire the shear valve within 8 hours.

C. Manually withdraw the TIP from the core and shut the ball valve within 4 hours.

D. Manually withdraw the TIP from the core and shut the ball valve within 8 hours.

Answer: A

Question 92 Info	
Topic:	92 - 215001.A2.02
Comments:	Objective: 215LN001.07 Reference: TS 3.6.1.3, DOP 0700-06 K/A: 215001.A2.02 2.9/3.0 K/A: Ability to (a) predict the impacts of the following on the TIP; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High primary containment pressure: Mark 1&2 (Not BWR-1) CFR: 41.5 Safety Function: 7 Pedigree: New Level: High Explanation: A - Correct. With a loss of power to Bus 29, power is lost to the TIP drive motor and the Ball valve. The SRO is required to direct the firing of the shear valve within 4 hours. This action is only taken upon direction of the SRO. B - Incorrect. The 8 hour time clock applies to MSL PCIVs only. C - Incorrect. While this would meet the requirements of TS, no procedural guidance exists to perform these actions given the conditions in the stem. Access to TIP room is prohibited unless the withdrawn to the in shield position. Even if the TIP were manually withdrawn, the ball valve is located inside primary containment and cannot be accessed given stem conditions. D - Incorrect. The 8 hour time clock applies to MSL PCIVs only. Withdrawing the TIP manually would comply with LCO however the ball valve cannot be accessed in the current conditions. SRO Justification: Application of Technical Specifications and required actions is SRO Only at Dresden. **REQUIRED REFERENCES: TS 3.6.1.3**

93 **ID: 27415** **Points: 1.00**

Given the following conditions:

- Both Units are at rated power
- 'B' Standby Gas Treatment in day 1 of a 7 day LCO
- Fuel handling OPDRVs on going in Unit 2 Fuel Pool
- Unit 2 Fuel Pool Channel B Rad Monitor has been removed from the control room for maintenance
- Bus 29 trips on overcurrent

Can fuel moves be continued and what is the SRO required to direct per Tech Spec 3.6.4.3, Standby Gas Treatment (SGT) System?

A. Suspend OPDRVs, due to loss of SBGT.

B. Fuel OPDRVs may continue, Place 2/3A SBGT in service.

C. Suspend OPDRVs, due to only one train of SBGT available

D. Fuel OPDRVs may continue. Manually secure RB Ventilation.

Answer: A

Question 93 Info	
Topic:	93 - 234000.G.2.1.23
Comments:	Objective: 261LN001.07 Reference: DOA 0500-05, TS 3.6.4.3 K/A: 234000.G.2.1.23 4.3/4.4 K/A: Fuel-Handling Equipment: Ability to perform specific system and integrated plant procedures during all modes of plant operation CFR: 43.5 Safety Function: 8 Pedigree: New Level: High Explanation: A - Correct. Loss of Bus 29 removes power from "A" RPS Bus. 2/3A SBGT train inlet and outlet dampers and fan are powered from Bus 29. B - Incorrect. This would be correct if power was lost to 2/3B SBGT and it were not OOS. C - Incorrect. No SBGT trains are operable. This requires suspension of OPDRVs. D - Incorrect. The RB vent and exhaust fans lose power. The dampers will fail closed via accumulator. SBGT received an autostart signal, but will not start. SRO Criteria: 2 **REQUIRED REFERENCES: None.**

94 **ID: 27416** **Points: 1.00**

Unit 2 is at rated power.

Charcoal adsorber filter differential pressure is 80 inWC.

What is the effect on the plant and what will the SRO direct?

A. Main Condenser Vacuum will improve. Place charcoal adsorbers in series per DOP 5400-05, STARTUP OF THE CHARCOAL ADSORBER SYSTEM.

B. Main Condenser Vacuum will improve. Place charcoal adsorbers in parallel per DOP 5400-05, STARTUP OF THE CHARCOAL ADSORBER SYSTEM.

C. Main Condenser Vacuum will degrade. Place charcoal adsorbers in series per DOP 5400-05, STARTUP OF THE CHARCOAL ADSORBER SYSTEM.

D. Main Condenser Vacuum will degrade. Place charcoal adsorbers in parallel per DOP 5400-05, STARTUP OF THE CHARCOAL ADSORBER SYSTEM.

Answer: D

Question 94 Info	
Topic:	94 - 271000.A2.14
Comments:	Objective: 271LN001.12 Reference: DOP 5400-14, DOP 5400-06 K/A: 271000.A2.14 2.6/2.8 K/A: Ability to (a) predict the impact of the following on the OFFGAS SYSTEM; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations: Offgas filter high differential pressure CFR: 41.5 Safety Function: 9 Pedigree: New Level: High Explanation: A - Incorrect. Main Condenser vacuum will degrade. Adsorbers in series would exacerbate the problem vice remedy it. B - Incorrect. Main Condenser vacuum will degrade. Adsorbers in parallel is the correct action. C - Incorrect. The effect is correct. Adsorbers in series would exacerbate the problem vice remedy it. D - Correct. With high charcoal adsorber filter differential pressure, loss of main condenser vacuum will occur due to high SJAE backpressure. To alleviate the backpressure, the adsorbers may be placed in parallel mode of operation or bypassed per DOP 5400-06. SRO Criteria: 5 **REQUIRED REFERENCES: None.**

95 **ID: 27417** **Points: 1.00**

An ATWS has occurred on Unit 2.

- ERVs are cycling
- Reactor Power is 78%
- Torus Temperature is 111°F and rising
- RPV level being controlled in AUTO at -40"
- SBLC Tank level is 60%

What is the SRO required to direct?

(Reference Provided)

A. Control RPV level between +8 and +48 inches.

B. Terminate and prevent injection until RPV level reaches -143 inches.

C. Terminate and prevent injection until RPV level reaches -170 inches.

D. Emergency Depressurize per DEOP 400-2, Emergency Depressurization.

Answer: C

Question 95 Info	
Topic:	95 - 295007.A2.03
Comments:	Objective: 29502LP025 Reference: DEOP 400-5 K/A: 295007.A2.03 3.7/3.7 K/A: Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: Reactor water level CFR: 43.5 Safety Function: 3 Pedigree: New Level: High Explanation: A- Incorrect. This would be correct after HSBW has been injected (SBLC tank level < 51%) B - Incorrect. This would be correct if RPV pressure was less than 500 psig. C - Correct. With override conditions met, the SRO shall direct the team to terminate and prevent injection until RPV level reaches TAF (which is -170 inches based on ERVs cycling). D - Incorrect. This would be correct if HCTL (Figure M) was violated. SRO Criteria: 5 This objective is SRO ONLY **REQUIRED REFERENCES: DEOP 400-5**

96 **ID: 27439** **Points: 1.00**

Unit 3 was operating at near rated power when an Instrument Air system pipe ruptured, causing Instrument Air pressure to drop rapidly to 0 psig.

The FWRVs will fail ____(1)____.

If RPV water level is dropping and feedwater is needed for injection, while executing the DEOPs, the Unit Supervisor is required to direct Operators to ____(2)____.

A. (1) immediately;
(2) valve in Main Bank Nitrogen bottles, per DOA 4700-01, INSTRUMENT AIR SYSTEM FAILURE

B. (1) immediately;
(2) install handwheels and manually operate the FWRVs, per DOA 0600-01, TRANSIENT LEVEL CONTROL

C. (1) after 30 minutes;
(2) valve in Main Bank Nitrogen bottles, per DOA 4700-01, INSTRUMENT AIR SYSTEM FAILURE

D. (1) after 30 minutes;
(2) install handwheels and manually operate the FWRVs, per DOA 0600-01, TRANSIENT LEVEL CONTROL

Answer: D

Question 96 Info	
Topic:	96 - 295019.A2.02
Comments:	Objective: DRE278LN001.12 Reference: DOA 4700-01, DOA 0600-01 K/A: 295019.A2.02 3.6 / 3.7 K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Status of safety-related instrument air system loads. Safety Function: 8 PRA: Yes Level: High Pedigree: Bank History: 2012 NRC; 2010 NRC Explanation: Per the critical component failure table in the Loss of Inst Air DOA, the FWRVs will operate on their backup nitrogen source for 30 minutes after a loss of Inst Air. The DOA for transient level control states that if the FWRVs can not be opened due to loss of air and feedwater/alternate injection systems are required by the DEOPs, then operate the valves manually as directed by the Unit Supervisor. SRO per Criteria: 5 **REQUIRED REFERENCES: None.**

97 **ID: 27419** **Points: 1.00**

Unit 2 was operating at rated power when IMD reports LT-2-0263-57B setpoint is currently 0.0 inches.

What actions are required?

(Reference Provided)

A. Place Channel B RPS in trip within 6 hours.

B. Place Channel A RPS in trip within 12 hours.

C. Place Channel B RPS in trip within 12 hours.

D. Place the Unit in Mode 3 within 12 hours.

Answer: C

Question 97 Info	
Topic:	97 - 295031.G.2.4.02
Comments:	Objective: 212LN001.07 Reference: 12E-6822, TS 3.3.1.1, 12E-2464 Sheets 1 and 2 K/A: 295031.G.2.4.02 4.5/4.6 K/A: Reactor Low Water Level: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions CFR: 41.7 Safety Function: 2 Level: High Pedigree: New Explanation: A - Incorrect. This would be correct if the failure fed both trip systems. B - Incorrect. This would be correct if the failure fed "A" RPS C - Correct. 2 channels of RPS low water level trip are required per trip system. Each RPS system has 2. With the level transmitter 2-263-57B below the TS required setpoint, RPS trip capability is not maintained as required per TS. Placing B RPS channel in trip within 12 hours is required. D - Incorrect. This is plausible if the candidate jumps immediately to the 12 hours to be in Mode 3 as specified in Table 3.3.1.1-1. This question meets the K/A because it requires knowledge of system setpoints (RPS low water level scram setpoint) associated with EOP entry (DEOP 100) conditions. SRO Criteria: 2 **REQUIRED REFERENCE: 12E-6822, TS 3.3.1.1, 12E-2464 Sheets 1 and 2**

98 **ID: 27441** **Points: 1.00**

A complete Loss of Offsite Power (LOOP) has occurred on Unit 2. DGP 2-3, Reactor Scram, and DOA 6500-01, 4KV BUS FAILURE, are being performed.

Drywell pressure is 2.0 psig and rising.

Which of the following describes the required actions to be directed by the Unit 2 Unit Supervisor?

A. Concurrently enter DEOP 200-1, Primary Containment Control, and start Torus sprays.

B. Exit DOA 6500-01, enter DEOP 200-1, Primary Containment Control, and start Torus sprays.

C. Continue DOA 6500-01 and DGP 2-3, monitor Drywell pressure, and DO NOT enter DEOP 200-1, Primary Containment Control.

D. Exit DGP 2-3, enter DEOP 200-1, Primary Containment Control, monitor Drywell pressure, and DO NOT start Torus sprays.

Answer: A

Question 98 Info	
Topic:	98 - 295024.G.2.4.23 (2)
Comments:	Objective: 29502LK001 Reference: DANs 902-5 E-5, 902-5 E-11, 923-5 E-1, DEOP 100 K/A: 295024.G.2.4.23 3.4/4.4 K/A: Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations CFR: 43.5 Safety Function: 5 Level: High Pedigree: New Explanation: A - Correct. When a DEOP entry condition is reached, the DEOP is entered. DOA execution supplements DEOP execution because the DEOPs are symptom based, not event based. The actions of DEOP 200 must be directed, and will take precedence over concurrent DOAs if necessary, but there is no explicit direction to exit DOAs when entering DEOPs. B - Incorrect. No explicit direction exists to exit the DOA and such action would be detrimental to restoring electrical power sources. C - Correct. While continuing in DOAs is correct, once a DEOP entry condition is reached, entering the DEOP is required immediately. D - Incorrect. No explicit direction exists to exit the DOA. Actions of the DEOPs must be directed once the DEOPs are entered. This question meets the K/A because it samples the operators knowledge of EOP execution and prioritization during emergency operations. SRO per Criteria: 5 Assessment of the situation provided in the stem and selection of an appropriate procedure (DEOP 200-1) **REQUIRED REFERENCES: DEOP charts, with the entry conditions blanked out.**

99 **ID: 27421** **Points: 1.00**

During an ATWS on Unit 3, operators have lowered level to -140 inches. When the SBLC tank level has decreased to 55%, operators commence raising reactor water level per DEOP 400-5, Failure to Scram.

While increasing reactor water level plant conditions are as follows:
- operators are increasing reactor water level with Reactor Feed Pumps
- reactor pressure is 920 psig and constant
- reactor power is steadily increasing on IRMs

Which of the following states the reason that reactor power increased when reactor water level was raised **AND** what action the SRO is required to direct?

(Reference Provided)

A. Insufficient boron has been injected into the core to maintain shutdown conditions in reactor.
Terminate and prevent all injection with the exception of boron and CRD.

B. Insufficient boron has been injected into the core to maintain shutdown conditions in reactor.
Continue to raise level to 8 inches and hold level between 8 and 48 inches.

C. The water injected into the vessel flushed some of the boron from the core area.
Terminate and prevent all injection with the exception of boron and CRD.

D. The water injected into the vessel flushed some of the boron from the core area.
Continue to raise level to 8 inches and hold level between 8 and 48 inches.

Answer: A

Question 99 Info	
Topic:	99 - 295015.G.2.1.20
Comments:	Objective: 29502LK040 Reference: DEOP 0400-05 K/A: 295015.G.2.1.20 4.6 / 4.6 K/A: Ability to interpret and execute procedure steps. CFR: 43.5 Safety Function: 5 Level: High Pedigree: Bank Explanation: A - Correct. BWROG EPG/SAG states as level is increased the boron that was in the lower plenum now enters the core area causing power to decrease after a few seconds of increased flow. If power continues to increase it is because not enough boron has been injected for the condition the reactor is in currently. If these conditions exist DEOP 400-5 directs that all injections be terminated and prevented with the exception of boron and CRD. B - Incorrect. With the conditions given the correct action is to terminate and prevent all injection except boron and CRD per DEOP 400-5 C - Incorrect. This would be true if core spray was used to raise RPV level. D - Incorrect. This would be true if core spray was used to raise RPV level. With the conditions given the correct action is to terminate and prevent all injection except boron and CRD per DEOP 400-5 SRO per Criteria: 5 **REQUIRED REFERENCES: DEOP charts, with the entry conditions blanked out.**

100 **ID: 27422** **Points: 1.00**

Unit 2 was operating at near rated power, when the HPCI system was declared Inoperable.

What action is required, and what is the Tech Spec Bases for the action?

A. Within 1 hour, verify both Divisions of LPCI and Core Spray are Operable
Ensure adequate core cooling over entire range of reactor operating pressures

B. Immediately verify the Isolation Condenser is Operable
Ensure adequate core cooling will be automatically provided at most reactor operating pressures

C. Immediately verify the ADS system is Operable
Ensure adequate core cooling availability with low pressure ECCS

D. Within 1 hour, enter LCO 3.0.3
Place the Unit in a condition where LCO does not apply within the subsequent 12 hours

Answer: B

Question 100 Info	
Topic:	100 - 206000.G.2.2.25
Comments:	Objective: 206LN001.07 Reference: TS 3.5.1 K/A: 206000.G.2.2.25 3.2 / 4.2 K/A: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. CFR: 43.2 Safety Function: 2 & 4 Level: High Pedigree: Bank Explanation: A - Incorrect. Must verify by administrative means the IC system is OPERABLE B - Correct. With the HPCI system inoperable, the team is required to verify the IC system operable immediately. TS LCO 3.5.1 Condition G states with HPCI system inoperable you must verify by administrative means the IC system is OPERABLE immediately, and Restore HPCI system to OPERABLE status within 14 days. The bases states: In this condition (HPCI Inop), adequate core cooling is ensured by the Operability of the redundant and diverse low pressure ECCS injection/spray subsystems in conjunction with ADS. ALSO, the IC System will automatically provide core cooling at most reactor operating pressures. Verification of IC Operability is therefore required immediately when HPCI is inoperable." C - Incorrect. Must verify by administrative means the IC system is OPERABLE D - Incorrect. Must verify by administrative means the IC system is OPERABLE SRO per Criteria: 2 **REQUIRED REFERENCES: None**