

EXAMINATION ANSWER KEY

09-1 NRC Exam

1

Points: 1.00

Unit 2 was operating at near rated power, with a TIP trace in progress, when a transient occurred causing RPV level to decrease to -10 inches and then recover to +30 inches.

How does the TIP system automatically respond?

- A. The TIP will continue WITHOUT interruption.
- B. The TIP will stop AND the shear valves will fire.
- C. The TIP withdraws to the In-Shield position AND the shear valves fire.
- D. The TIP withdraws to the In-Shield position AND the ball valve closes.

Answer: D

Question 1 Details

Comments:

Objective: DRE215LN001.06

Reference: DAN 902-5 E-5

K/A: 215001.K4.01 3.4 / 3.5

K/A: Knowledge of TRAVERSING IN-CORE PROBE design feature(s) and/or interlocks which provide for the following:

Primary containment isolation: Mark-I&II(Not-BWR1).

Level: High

Pedigree: Bank

Explanation: At RPV Level Low (Group II Initiation Signal +6 inches) the TIPS auto withdraw and the Ball valve closes.

The Shear valves do not AUTO fire.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 2 was operating at 25% power when 2 out of 3 DEHC Pressure Controller Processors fail HIGH.

What is the plant response to the above failures?

- A. The Backup Pressure Regulator will take control.
- B. Turbine trip, causing a Reactor Scram on load reject.
- C. Turbine Control Valves close, causing a Reactor Scram on High Pressure.
- D. Turbine throttle pressure to drops to ≤ 827 psig, causing a Reactor Scram on MSIV closure.

Answer: D

Question 2 Details

Comments:

Objective: DRE241LN001.12

Reference: DOA 5650-02

K/A: 241000.K3.19 2.7 / 2.7

K/A: Knowledge of the effect that a loss or malfunction of the REACTOR/TURBINE PRESSURE REGULATING SYSTEM will have on following: Turbine inlet pressure.

Level: High

Pedigree: Bank

Explanation: When 2 of the 3 DEHC Pressure Controller Processors fail HIGH then the Turbine Control Valves open, causing Turbine throttle pressure to drop to ≤ 827 psig (if the Mode Switch is in RUN), then the MSIVs close causing a Reactor Scram. A Reactor Scram on high pressure will occur only if 2 out of 3 DEHC Pressure Controller Processors fail LOW, (causing the Turbine Control Valves and the Turbine Bypass Valves to close). The backup pressure regulator is lost when 1 out of 3 of the DEHC Pressure Controller Processors fail (common misconception). The turbine trip will NOT cause a scram, if Reactor power is $< 38.5\%$ power.

REQUIRED REFERENCES: None.

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Points: 1.00

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

- Bus 23-1 de-energized due to an overcurrent condition.

What INITIAL Containment impacts are there with this loss?

- A. The Rx Building D/P increases.
- B. The Drywell to Torus D/P increases.
- C. The Drywell to Torus D/P decreases.
- D. The Rx Building to Torus D/P increases.

Answer: B

Question 3 Details

Comments:

Objective: 262LN001.12

Reference: DANs 902-5 G-5, 902-4 G-17

K/A: 295012.K2.01 3.4 / 3.5

K/A: Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell ventilation.

Level: High

Pedigree: Bank

Explanation: The overcurrent on Bus 23-1 causes it to fully de-energize (EDG cannot close onto it). With Bus 23-1 de-energized, Bus 28 becomes de-energized. With Bus 28 de-energized, four of the Drywell Coolers (A, B, F, G) lose power, causing temperature to rise in the Drywell. As temperature rises, a corresponding rise in Drywell pressure will occur. With a Drywell pressure increase, the Drywell to Torus DP would INCREASE, since Torus temperature and pressure will not be IMMEDIATELY affected.

Reactor Building DP will actually decrease due to a loss of RB ventilation (loss of Bus 28) and subsequent start of SBT.

With the Reactor Building DP decreasing, this will cause a decrease between Torus and Reactor Building DP.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 3 was operating at 65% power, with the Recirc pumps operating at a 2% speed difference from each other.

IF a Jet Pump failed, a symptom would be ___(1)___ in ___(2)___ .

- A. (1) a decrease
(2) indicated total core flow
- B. (1) a decrease
(2) associated Recirc pump flow
- C. (1) an increase
(2) core thermal power
- D. (1) an increase
(2) indicated total core flow

Answer: D

Question 4 Details

Comments:

Objective: DRE202LN001.12

Reference: DOA 0201-01

K/A: 295001.A2.03 3.3 / 3.3

K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Actual core flow.

Level: Memory

Pedigree: Bank

Explanation: One of the indications of a failed jet pump would be an increase in indicated total core flow. Individual Jet pump flow indicator would be MORE, not less, stable than the other Jet pump flow indicators. Recirc pump flow would INCREASE, not decrease. There would be a DECREASE in core thermal power, not an increase.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 2 is operating at 40% reactor power, with the following conditions:

- Primary Containment inerting with purge via SBGT began 2 hours ago.
- The DW PRESS CONTRL PIC 2-8540-1 is in MANUAL.
- Drywell pressure is stable.

Then a loss of feedwater caused RPV water level to decrease to -10 inches.

What is the effect on Drywell pressure and why?

- A. Drywell pressure will remain STABLE due to isolation of Nitrogen inerting AND SBGT.
- B. Drywell pressure will remain STABLE due to Nitrogen inerting and SBGT still being aligned.
- C. Drywell pressure will DECREASE due to isolation of Nitrogen inerting WHILE SBGT still being aligned.
- D. Drywell pressure will INCREASE due to isolation of SBGT WHILE Nitrogen inerting still being aligned.

Answer: A

Question 5 Details

Comments:

Objective: DRE271LN001.06

Reference: DOP 1600-05, DAN 902-5 E-5

K/A: 261000.A1.02 3.1 / 3.2

K/A: Ability to predict and/or monitor changes in parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including: Primary containment pressure.

Level: High

Pedigree: Bank

Explanation: With SBGT being used to inert the Drywell and a subsequent Group II isolation signal (+6 inches RPV water level), all valves from Nitrogen inerting and to SBGT receive an isolation signal. This will cause Drywell pressure to stabilize with no supply or return flow.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 3 is operating at near rated power when the following sequence of events occur:

- 05:15:00, Spurious Reactor scram combined with a loss of all high pressure feed.
- 05:16:30, A small Main Steam Line leak occurs in the X Area, causing a HIGH temperature alarm.
- 05:22:00, RPV water level decreased to -60 inches and is trending down at a rate of 5 inches per minute.
- 05:22:30, Annunciator 903-3 H-13, LPCI/CS PP AT PRESS, is received.

What is the EARLIEST time that all ADS Valves will begin to open?

- A. 05:18:30
- B. 05:24:00
- C. 05:30:30
- D. 05:31:00

Answer: C

Question 6 Details

Comments:

Objective: DRE218LN001.06

References: DAN 903-3 B-13

K/A: 218000.K5.01 3.8 / 3.8

K/A: Knowledge of the operational implications of the following concepts as they apply to AUTOMATIC DEPRESSURIZATION SYSTEM: ADS logic operation.

Level: High

Pedigree: Bank

Explanation: For a leak outside the drywell, ADS will provide high pressure systems a chance to recover level by waiting 8.5 minutes (2 minutes if leak INSIDE the drywell). After 8.5 minutes from -59 inches RPV level (time 05:30:30) the ADS valves will begin opening, since the permissives are met (RPV water level <-59 inches, LPCI/CS pump at pressure alarm). The distractor times are based on 2 minutes or on 8.5 minutes from LPCI pump starting.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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Points: 1.00

Unit 3 was in STARTUP, with the following conditions:

- Step 20 of the CRSP contains Control Rods H-8, F-10, H-6 and K-8 with a rod limit from position 08 to 12.
- Control Rod H-8 is withdrawn to position 12.
- Control Rod F-10 is withdrawn to position 10.

The NSO then selects Control Rod H-6, which is currently at position 08.

What color will Control Rod H-6 be indicated on the RWM?

- A. Red
- B. Cyan
- C. White
- D. Green

Answer: D

Question 7 Details

Comments:

Objective: DRE201LN006.06

Reference: DOP 0400-02

K/A: 201006.A1.03 2.9 / 3.0

K/A: Ability to predict and/or monitor changes in parameters associated with operating the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) controls including: Latched group indication: P-Spec(Not-BWR6).

Level: Memory

Pedigree: Bank

Explanation: Control rods are in red when they are out of sequence, green when they are in the current latched step or selected for rod exercising, white if they are not the rod selected for exercising or not part of the in-sequence step. H-6 should remain green the entire time. Control Rods are indicated in Cyan when they are taken O.O.S.

REQUIRED REFERENCES: None.

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Points: 1.00

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

- BOTH loops of Torus Sprays are operating.
- BOTH loops of Torus Cooling are operating.
- Drywell pressure is 5.0 psig and trending down slowly.
- RPV water level is -20 inches and trending down slowly.

When Drywell pressure drops to 2.5 psig, the

- A. Torus *Spray* valves in BOTH loops will auto close.
- B. Torus *Cooling* valves in BOTH loops will auto close.
- C. LPCI system will continue to operate as stated above.
- D. LPCI *inboard* injection valve for the NON-selected loop will auto close.

Answer: C

Question 8 Details

Comments:

Objective: DRE203LN001.06

Reference: DOP 1500-03

K/A: 203000.K1.13 3.9 / 4.0

K/A: Knowledge of the physical connections and/or cause effect relationships between RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) and the following: Drywell pressure.

Level: High

Pedigree: Bank

Explanation: The Torus cooling and injection valves are unaffected by the drywell pressure dropping to 2.5 psig, since the initiation signal is still present. The 316 switches (which are in the OVERRIDE position, when Torus Sprays and Cooling are initiated) enables the spray and test line vlvs to be opened with a LPCI initiation signal present. If DRYWELL pressure would have dropped below 1 psig, the permissive to open the Torus SPRAY valves (18 and 19 valves) is lost AND if an initiation signal is still present the SPRAY valve(s) would have closed. The LPCI injection valves can only be closed MANUALLY, they will NOT auto close.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 2 is in MODE 3 with the following set of conditions:

- RPV pressure is 245 psig.
- RPV water temperature of 316°F and steady.
- 2B Recirc pump is running at minimum speed.
- ALL three trains of Shutdown Cooling are aligned to the RPV removing their rated heat load.

Then an overcurrent condition occurs on BUS 23-1.

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

- A. Increase CRD cooling water flow.
- B. Open five (5) turbine bypass valves fully.
- C. Initiate the HPCI system and throttle the Test Return Valve.
- D. Start the RWCU system using the RWCU Aux pump and maximize system flow.

Answer: C

Question 9 Details

Comments:

Objective: DRE205LN001.08

Reference: DOA 1000-01, DOP 2300-03

K/A: 295021.A1.04 3.7 / 3.7

K/A: Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: Alternate heat removal methods.

Level: High

Pedigree: New

Comments: Each train of SDC removes the equivalent of 8 MWth. With the loss of all SDC would cause a loss of ~24 MWth. Initiating HPCI (up to 37 MWth) and throttling the Test Return Valve, would allow the team to maintain RPV temperature.

The RWCU system would not supply enough cooling (~10 MWth).

Increasing CRD cooling water flow would add cool water (~200 gpm), but not enough to overcome the loss from SDC.

Opening the bypass valves would remove too much heat (112 MWth) and lower temperature.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 2 was operating at near rated power, with Bus 25 O.O.S., when Bus 27 experienced an overcurrent condition.

A short time later the Main Turbine/Generator tripped.

What would be the diagnosis of the above trip?

- A. EHC reached the low oil pressure trip setpoint.
- B. Bus Duct temperatures reached the trip setpoint.
- C. BOTH Stator Cooling Pumps lost power and the plant did NOT achieve a sufficient Turbine runback.
- D. ALL Hydrogen Seal Oil pumps lost power and the plant did NOT achieve a sufficient Turbine runback.

Answer: A

Question 10 Details

Comments:

Objective: DRE245LN001.08

Reference: DOA 5600-01

K/A: 295005.K2.08 3.2 / 3.3

K/A: Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: A.C. electrical distribution.

Level: High

Pedigree: Modified

Explanation: With Bus 25 out of service and the subsequent loss of Bus 27, both EHC pumps are de-energized and this would cause a Low EHC Oil Pressure condition, which would result in the Generator/Turbine trip.

Bus Duct temperatures would not change, as power is not lost to all blowers (MCC 25-2 and MCC 26-1).

Power is not lost all Stator Cooling pumps, as they are powered from Bus 25 and Bus 26.

Power is not lost to Hydrogen Seal Oil pumps, as they are powered from MCC 28-2 and MCC 2 (250 VDC).

REQUIRED REFERENCES: None.

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Points: 1.00

Per the UFSAR, what is the bases for the *High Drywell Pressure SCRAM* function for the Reactor Protection System (RPS)?

- A. To reduce the heat generation to terminate the pressure rise.
- B. To assure that the reactor is NOT operated without a path to the main heat sink.
- C. To minimize the energy which must be accommodated during a Loss of Coolant Accident AND prevent the Reactor from going critical following the accident.
- D. To ensure equipment located in the Drywell is able to perform its intended function, prior to exceeding its environmental qualification.

Answer: C

Question 11 Details

Comments:

Objective: 299LN049-2

Reference: UFSAR section 7.2.2.2

K/A: 295024.K3.06 4.0 / 4.1

K/A: Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Reactor SCRAM.

Level: Memory

Pedigree: Bank

Explanation: The correct answer is from the UFSAR.

Reducing the heat generation to terminate the pressure rise is from the High Reactor Pressure Scram.

Assuring that the reactor is not operated without a path to the main heat sink is from the MSIV closure Scram.

Environmental qualification concerns is based on temperatures, not pressure.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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Points: 1.00

On a loss of off-site power (LOOP) and a loss of coolant accident (LOCA), if the loads are SIMULTANEOUSLY started on the Emergency Busses

- A. the EDGs may TRIP, due to high motor starting current.
- B. the EDGs may experience OVERLOADING, due to high motor starting current.
- C. the LPCI and Core Spray Pumps may cavitate due to transient suction pressure.
- D. the LPCI loop select logic may NOT be able to decide which Recirc loop to select for injection.

Answer: B

Question 12 Details

Comments:

Objective: 29800LK040

Reference: DAN 902-3 E-8 and G-4, UFSAR 8.3-14

K/A: 264000.K5.06 3.4 / 3.5

K/A: Knowledge of the operational implications of the following concepts as they apply to EMERGENCY GENERATORS (DIESEL/JET): Load sequencing.

Level: Memory

Pedigree: Bank

Explanation: Per the above procedures, the EDGs may experience overloading, due to high motor starting current, if loads are allowed to "block" start on the buses powered by the EDGs. Given the auto start signal provided in the stem (LOCA and LOOP), the only trips that are still active and would trip the EDG, is differential current and overspeed.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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13

Points: 1.00

Unit 3 was operating at near rated power with DOS 2300-03, HIGH PRESSURE COOLANT INJECTION SYSTEM OPERABILITY AND QUARTERLY IST VERIFICATION TEST, being performed.

Then the following occurred:

- Annunciator 903-3 A-1, RX BLDG RAD HI alarmed.
- NO other unexpected alarms are received on the 903-3 panel.
- The HIGHEST radiation in the HPCI room is 150 mrem/hour and rising.

Why must the HPCI room be evacuated under these conditions?

- A. A steam leak has occurred in the HPCI room.
- B. DEOP 300-1 requires the area to be evacuated.
- C. The HPCI room has become a High Radiation Area.
- D. The HPCI room has become a Locked High Radiation Area.

Answer: C

Question 13 Details

Comments:

Objective: 29502LP017

Reference: DAN 903-3 A-1, RP-AA-18

K/A: 295033.K3.04 4.0/4.4

K/A: Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Personnel evacuation.

Level: High

Pedigree: Bank

Explanation: The HPCI room has exceeded the high radiation area posting (>100 mrem/hour). DEOP 300-1 is entered for the high radiation condition, but does not direct evacuation (the DAN directs evacuation). A locked high rad are is not reached until 1000 mrem/hour. While high area temperature is a symptom of steam leak, the stem states that no other unexpected alarms are received on the 903-3 Panel (NO 'Area Temp Hi' alarms).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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Points: 1.00

A loss of the _____ will cause a loss of power to the Unit 2 HPCI Flow Controller.

- A. U2 ESS Bus
- B. U2 Instrument Bus
- C. 125 VDC Bus 2A-1
- D. 250 VDC MCC 2B

Answer: A

Question 14 Details

Comments:

Objective: DRE206LN001.02

Reference: DOA 6800-01

K/A: 206000.K2.04 2.5 / 2.7

K/A: Knowledge of electrical power supplies to the following:
Turbine control circuits: BWR-2,3,4.

Level: Memory

Pedigree: Bank

Explanation: ESS Bus powers the flow controller. 125 VDC powers the initiation logic (2B-1/2A-1). 250 VDC powers all valves except 4-Valve (MCC 29-1).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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15

Points: 1.00

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

- ALL rods are in.
- EHC pressure is 0 psig.
- RPV pressure is 1065 and steady.
- RPV water level decreased to +28 inches and is returned to +30 inches.

Which of the following procedures would the Operating team be required to enter?

- (1) DEOP 100-1, RPV CONTROL
- (2) DGP 2-3, REACTOR SCRAM
- (3) DOA 0600-1, TRANSIENT LEVEL CONTROL
- (4) DOA 5650-02, PRESSURE REGULATOR FAILURE

- A. 1 and 2 ONLY
- B. 1, 2 AND 4
- C. 1 and 4 ONLY
- D. 2 and 3 ONLY

Answer: A

Question 15 Details

Comments:

Objective: 29501LK019

Reference: DEOP 100

K/A: 295025.G.04.04 4.5 / 4.7

K/A: High Reactor Pressure: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.

Level: Memory

Pedigree: New

Explanation: DEOP 100 entry condition is 1060 psig. Once in DEOP 100, with all rods in the team is required to enter DGP 2-3. DOA 0600-1 is NOT entered until RPV level decrease to 25 inches (DAN 902-5 F-8). DOA 5650-02 is NOT entered unless erratic Reactor pressure and power are experienced or erratic Turbine Control valve operation is experienced.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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Points: 1.00

Which of the following events would require a PA notification to be made to all on-site personnel per OP-AA-104-101, COMMUNICATIONS?

- A. Starting a WWT Equalization Tank Pump
- B. Waste Sample Tank LOW LEVEL annunciator alarms, during winter months
- C. Starting the Drywell Equipment Drain Sump Pump, from the Main Control Room
- D. Radwaste river discharge HIGH RADIATION annunciator alarms, while a discharge is in progress

Answer: D

Question 16 Details

Comments:

Objective: 299000LK150

Reference: OP-AA-104-101, DAN 2223-6

K/A: 295017.G.1.14 2.5 / 3.3

K/A: High Off-Site Release Rate: Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.

Level: High

Pedigree: Bank

Explanation: Making an announcement for a High Radiation alarm is the only choice that is required.

While making a PA announcement for the events listed in the distractors would be helpful, it is NOT required. The Waste Sample Tank LOW LEVEL alarm in the winter months is set to secure the level prior to reaching 20%, which is the level required to maintain the heaters covered.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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Points: 1.00

What is the basis for *Emergency Depressurization*, when Torus temperature and RPV pressure can NOT be maintained below the Heat Capacity Temperature Limit in DEOP 200-1, PRIMARY CONTAINMENT CONTROL?

- A. To prevent inadequate steam condensation, resulting in the torus to drywell vacuum breakers opening.
- B. To ensure there is adequate margin to the ECCS suction piping design temperature in the event of a full RPV depressurization.
- C. To ensure the Torus has enough capacity to accept a full RPV depressurization without exceeding the design temperature of the Torus.
- D. To allow RPV depressurization to a point where Core Spray and LPCI can inject prior to the Torus temperature exceeding the low pressure ECCS pump NPSH limit.

Answer: C

Question 17 Details

Comments:

Objective: 29501LK007

Reference: EPG B-7-24

K/A: 295026.K3.01 3.8 / 4.1

K/A: Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER

TEMPERATURE: Emergency/normal depressurization.

Level: Memory

Pedigree: Bank

Explanation: The Heat Capacity Limit is based on keeping Torus temperature below design temperature after a blowdown.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 3 was operating at 90% Core Thermal Power. APRM 5 was reading 99%.

If Core Thermal Power is raised to 100%, and APRM 5 reading is still 99%, how will its AGAF reading respond?

- A. Indicate lower.
- B. Indicate higher.
- C. Indicate the same.
- D. Initially increase, but then indicate lower.

Answer: B

Question 18 Details

Comments:

Objective: DRE215LN005.11

Reference: DOS 0500-06, DOP 0700-09

K/A: 215005.A1.07 3.0 / 3.4

K/A: Ability to predict and/or monitor changes in parameters associated with operating the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM controls including: APRM (gain adjustment factor).

Level: High

Pedigree: Bank

Explanation: $AGAF = \%CTP / APRM$ indicated power.

(example: at 90% Core Thermal Power and an APRM reading of .99 with an AGAF of .909, when Core Thermal Power is increased and the APRM reading stays the same, the AGAF will also STEADILY increase).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

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Points: 1.00

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

- RPV water level is -240 inches and trending up slowly.
- RPV pressure is 560 psig and trending down slowly.
- Drywell temperature is 270°F and trending up slowly.

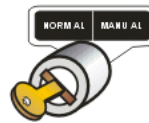
The Unit Supervisor directed you to initiate Drywell Sprays, utilizing the 'A' loop.

At a MINIMUM, which of the following switches are required to be re-positioned to satisfy system LOGIC and allow the Drywell Spray valves to open?

- A. 1 and 2 ONLY
- B. 1 and 3 ONLY
- C. 2 and 3 ONLY
- D. 1, 2, AND 3

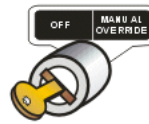
Answer: A

CNMT SP/TORUS CLG
PERMISSIVE
2-316A



1

2/3 CORE COVERAGE
OVERRIDE
2-317A



2

2A & 2B CCSW PPS
START PERMISSIVE
2-318A



3

Question 19 Details

Comments:

Objective: DRE203LN001.06

Reference: DOP 1500-03

K/A: 295028.A1.01 3.8 / 3.9

K/A: Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell spray: Mark-I&II.

Level: High

Pedigree: New

Explanation: In order to open the Drywell Spray valves, the 316 switch must be placed in MANUAL (LPCI Spray permissive with Drywell pressure > 1.0 psig), and the 317 switch must be placed in MANUAL OVERRD (with RPV level < 2/3 core height, which is -191 inches).

The 318 switch is only used if it is desired to start the CCSW pumps for Torus Cooling, which is NOT required to Spray the Drywell.

REQUIRED REFERENCES: None.

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Points: 1.00

Unit 2 and Unit 3 were operating at near rated power, with Reactor Building crane lifts in progress to move material from the 517' level of the Reactor Building to the refuel floor, when the following occurred:

- A Tornado Warning was declared for the area near Dresden station.
- The outside NLO reported a seeing a tornado West of the 345 KV Switchyard.

Per DOA 0010-02, TORNADO WARNING/SEVERE WINDS, which of the following is/are a REQUIRED action(s) and why?

- A. SCRAM both Reactors, to place them in a safe condition.
- B. Start all EDGs, in anticipation of a potential loss of off-site power.
- C. Open both Units Turbine Building rollup doors, to equalize building pressures.
- D. Verify both Units Reactor Buildings blowout panels are in place, to ensure integrity of Secondary Containment.

Answer: D

Question 20 Details

Comments:

Objective: 29501LK063

Reference: DOA 0010-02

K/A: 295038.K1.03 2.8 / 3.8

K/A: High Off-Site Release Rate: Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE: Meteorological effects on off-site release.

Level: Memory

Pedigree: Bank

Comments: Verifying the blowout panels is the required as this would affect the off-site release rate due to a loss of secondary containment.

Scramming the Reactor, is a conservative action but is NOT a required action.

The EDGs are required to be verified as operable, but NOT started.

The roll up are required to be closed NOT opened (a common misconception with the potential of pressure changes related to tornados).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

21

Points: 1.00

Unit 3 was operating at near rated power, with HPCI in standby, when the U3 HPCI exhaust line developed a hole on the Reactor Building side of the Torus penetration.

Regarding this transient, inputs to the U3 Reactor Building Floor Drain Sumps will ___(1)___ , and local area Oxygen concentration ___(2)___ affected.

- A. 1) go up;
2) will be
- B. 1) go up;
2) will NOT be
- C. 1) NOT change;
2) will be
- D. 1) NOT change;
2) will NOT be

Answer: D

Question 21 Details

Comments:

Objective: DRE206LN001.02

Reference: TSG 2

K/A: 290001.K6.04 3.9 / 4.1

K/A: Knowledge of the effect that a loss or malfunction of the following will have on the SECONDARY CONTAINMENT:

Primary containment system.

Level: High

Pedigree: Bank

Explanation: The leak is in the HPCI exhaust line at the top of the Torus. This will not affect Torus level. Oxygen concentration will not be affected because the HPCI sparger is at 12 feet, below the normal torus water level, so the water seal will prevent Nitrogen from escaping the Containment. (Outside the Torus, in the Torus Basement)

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

22

Points: 1.00

Unit 3 was in shutdown with the following set of conditions:

- 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.

Then Bus 34 experienced an overcurrent condition, causing a loss of power to the

- 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 22 Details

Comments:

Objective: DRE205LN001.02

Reference: DOP 6500-18 DTS 6700-3

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.

Level: Memory

Pedigree: Bank

Explanation: 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.

EXAMINATION ANSWER KEY

09-1 NRC Exam

23

Points: 1.00

Given the following set of conditions on Unit 2:

- The Reactor is shutdown.
- RPV water level is +7 inches.
- The Recirc system is secured.
- One SDC loop ONLY is in service.

The Operating team is required to

- A. Start EITHER Recirc pump to prevent RPV water stratification.
- B. Raise RPV water level to +48 inches to prevent RPV water stratification.
- C. Program the "Operator Selected" alarm for RPV water temperature to 190°F.
- D. Open EITHER Recirc loop 2A(B) PP SUCT VLV MO 2-202-4A(B) OR 2A(B) PP DISCH VLV MO 2-202-5A(B) to establish proper flow through the RPV.

Answer: B

Question 23 Details

Comments:

Objective: DRE205LN001.08

Reference: DOP 1000-03

K/A: 295031.K1.02 3.8 / 4.1

K/A: Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Natural circulation: Plant-Specific.

Level: High

Pedigree: Bank

Explanation: Per the precaution section of the above procedure, given the conditions in the stem, the required action is to raise RPV water level to 48 inches to prevent stratification.

Setting the Operator selected alarm for RPV water temperature to 190°F, is performed only if the Recirc pumps are operating.

Starting a Recirc pump is NOT allowed, since RPV water level is < +30 inches.

With the Recirc Pumps NOT operating, EITHER the Recirc Loop suction OR discharge valve should be CLOSED to establish proper flow through the RPV.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

24

Points: 1.00

Unit 2 was operating at approximately 40% power with the Bus 22 and Bus 24 Main Feed Breakers (MFB) O.O.S., when the TR-86 Sudden Pressure Relay activated.

Which of the following components would have AC electrical power available?

- A. 2A RFP **only**.
- B. 2B RFP **only**.
- C. 2C RFP **only**.
- D. 2A and 2C RFP **only**.

Answer: D

Question 24 Details

Comments:

Objective: DRE262LN001.01

Reference: Electrical Print 12E-2303 sht 1

K/A: 295003.K2.04 3.4 / 3.5

K/A: Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: A.C. electrical loads.

Level: High

Pedigree: New

Explanation: At 40% power, the UAT is carrying Bus 21 and 23 (Div 1) and the RAT is carrying Bus 22 and 24 (Div 2). When TR-86 sudden pressure relay activated, TR-86 trips. Bus 22 and 24 are designed to transfer to the UAT - but they do NOT due to MFBs being OOS. With a loss of Div 2 power, only the Div 1 Buses would be energized, and have power available. The power supplies to the RFPs are: 2A - Bus 21, 2B - Bus 22, 2C - Bus 21 OR Bus 22. Thus 2A and 2C would still have AC power available (from Bus 21).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

25

Points: 1.00

Unit 2 was operating at near rated power, with Bus 25 O.O.S., when the following occurred:

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

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

- A. (1) ABT;
(2) Inverter
- B. (1) ABT;
(2) Voltage Regulator
- C. (1) Static Switch;
(2) Inverter
- D. (1) Static Switch;
(2) Voltage Regulator

Answer: A

Question 25 Details

Comments:

Objective: DRE262LN001.06

Reference: DOP 6800-01

K/A: 262002.K4.01 3.1 / 3.4

K/A: Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: Transfer from preferred power to alternate power supplies.

Level: Memory

Pedigree: New

Explanation: With Bus 25 O.O.S., and the subsequent loses of Bus 24-1 and MCC 2, the ABT will transfer ESS Bus power from the Inverter to MCC 28-2, via a Transformer.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

26

Points: 1.00

Which of the following individuals are REQUIRED to request permission from the Unit NSO prior to entering the "Zone Of Control" area (designated by contrasting carpet), per OP-AA-103-101, CONTROL ROOM ACCESS?

- A. Shift Manager (SM)
- B. NRC Resident Inspector
- C. Chief Nuclear Officer (CNO)
- D. Shift Technical Advisor (STA)

Answer: C

Question 26 Details

Comments:

Objective: 29900LK016

Reference: OP-AA-103-101

K/A: Generic.1.13 2.5 / 3.2

K/A: Knowledge of facility requirements for controlling vital/controlled access.

Level: Memory

Pedigree: Bank

Explanation: Per the above procedure, the Shift Manager, Unit Supervisor (Control Room Supervisor), STA, and Regulatory Personnel are not required to obtain permission to enter the "zone of control". Everyone else must obtain permission from the Reactor Operator to enter.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

27

Points: 1.00

With regards to the DEOP charts, rectangle boxes represent ___(1)___ and double bordered boxes with rounded corners represent ___(2)___ .

- A. (1) action statements;
(2) contingency steps
- B. (1) action statements;
(2) override statements
- C. (1) transitions symbols;
(2) contingency steps
- D. (1) transitions symbols;
(2) override statements

Answer: B

Question 27 Details

Comments:

Objective: 29501LE004

Reference: DEOP 0010-00

K/A: Generic.4.19 3.4 / 4.1

K/A: Knowledge of EOP layout, symbols, and icons.

Level: Memory

Pedigree: Bank

Explanation: Per the above procedure, rectangle boxes represent ACTION STATEMENTS and double bordered boxes with rounded corners represent OVERRIDE STATEMENTS.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

28

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 28 Details

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

Explanation: 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).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

29

Points: 1.00

During performance of a surveillance test of HPCI, the HPCI room temperature is reported as 122°F.

An EO reported that there has been a loss of cooling water to the room cooler.

As the NSO, you should recommend to the Unit Supervisor that HPCI be CONSIDERED ___(1)___ because ___(2)___.

- A. (1) inoperable;
(2) of the lack of environmental qualification of components in the room
- B. (1) inoperable;
(2) of the lack of high temperature qualifications on pipe supports and hangers
- C. (1) operable but degraded;
(2) the HPCI room cooler fan is running
- D. (1) operable with NO concerns;
(2) the HPCI room cooler fan is running and cooling water is available

Answer: C

Question 29 Details

Comments:

Objective: 20600LK010

Reference: DAN 923-5 H-1, UFSAR 3.11.4 and 9.4.6

K/A: 295032.A2.02 3.3 / 3.5

K/A: Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA

TEMPERATURE: Equipment operability.

Level: High

Pedigree: New

Explanation: With the HPCI room 122°F and the room cooler unavailable (but fan still working) that HPCI should be considered operable, BUT degraded.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

30

Points: 1.00

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

- Torus water level is 12.5 feet.
- MCC 28-3 de-energized, due to an overcurrent condition.

Which of the following indicators will be the most accurate for monitoring Torus water level?

- A. TORUS LVL LI 2-1640-3 Narrow Range level indicator; on the 902-3 panel
- B. TORUS LVL LI 2-1640-10A Wide Range level indicator; on the 902-3 panel
- C. TORUS LVL LI 2-1640-10B Wide Range level indicator; on the 902-3 panel
- D. WR DW PRESS TORUS LVL P/LR 2-1640-13A Wide Range level indicator; on the 902-2 panel

Answer: C

Question 30 Details

Comments:

Objective: DRE223LN001.09

Reference: 12E-2312, 12E-6587

K/A: 295030.A2.01 4.1 / 4.2

K/A: Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: suppression pool level.

Level: High

Pedigree: Bank

Explanation: 2-1640-10B Wide Range is the only useable level indicator. With Torus water level at 12.5 feet, this is below the narrow range water level indicator 2-1602-3 (13 feet 4 inches). 2-1640-10A and 2-1640-13A are supplied via LT 2-1641-5A (12E-6587). The student must utilize 12E-2312 to see that with MCC 28-3 not powered, the panel FP-2 via breaker 2C-3 is not powered and therefore both the 'A' division level indicators in the Control Room are unable to give a proper signal.

REQUIRED REFERENCES: Electrical prints 12E-2312 and 12E-6587.

EXAMINATION ANSWER KEY

09-1 NRC Exam

31

Points: 1.00

The 2-0301-25 valve, CRD SYS CHARGING HDR SV, is closed as part of an Out Of Service (Clearance Order).

While clearing this clearance order, the correct method of ensuring proper positioning of this valve is to use

- A. Peer check.
- B. Alternate verification.
- C. Concurrent verification.
- D. Independent verification.

Answer: C

Question 31 Details

Comments:

Objective: 29900LK003

Reference: HU-AA-101, OP-AA-108-101-1001

K/A: Generic.2.13 4.1 / 4.3

K/A: Knowledge of tagging and clearance procedures.

Level: High

Pedigree: Bank

Explanation: The examinee must understand that the 2-301-25 is a normally throttled valve. Throttled valves are verified by the "concurrent verification" method per HU-AA-101.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

32

Points: 1.00

Both Units were operating at near rated power, with following initial conditions:

- 2A RBCCW Pump and Heat Exchanger are in operation on Unit 2.
- 2B RBCCW Pump and Heat Exchanger are in operation on Unit 2.
- 3A RBCCW Pump and Heat Exchanger are in operation on Unit 3.

Then an earthquake caused steam leaks inside BOTH Unit's Drywells, resulting in the following:

- Unit 2 Drywell pressure is 1.35 psig and steady.
- Unit 3 Drywell pressure is 2.15 psig and steady.
- Bus 33-1 caught fire and experienced an Overcurrent condition.
- An NSO attempted to start the 3B RBCCW pump, which immediately tripped.

With regards to RBCCW, what is the NEXT required action?

- A. Manually scram Unit 2.
- B. Isolate RBCCW to the Unit 2 Drywell ONLY.
- C. Isolate RBCCW to the Unit 3 Drywell ONLY.
- D. Isolate RBCCW to BOTH Unit 2 AND Unit 3 Drywells.

Answer: C

Question 32 Details

Comments:

Objective: DRE276LN001.08

Reference: DOA 3700-01

K/A: Generic.4.13 4.0 / 4.6

K/A: Knowledge of crew roles and responsibilities during EOP usage.

Level: High

Pedigree: Bank

Explanation: With a LOCA on Unit 3 AND Drywell pressure > 2.0 psig, and a loss of RBCCW (overcurrent on Bus 33-1) the required action is to isolate RBCCW to Unit 3 Drywell ONLY.

Unit 2 has a LOCA, but does NOT have Drywell pressure > 2.0 psig . Manual scram of Unit 2 is NOT required, since RBCCW is not lost.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

33

Points: 1.00

Unit 2 was operating at near rated power when an overcurrent condition occurred on Bus 24-1.

The ___(1)___ RPS MG Set has become de-energized and the RPS Bus ___(2)___ should be powered from MCC 25-2.

- A. (1) 2A;
(2) A
- B. (1) 2A;
(2) B
- C. (1) 2B;
(2) A
- D. (1) 2B;
(2) B

Answer: C

Question 33 Details

Comments:

Objective: DRE262LN005.03

Reference: DOA 0500-05

K/A: 212000.K2.01 3.2 / 3.3

K/A: Reactor Protection System Knowledge of electrical power supplies to the following: RPS motor-generator sets.

Level: Memory

Pedigree: New

Explanation: When Bus 24-1 experiences an overcurrent condition, the EDG will auto start but NOT close in. With Bus 24-1 de-energized, Bus 29 becomes de-energized and will subsequently cause MCC 29-2 to also become de-energized. MCC 29-2 is the power supply to the "B" MG Set, which coasts down and subsequently causes the "A" Bus to also become de-energized. The cross-connection between the "A" and "B" trains of the RPS electrical system is a common misconception at Dresden Station.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

34

Points: 1.00

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

- Drywell pressure is 1.30 psig.
- RPV water level is -83 inches.
- RPV pressure is 275 psig and rising.
- Both loops of Core Spray are injecting.

As RPV pressure continues to rise, which of the following is the **FIRST** RPV pressure that Core Spray will NO longer be able to inject into the RPV?

- A. 300 psig
- B. 400 psig
- C. 500 psig
- D. 600 psig

Answer: B

Question 34 Details

Comments:

Objective: DRE206LN001.06

Reference: DAN 902-3 H-16

K/A: 295007.K1.01 2.9 / 3.2

K/A: High Reactor Pressure: Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: Pump shutoff head.

Level: Memory

Pedigree: Bank

Comments: With the Core Spray systems injecting, as RPV pressure climbs above the pumps shutoff head (~350 psig) the Core Spray system will no longer be able to inject. The first pressure of the choices that will be reached is 400 psig.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

35

Points: 1.00

Unit 3 was in STARTUP, with the following *PRIOR TO STARTUP* and CURRENT conditions:

PRIOR TO STARTUP

SRM 21 at 9 cps
SRM 22 at 11 cps
SRM 23 at 8 cps
SRM 24 at 10 cps
Moderator temp 148°F

CURRENT

SRM 21 at 85 cps
SRM 22 at 100 cps
SRM 23 at 90 cps
SRM 24 at 95 cps
Moderator temp 149°F

The Reactor is NOT critical.

The next sequence step is to move Control Rod F-05 from notch 00 to notch 48.

Which of the following methods is the FASTEST method allowed by DGP 3-4, CONTROL ROD MOVEMENT, to move Control Rod F-05?

- A. Continuous withdrawal from 00 to 48.
- B. Single notch withdrawal from 00 to 48.
- C. Single notch withdrawal from 00 to 24 and THEN continuous withdrawal to 48.
- D. Single notch withdrawal from 00 to 36 and THEN continuous withdrawal to 48.

Answer: A

Question 35 Details

Comments:

Objective: 29800LK017
Reference: DGP 3-4, DGP 1-1
K/A: Generic.2.02 4.6 / 4.1
K/A: Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.
Level: High
Pedigree: Bank
Explanation: Per the above procedures, the notch override switch shall NOT be used between positions 04 and 36 after the SRMs have experienced four doublings (16 times the initial count rate) until the Unit is in a steaming condition (one bypass valve partially OPEN or the Unit on-line).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

36

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 36 Details

Comments:

Objective: DRE259LN002.08

Reference: DOA 0600-01

K/A: 259002.A2.05 3.2 / 3.4

K/A: Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of applicable plant air systems.
Level: High

Pedigree: Bank

Explanation: 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. 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. Alternate methods must be used to control the feedwater flow, such as using the MOV isolation valves. DOA 0600-01 gives guidance for throttling the isolation valves.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

37

Points: 1.00

Unit 3 was in STARTUP, with the following set of conditions:

- The NSO withdrew Control Rod G-7 from notch 12 to notch 14.
- Reactor period changed from 100 seconds to a STABLE 19 seconds.

What action is required next and why?

- A. Insert Control Rod G-7;
to obtain a stable period indication of greater than 60 seconds.
- B. Withdraw Control Rod G-7;
to obtain a stable period indication of greater than 60 seconds.
- C. Insert Control Rods as necessary;
to achieve sub-criticality.
- D. Stop ALL Control Rod movements;
to allow the QNE to perform core analysis.

Answer: A

Question 37 Details

Comments:

Objective: 20102LK005

Reference: DAN 902-5 E-4

K/A: Generic.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.

Level: Memory

Pedigree: Bank

Explanation: Per DGP 1-1 the range for reactor period is 60-330 seconds. The DAN states that rods should be inserted until period is more than 60 seconds.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

38

Points: 1.00

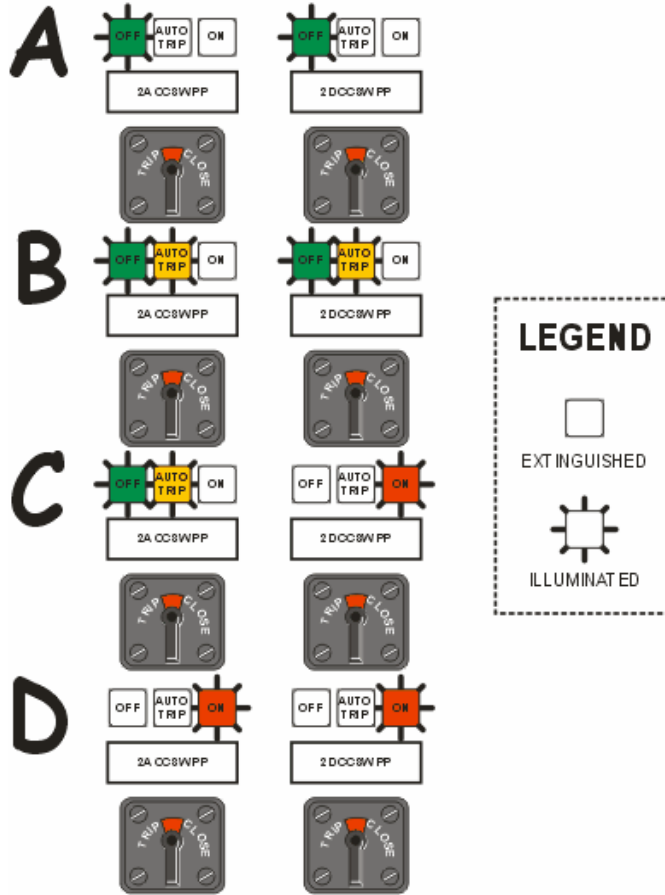
Unit 2 was operating at near rated power with the 2A & 2D CCSW pumps operating for DOS 1500-02, CCSW PUMP TEST AND IST, when the following occurred:

- A leak developed in the 2A Reactor Recirc suction line.
- Drywell pressure rapidly increased to 3.5 psig.

Which of the indications below would be expected after this transient?

- A. A
B. B
C. C
D. D

Answer: B



Question 38 Details

Comments:

Objective: DRE277LN001.06
Reference: DOS 1500-02, DAN 902-3 E-7
K/A: 400000.A4.01 3.1 / 3.0
K/A: Ability to manually operate and / or monitor in the control room: CCSW indications and control.
Level: High
Pedigree: New
Explanation: With the control switches in a "normal-after-close" position AND a LPCI initiation signal present, both CCSW pumps will trip, leaving the amber AUTO TRIP and green OFF lights illuminated.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

39

Points: 1.00

Unit 2 was in REFUEL, with core alterations in progress, when an irradiated fuel bundle being moved from the Reactor cavity to the Spent Fuel Pool becomes ungrappled and falls into the Reactor vessel downcomer area between the vessel wall and the shroud.

Bundle integrity is maintained.

Which of the below describes the person at the greatest risk for radiation exposure?

- A. A Mechanic working on SRVs.
- B. The Refuel SRO on the Bridge.
- C. An EMD Technician working on the SBLC Skid.
- D. A Mechanic working on a Torus to Drywell Vacuum Breaker.

Answer: A

Question 39 Details

Comments:

Objective: 232F-01.08

Reference: TSG-2

K/A: 295023.K1.01 3.6 / 4.1

K/A: Knowledge of the operational implications of the following concepts as they apply to REFUELING

ACCIDENTS: Radiation exposure hazards.

Level: High

Pedigree: Bank

Explanation: The correct answer is the Mechanic working on the SRVs due to LOCATION in the drywell. The other 3 answers represent workers outside of the drywell who are shielded from the area where the Control Rod is setting.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

40

Points: 1.00

Unit 2 was operating at near rated power when the 24/48VDC Bus 2B de-energized, due to a fire.

Which SRMs will become de-energized, as a result of this transient?

- A. 21 and 22
- B. 21 and 23
- C. 22 and 24
- D. 23 and 24

Answer: D

Question 40 Details

Comments:

Objective: DRE215LN004.02

Reference: DOA 6900-01

K/A: 215004.K6.02 3.1 / 3.3

K/A: Knowledge of the effect that a loss or malfunction of the following will have on the SOURCE RANGE MONITOR (SRH) SYSTEM: 24/48 volt D.C. power.

Level: Memory

Pedigree: New

Explanation: SRMs 23 and 24 are powered from Bus 3B. SRMs 21 and 22 are powered from Bus 3A. This is a common misconception, due to this does not follow the convention odds to odds and even to even lineup.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

41

Points: 1.00

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

- Time 00:00:00, Drywell pressure increased to 3.5 psig.
- Time 00:05:00, the feed breaker between Buses 23 and 23-1 tripped.

At time 00:07:00, which of the following choices indicates which Core Spray pump(s) (if any) will be operating ?

- A. None
- B. 2A ONLY
- C. 2B ONLY
- D. BOTH 2A and 2B

Answer: D

Question 41 Details

Comments:

Objective: DRE207LN001.06

Reference: Electrical Print 12E-2304

K/A: 209001.K6.01 3.4 / 3.4

K/A: Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM: A.C. power.

Level: High

Pedigree: New

Explanation: When Drywell pressure increased above the Core Spray initiation setpoint (+ 2.0 psig), both Core Spray pumps will auto start. The subsequent loss of feed to Bus 23-1 will cause the bus to become de-energized until the 2/3 EDG re-energizes it (~13 seconds). Within 10 seconds, the 2A Core Spray pump will be energized again. 2B will remain powered.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

42

Points: 1.00

Unit 2 was operating at near rated power when a leak inside the Drywell occurred, causing Drywell pressure to reach 3.5 psig.

The NSO placed the 2A and 2B Drywell Equipment Drain Sump Pumps control switches to START, to assist in determining the size of the leak.

The AO-2001-5 and AO-2001-6 DW EQUIP DRN ISOL VLVs will indicate ___(1)___ and the 2A and 2B EQUIP DRN PPs will indicate ___(2)___ .

- A. (1) OPEN
(2) ON
- B. (1) OPEN
(2) OFF
- C. (1) CLOSED
(2) ON
- D. (1) CLOSED
(2) OFF

Answer: D

Question 42 Details

Comments:

Objective: DRE268LN001.06

Reference: DANs 902-4 A-17 and 902-5 E-5

K/A: 295010.A1.02 3.6 / 3.6

K/A: Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Drywell floor and equipment drain sumps.

Level: High

Pedigree: New

Explanation: With the Drywell pressure > 2.0 psig, this is a Group 2 initiation signal. With the Group 2 signal present the Drywell sump pumps are prevented from starting and the valves are prevented from opening.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

43

Points: 1.00

With both Units operating at near rated power, Unit 2, Division 2 is normally supplied off-site power by ___(1)___ of the 345 KV Switchyard, and Unit 3, Division 2 is normally supplied off-site power by ___(2)___ of the 345 KV Switchyard.

- A. (1) Bus 1;
(2) Bus 8
- B. (1) Bus 1;
(2) Bus 10
- C. (1) Bus 3;
(2) Bus 8
- D. (1) Bus 3;
(2) Bus 10

Answer: C

Question 43 Details

Comments:

Objective: DRE262LN003.02

Reference: DOP 6400-13

K/A: 262001.K1.03 3.4 / 3.8

K/A: Knowledge of the physical connections and/or cause effect relationships between A.C. ELECTRICAL DISTRIBUTION and the following: Off-site power sources.

Level: Memory

Pedigree: New

Explanation: Unit 2 Div 2 off-site power is supplied by Bus 3 and Unit 3 Div 2 off-site power is supplied by Bus 8.

Bus 1 is the Div 1 power tie to Unit 2.

Bus 10 is the Div 1 power tie to Unit 3

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

44

Points: 1.00

Given the following for the Unit 2 250 VDC :

- 5 Volt POSITIVE ground is present.
- 15 Volt NEGATIVE ground is present.

What will ground detection recorder, 2-8350-250, display if the NEGATIVE button is depressed?

- A. Positive 10 VOLTS
- B. Positive 15 VOLTS
- C. Negative 10 VOLTS
- D. Negative 15 VOLTS

Answer: D

Question 44 Details

Comments:

Objective: DRE263LN001.02

Reference: DOP 6900-04

K/A: 263000.K1.04 2.6 / 2.9

K/A: Knowledge of the physical connections and/or cause effect relationships between D.C. ELECTRICAL DISTRIBUTION and the following: Ground detection.

Level: High

Pedigree: New

Explanation: When depressing the POSITIVE button, the negative reference leg is isolated, displaying only the positive ground. When depressing the NEGATIVE button, the positive reference leg is isolated, displaying only a negative ground.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

45

Points: 1.00

Unit 3 was operating at near rated power, when Bus 37 experienced an overcurrent condition. Which of the following Instrument Air Compressor(s) will lose its/their power supply?

- A. 3A ONLY
- B. 3B ONLY
- C. 3C ONLY
- D. 3B and 3C ONLY

Answer: D

Question 45 Details

Comments:

Objective: DRE278LN001.02

Reference: DOA 4700-01

K/A: 300000.K2.01 2.8 / 2.8

K/A: Knowledge of electrical power supplies to the following:
Instrument air compressor.

Level: Memory

Pedigree: New

Explanation: The power supplies are 3A - Bus 36, 3B - Bus 37, and 3C - Bus 37.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

46

Points: 1.00

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

- RPV pressure is 1055 psig.
- RPV water level is -72 inches.
- Drywell pressure is 1.38 psig.

Which of the following indications would the NSO expect to see?

- (1) Iso Condenser auto started
- (2) U2 and 2/3 EDGs auto started
- (3) 2A and 2B Recirc pumps tripped
- (4) Electromatic Relief valves cycling
- (5) 2D Cond/Cond Booster pump tripped

- A. 1, 2, and 5 ONLY
- B. 1, 3, and 4 ONLY
- C. 2, 3, and 4 ONLY
- D. 2, 3, and 5 ONLY

Answer: D

Question 46 Details

Comments:

Objective: DRE202LN001.06

Reference: DANs 902-4 A-9, 902-5 B-10, 902-6 F-5, 902-8 B-7

K/A: 295006.A1.04 3.1 / 3.2

K/A: Ability to operate and/or monitor the following as they apply to SCRAM: Recirculation system.

Level: Memory

Pedigree: New

Explanation: When RPV level dropped below -59 inches, the following happens: Both Recirc Pumps trip, both EDGs auto start (ECCS signal), and the 2D Cond/Cond Booster pump trips (load shed).

The Iso Cond does NOT auto start until 1070 psig, for 17 seconds.

The FIRST ERVs will NOT start cycling until 1110 PSIG.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

47

Points: 1.00

What is the estimated time that the Unit 2 125 VDC batteries will carry the normal dc loads plus all dc loads required for safe shutdown on ONE unit and operations required to limit the consequences of a design basis event on the OTHER unit?

- A. 2 hours
- B. 4 hours
- C. 8 hours
- D. 16 hours

Answer: B

Question 47 Details

Comments:

Objective: DRE263LN002.01

Reference: UFSAR 8.3.2.2.1

K/A: 295004.K1.04 2.8 / 2.9

K/A: Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Effect of battery discharge rate on capacity.

Level: Memory

Pedigree: New

Explanation: The battery of the 125 VDC system has sufficient capacity to supply normal dc loads plus all dc loads required for safe shutdown on ONE unit and operations required to limit the consequences of a design basis event on the OTHER unit for a period of 4 hours.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

48

Points: 1.00

Unit 2 was operating at near rated power, when a SCRAM occurred. The following parameters are observed:

- RPV pressure is 980 psig and steady.
- Drywell pressure is 1.21 psig and steady.
- All RPS Channel 'A' and 'B' lights are extinguished.
- RPV water level is +10 inches and trending up slowly.
- APRMs are reading 4% and are trending down rapidly.
- The RWM is NOT displaying any RED indications OR question marks.

Which of the statements below demonstrates a proper verbal report from the Unit NSO to the Unit Supervisor per DGP 2-3, REACTOR SCRAM?

- A. "Attention for an update, All rods in, Reactor level and pressure and Drywell pressure are trending as expected, End of Update"
- B. "Attention for an update, Rods did not go in, ARI actuated, it is a hydraulic ATWS, Reactor power is approximately 4%, End of Update"
- C. "Attention for an update, Rods did not go in, ARI actuated, it is an electrical ATWS, Reactor water level is +10 inches, Reactor pressure is 980 psig, Drywell pressure is 1.21 psig, and Reactor power is approximately 4%, End of Update"
- D. "Attention for an update, Rods did not go in, ARI actuated, it is a hydraulic ATWS, Reactor water level is +10 inches, Reactor pressure is 980 psig, Drywell pressure is 1.21 psig, and Reactor power is approximately 4%, End of Update"

Answer: A

Question 48 Details

Comments:

Objective: 29800LK065

Reference: DGP 2-3

K/A: Generic.1.18 3.6 / 3.8

K/A: Ability to make accurate, clear, and concise logs, records, status boards, and reports.

Level: High

Pedigree: Bank

Explanation: The candidate must be able to determine that an ATWS condition does NOT exist (APRMs downscale, RPS lights extinguished, and NO red or questions marks on the RWM), and make the report of "all rods in". The candidate must understand the RPV level initially dropped due to FWLC setpoint setdown, but is returning to normal level. Drywell pressure is in normal band. RPV pressure is in normal band. These level and pressure trends require the report that the "levels and pressures are trending as expected".

REQUIRED REFERENCES: None.

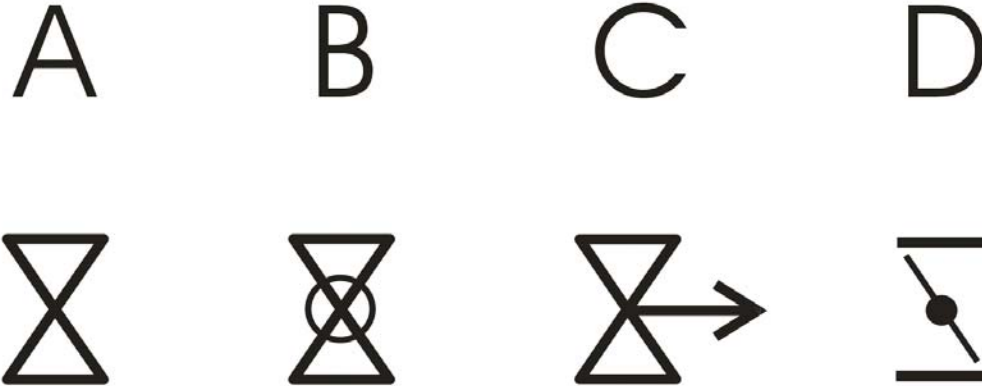
EXAMINATION ANSWER KEY

09-1 NRC Exam

49

Points: 1.00

Which of the following symbols is a drawing of a GATE VALVE?



- A. Figure A
- B. Figure B
- C. Figure C
- D. Figure D

Answer: A

Question 49 Details

Comments:

Objective: DRE101LN001.06

Reference: Mechanical Drawing M-11 sht 2

K/A: Generic.2.41 3.5 / 3.9

K/A: Ability to obtain and interpret station electrical and mechanical drawings.

Level: Memory

Pedigree: Modified

Explanation: 'A' is a Gate Valve. 'B' is a Globe Valve. 'C' is a Needle Valve. 'D' is a Butterfly Valve. Lack of ability to understand valve types, caused an O.O.S. event at Dresden Station.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

50

Points: 1.00

With the Reactor experiencing an ATWS condition, COLD SHUTDOWN BORON WEIGHT is defined as the amount of boron necessary to maintain the Reactor shutdown with which of the following additional conditions?

- A. Xenon free core
Reactor Recirc is NOT in service
RPV water level +8 to -59 inches
- B. Xenon free core
Reactor Recirc in service
RPV water level in normal operating band
- C. 72 hour shutdown Xenon
Reactor Recirc in service
RPV water level +8 to -59 inches
- D. 72 hour shutdown Xenon
Reactor Recirc is NOT in service
RPV water level in normal operating band

Answer: B

Question 50 Details

Comments:

Objective: DRE211LN001.01

Reference: UFSAR section 9.3.5, EPG B-17-9

K/A: 295037.K.3.05 3.2 / 3.7

K/A: Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Cold shutdown boron weight: Plant-Specific.

Level: Memory

Pedigree: Bank

Explanation: Per the above documents Cold Shutdown Boron Weight is defined as the amount of boron necessary to shutdown the reactor and maintain a shutdown condition with the following conditions: RPV water level is assumed as normal operating level, Xenon is at equilibrium, and Recirc system in service.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

51

Points: 1.00

The Unit Supervisor has ordered a Control Room evacuation, due to a fire.

Which of the following is/are correct action(s) to take per DSSP 100-CR HOT SHUTDOWN PROCEDURE - CONTROL ROOM EVACUATION?

- A. Vent the air supply to the MSIVs, to prevent spurious operation.
- B. Trip ALL loads on 125 VDC Dist Panels 2A-1 and 2B-1, for load conservation.
- C. Place Relief Valve control switches in MAN, to remove the energy from the RPV.
- D. Scram the Reactor and reset the scram, to prevent cold water injection through the CRDs.

Answer: A

Question 51 Details

Comments:

Objective: 29501LP084

Reference: DSSP 100-CR

K/A: 295016.G.1.20 4.6 / 4.6

K/A: Control Room Abandonment: Ability to interpret and execute procedure steps.

Level: Memory

Pedigree: Bank

Comments: Per the above procedure, the only correct action is to close the MSIVs, to prevent spurious operation. Non-essential loads are shed from 250 VDC, not 125 VDC. The ERVs are placed in OFF, not MAN, to prevent them from causing an uncontrolled blowdown. The Reactor is scrammed, but the scram is NOT reset.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

52

Points: 1.00

Unit 2 was operating at 18% power with the following conditions:

- 2A CRD pump O.O.S.
- The Unit is in a shutdown clock for Control Rod F-5, at position 48, being INOP due to accumulator pressure.

Then a transient occurred, resulting in the following:

- 2B CRD pump tripped on overcurrent.
- RPV steam dome pressure decreased to and stabilized at 880 psig.

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

- A. Place the scram toggle switch for Control Rod F-5 to the up position **only**.
- B. Place the Mode Switch in SHUTDOWN and enter DGP 02-03, REACTOR SCRAM **only**.
- C. Trip the Recirc pumps, Scram the Reactor, **and** enter DGP 02-03, REACTOR SCRAM.
- D. Place the scram toggle switch for Control Rod F-5 to the up position, hold for 7 to 10 seconds, **then** return it to the down position.

Answer: B

Question 52 Details

Comments:

Objective: DRE201LN001.08

Reference: DOA 0300-01

K/A: 295022.A1.01 3.1 / 3.2

K/A: Ability to operate and/or monitor the following as they apply to LOSS OF CRD PUMPS: CRD hydraulic system.

Level: High

Pedigree: New

Explanation: With all of the following the conditions present (MODE 1, a Control Rod accumulator inop, not fully inserted, Steam Dome pressure <900 psig, and a loss of charging water pressure) the correct actions to take is to place the mode switch in shutdown and enter DGP 2-3, ONLY.

The scram toggle switch is not operated unless in Mode 3, 4, or 5.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

53

Points: 1.00

Unit 2 was in STARTUP with *only* the 2C SDC pump in operation, when the 2C SDC pump tripped on high suction temperature.

One minute later, the U2 125 VDC Rx Bldg Distribution Panel de-energized, due to a fire.

Which picture below correctly identifies the proper indications for the above situation?

- A. A
- B. B
- C. C
- D. D

Answer: A

Question 53 Details

Comments:

Objective: DRE205LN001.12
 Reference: DOA 6900-T1
 K/A: 205000.A4.01 3.7 / 3.7
 K/A: Ability to manually operate and/or monitor in the control room: SDC/RHR pumps.
 Level: High
 Pedigree: New
 Explanation: With a loss of the U2 125 VDC Rx Bldg Dist Panel, all control power is lost to Bus 23-1. The 2A and 2C SDC pumps are powered from Bus 23-1. When control power is lost to Bus 23-1, all indicating lights for the 2A and 2C SDC pumps are lost. The 2B SDC pump will still have indicating lights, as it is powered from Bus 24-1, which receives its control power from 2B-1 Dist Panel. The 2B SDC pump does not auto start in this situation, so there will be no ON indicating light for it.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

54

Points: 1.00

Both Units were operating at near rated power, with the following conditions:

- 'A' SBGT system was in STBY.
- 'B' SBGT system was in PRI.

Then a transient occurred on Unit 3, with Drywell pressure stabilizing at 3.5 psig.

Initially the NSO observed the following:

- The 2/3B SBGT Fan indication was RED.
- The 2/3B SBGT Heater indication was RED.
- System flow is 4100 scfm.

Several seconds later the NSO observed that the 2/3B SBGT Heater indication changed from RED to GREEN.

What is the expected status of SBGT System, 2 minutes after the above indications were observed?

- A. 2/3 'A' SBGT system OFF, 2/3 'B' SBGT system OFF
- B. 2/3 'A' SBGT system OFF, 2/3 'B' SBGT system RUNNING
- C. 2/3 'A' SBGT system RUNNING, 2/3 'B' SBGT system OFF
- D. 2/3 'A' SBGT system RUNNING, 2/3 'B' SBGT system RUNNING

Answer: C

Question 54 Details

Comments:

Objective: DRE261LN001.06
Reference: DAN 923-5 B-6
K/A: 261000.A3.02 3.2 / 3.1
K/A: Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: Fan start.
Level: High
Pedigree: Modified
Explanation: With a valid initiation signal and the switches in the above configuration, the 'B' train will trip upon a heater trip (green indication) and the 'A' train will auto start.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

55

Points: 1.00

Unit 2 was operating at near rated power when an RPV water level transient occurred.

HPCI auto started and is being utilized for RPV water level control.

Several minutes later, annunciator 902-3 A-12, HPCI COND STG TK LVL LO LO alarmed.

What is the expected response of the HPCI system and what actions can the Operating team take to mitigate the consequences of the event?

- A. The CST suction valve closes;
Swap U2 HPCI suction to U3 Torus.
- B. The U2 HPCI system loses suction and trips;
Place jumpers to allow HPCI to continue to take a suction from the CSTs.
- C. Both U2 Torus suction valves open, THEN the CST suction valve closes;
Place Makeup Demineralizer in service to raise CST water level, if available.
- D. The CST suction valve remains open and both U2 Torus suction valves open;
Place Makeup Demineralizer in service to raise CST water level, if available.

Answer: C

Question 55 Details

Comments:

Objective: DRE206LN001.06

Reference: DAN 902-3 A-12

K/A: 206000.A2.09 3.5 / 3.7

K/A: Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: †Low condensate storage tank level: BWR-2,3,4.

Level: Memory

Pedigree: New

Explanation: With HPCI injecting, when the CST level low alarm comes in, the U2 Torus suction valves fully open THEN the CST suction valve closes (to maintain a suction path).

Then the Operating team is directed by the procedure to refill the CSTs with the Makeup Demins, if available.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

56

Points: 1.00

Unit 2 was utilizing the Head Spray system for cooling down for a refuel outage.

RPV water level decreased to 0 inches.

What are the expected Control Room indications?

The MO 2-205-24 HEAD COOLING VLV ____ (1) ____ indication light is illuminated and the FIC 2-205-12 HEAD COOLING FLOW CONTRL flow indication ____ (2) ____ .

- A. (1) RED;
(2) drops
- B. (1) RED;
(2) remains steady
- C. (1) GREEN;
(2) drops
- D. (1) GREEN;
(2) remains steady

Answer: C

Question 56 Details

Comments:

Objective: DRE223LN005.06

Reference: DAN 902-5 E-5

K/A: 223002.A3.01 3.4 / 3.4

K/A: Ability to monitor automatic operations of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF including: System indicating lights and alarms.

Level: High

Pedigree: Bank

Explanation: When RPV water level drops below +6 inches, a Group 2 isolation is initiated, which causes the 2-205-24 valve to go closed (green light). Since the FIC is downstream of the 2-205-24 valve, when this valve closes, the Head Cooling flow drops off.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

57

Points: 1.00

Unit 2 was operating at near rated power, with the U2 EDG being run for a surveillance run per DOS 6600-01, DIESEL GENERATOR SURVEILLANCE TESTS.

Which of the following conditions will TRIP the Unit 2 EDG, 45 minutes after it has started?

- A. Engine High Oil Temperature
- B. Engine High Water Temperature
- C. Generator High Stator Temperature
- D. Generator High Internal Air Temperature

Answer: B

Question 57 Details

Comments:

Objective: DRE264LN001.06

Reference: DOS 6600-01

K/A: 264000.K4.01 3.5 / 3.7

K/A: Emergency Generators (Diesel/Jet): Knowledge of EMERGENCY GENERATORS (DIESEL/JET) design feature(s) and/or interlocks which provide for the following: Emergency generator trips (normal).

Level: Memory

Pedigree: Bank

Comments: When an EDG is being run for a surveillance test, the trips that are in effect are: Diesel engine overspeed, Generator differential fault, Overcrank, Engine high water temperature, Engine low water pressure, Main bearing oil pressure low, and Crankcase pressure high.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

58

Points: 1.00

Both Units were operating at near rated power, when a large Instrument Air leak occurred.

The Operating team was attempting to start all available Instrument Air Compressors, when the following occurred:

- A loss of off-site power on BOTH Units.
- Buses 23, 24, 33, and 34 have been re-energized.
- An NSO reported that the U2 Main Turbine coasted down, but the Turning Gear did NOT engage.

What actions are required to be taken?

- A. Manually engage the Turbine Turning Gear, adjacent to the Main Generator.
- B. Manually rotate the Turbine every 15 minutes, at the Turbine front standard.
- C. IMMEDIATELY shutdown the Turbine Gland Seal system, from the Control Room.
- D. Connect an air wrench, supplied by U3 Service Air, to operate the Turbine Turning Gear, adjacent to the Main Generator.

Answer: A

Question 58 Details

Comments:

Objective: DRE278LN001.12

Reference: DOA 4700-01

K/A: 295019.G.1.30 4.4 / 4.0

K/A: Partial or Complete Loss of Instrument Air: Ability to locate and operate components, including local controls.

Level: High

Pedigree: Bank

Explanation: Inst Air is normally utilized to engage the Turning Gear. The Turning Gear failed to engage because of the LOOP concurrent with a large Instrument Air leak. Per the above DOA, the Turning Gear is required to be manually engaged, given the loss of Inst Air.

Manually rotating the Turbine would be done ONLY after the failure of the manual Turning Gear engagement.

The Gland Seal system would not be operating, given the loss of Inst Air and the conditions are NOT met to shut it down (unable to engage the Turning Gear).

The air wrench tool would only be used IF the Turning Gear was inop.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

59

Points: 1.00

Unit 2 was operating at rated power when a complete loss of U2 125 VDC power was lost to Division I of the Isolation Condenser initiation and isolation logic.

What indications would the NSO expect to see two (2) minutes after the above transient?

- A. An Isolation Condenser initiation has occurred.
- B. ALL Isolation Condenser valves have remained as is.
- C. ALL Isolation Condenser isolation valves, on the 902-3 panel, closed.
- D. ALL Isolation Condenser isolation valves, on the 923-1 panel, closed.

Answer: C

Question 59 Details

Comments:

Objective: DRE207LN001.12

Reference: DOA 6900-02

K/A: 207000.G.1.31 4.6 / 4.3

K/A: Isolation (Emergency) Condenser: Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.

Level: High

Pedigree: Bank

Explanation: Upon a complete loss of Div 1 125 VDC, The Isolation Condenser isolates on high flow signal (ALL valves close). This will be indicated on the 902-3 panel. The 923-1 panel has the indications for the makeup pumps, not valves. An initiation signal will not be initiated, because of the isolation signal.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

60

Points: 1.00

Unit 2 was operating at near rated power when Bus 23-1 experienced an overcurrent condition, resulting in the following:

- Drywell pressure is 2.3 psig and slowly increasing.
- All available Torus Cooling was initiated from the Control Room.
- All available Torus Sprays were initiated from the Control Room.

Which of the following actions will occur immediately AFTER Bus 28 is cross-tied to Bus 29?

- A. The standby SBTG train starts.
- B. The 2B Torus Cooling and Torus Spray valves close.
- C. 2A Fuel Zone RPV level indicator begins to read on scale.
- D. The 2A Core Spray pump minimum flow valve opens then closes.

Answer: C

Question 60 Details

Comments:

Objective: DRE216LN002.13

Reference: DOP 6800-05, DOP 6700-02

K/A: 216000.K6.01 3.1 / 3.3

K/A: Knowledge of the effect that a loss or malfunction of the following will have on the NUCLEAR BOILER

INSTRUMENTATION: A.C. electrical distribution.

Level: High

Pedigree: Bank

Explanation: The 2A Fuel Zone indicator is re-energized when ATS panel 2202-73A receives power from MCC 28-1 (when Bus 28 is re-energized).

SBGT logic is powered from 125 VDC Bus 2A-1 and was NOT de-energized, so the standby train will NOT start (primary already started).

Torus Cooling and Spray valve logic is powered from MCC 29-1, which did NOT lose power (valves will NOT close).

The 2A Core Spray pump does NOT have a power source (Bus 23-1), therefore it can NOT start.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

61

Points: 1.00

Unit 2 was operating at near rated power with the 2A M-G SET LUBE OIL PP A1, supplying oil to the 2A Recirc system, when annunciator 902-4 B4, 2A RECIRC M-G LUBE OIL PRESS LO alarmed.

Which of the following indications would the NSO expect to see?

- A. A
- B. B
- C. C
- D. D

Answer:

A

B

C

D

LEGEND

EXTINGUISHED

ILLUMINATED

Question 61 Details

Comments:

Objective: DRE202LN001.06

Reference: DAN 902-4 B-4

K/A: 202001.A4.06 2.7 / 2.7

K/A: Recirculation System: Ability to manually operate and/or monitor in the control room: Oil pumps.

Level: High

Pedigree: New

Explanation: If lube oil pressure reaches 27 psig Unit 2, (30 psig Unit 3) and dropping then the Standby Oil pump will automatically start and the Scoop Tube will lockout. The ON lights will be illuminated for BOTH pumps and the LOCKOUT light will be extinguished.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

62

Points: 1.00

Unit 3 was in STARTUP, when a transient caused Drywell pressure to slowly increase.

The Unit Supervisor has directed Drywell venting.

If Torus pressure EXCEEDS Drywell pressure, how will the plant respond?

- A. SBTG will auto initiate.
- B. The Torus to Drywell vacuum breakers will cycle.
- C. There will be backflow through the Drywell Vent valves.
- D. There will be backflow through the Drywell Purge valves.

Answer: B

Question 62 Details

Comments:

Objective: DRE223LN001.06

Reference: DOP 1600-01

K/A: 223001.K5.01 3.1 / 3.3

K/A: Knowledge of the operational implications of the following concepts as they apply to PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES: Vacuum breaker/relief operation.

Level: High

Pedigree: Bank

Explanation: The limitations and action section of the above procedure states that during Drywell venting, Drywell pressure should be closely monitored to ensure Drywell pressure remains greater than or equal to Torus pressure. This will prevent unnecessary cycling of the Torus to Drywell vacuum breakers.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

63

Points: 1.00

Unit 3 was operating at 55% power, with the following conditions:

- 3A RFP operating.
- 3B RFP operating.
- 3C RFP in standby (from Bus 32).

Then a transient occurred, causing RPV water level to increase to 50 inches.

How will the 3C RFP respond to the above transient?

- A. Start immediately, and continue operating.
- B. Start immediately, then trip and remain off.
- C. Wait until RPV water level decreases below 48 inches, then start.
- D. Start immediately, trip, then restart when RPV water level decreases below 48 inches.

Answer: B

Question 63 Details

Comments:

Objective: DRE259LN001.06
Reference: DAN 902-6 E-7, DAN 902-6 F-7
K/A: 259001.A3.01 3.3 / 3.5
K/A: Ability to monitor automatic operations of the REACTOR FEEDWATER SYSTEM including: RFP auto start: Plant-Specific.
Level: High
Pedigree: Bank
Explanation: When RPV water level increase to 50 inches, the operating RFPs will trip, which is an auto-start signal for any RFPs selected for standby. Once the standby pump auto starts, it sees the RPV level of 50 inches and trips also. The breaker trip indicator (amber light) would have to be reset before any RFP would re-start.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

64

Points: 1.00

The Diesel Driven Isolation Condenser Makeup pumps provide ___(1)___ water to the ___(2)___ side of the Isolation Condenser.

- A. (1) Clean Demin;
(2) tube
- B. (1) Clean Demin;
(2) shell
- C. (1) Condensate Storage Tank;
(2) tube
- D. (1) Condensate Storage Tank;
(2) shell

Answer: B

Question 64 Details

Comments:

Objective: DRE207LN001.02

Reference: DOP 1300-01

K/A: 207000.K4.03 3.3 / 3.5

K/A: Knowledge of ISOLATION (EMERGENCY)

CONDENSER design feature(s) and/or interlocks which provide for the following: Filling of the system: BWR-2,3.

Level: Memory

Pedigree: Bank

Explanation: The Iso Cond shell side has 4 possible fill sources, in the following preferred order: Iso Cond Makeup pumps, the Clean Demin water pumps, Fire Water system, and CSTs. The Makeup pumps take a suction from the Clean Demin tank, NOT the CSTs.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

65

Points: 1.00

A function of the ___(1)___ system is to average the outputs of selected ___(2)___ to provide indication of Reactor power.

- A. (1) APRM;
(2) OPRMs
- B. (1) APRM;
(2) LPRMs
- C. (1) OPRM;
(2) LPRMs
- D. (1) OPRM;
(2) APRMs

Answer: B

Question 65 Details

Comments:

Objective: DRE215LN005.01

Reference: UFSAR 7.6.1.2.A

K/A: 215005.G.1.27 3.9 / 4.0

K/A: Average Power Range Monitor/Local Power Range Monitor System: Knowledge of system purpose and/or function.

Level: Memory

Pedigree: New

Explanation: The average power range monitors (APRMs) average the outputs of selected LPRMs to provide indication of average reactor power.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

66

Points: 1.00

Both Units were operating at near rated power, when annunciator 923-5 A-1, U2 RX BLDG VENT/EXH FAN TRIP alarmed.

The NSO discovered amber TRIP lights illuminated for:

- 2A RX BLDG EXHAUST FAN.
- 2C RX BLDG VENT FAN.

Which Bus is the NSO required to dispatch an EO to check the breaker indications for the above fans?

- A. 480V Bus 25
- B. 480V Bus 26
- C. 480V Bus 27
- D. 480V Bus 28

Answer: D

Question 66 Details

Comments:

Objective: DRE288LN001.02

Reference: Electrical Print 12E-2306

K/A: 288000.K1.01 2.6 / 2.6

K/A: Knowledge of the physical connections and/or cause effect relationships between PLANT VENTILATION SYSTEMS and the following: A.C. electrical.

Level: Memory

Pedigree: New

Explanation: 2A Rx Bldg Vent Fan and the 2C Rx Bldg Exhaust Fans are both powered from Bus 28. This is a common misconception, as the supply and vent fans are reversed, as stated below.

Bus 28: Vent "A", Vent "C", Exh "A"

Bus 29: Vent "B", Exh "B", Exh "C",

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

67

Points: 1.00

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

- Offgas flow dropped approximately 100 scfm.
- Offgas Recombiner temperature dropped approximately 600°F.

The Unit Supervisor has directed entering DOP 5400-14, EXTINGUISHING AN OFF GAS FIRE.

Which of the following actions are performed prior to executing the procedure above?

- A. Ensure adequate margin in the Instrument Air system, to extinguish the fire.
- B. Initiate Station Fire Watches for the Offgas system, to identify potential insulation fires.
- C. Start all available Circ Water pumps to limit Condensate temperature rise from reduced Condenser vacuum.
- D. Drain loop seals upstream of the fire, to allow for intrusion of Instrument Air to extinguish the fire.

Answer: C

Question 67 Details

Comments:

Objective: DRE271LN001.08

Reference: DOP 5400-14

K/A: 271000.G.1.32 3.8 / 4.0

K/A: Offgas System: Ability to explain and apply system limits and precautions.

Level: Memory

Pedigree: New

Explanation: A precaution in the above procedure states that all available Circ Water pumps should be started to limit Condensate temperature rise from reduced Condenser vacuum.

A fire watch would be an acceptable practice, but is not required.

Service Air is used to extinguish and Offgas fire (NOT Instrument Air).

Loop seals are to be ensured filled (not drained).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

68

Points: 1.00

With the Unit in REFUEL, during fuel moves, which of the following is a responsibility of the Unit NSO?

- A. Provide documentation of completed moves to the SNM Custodian.
- B. Record SRM readings on the Move Sheet, if reactivity was affected.
- C. Initial the "FROM" location and "TO" location boxes of the Move Sheet.
- D. Verify correct core coordinates for the move by observing the Swing Arm or Bridge and Trolley pointers.

Answer: B

Question 68 Details

Comments:

Objective: 23400LK005

Reference: DFP 0800-01

K/A: Generic.3.12 3.2 / 3.7

K/A: Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Level: Memory

Pedigree: New

Explanation: Per the master refueling procedure, one of the responsibilities of the Unit NSO is to record SRM readings on the Move Sheet. The distractors are duties of either an SRO or an SROL.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

69

Points: 1.00

Unit 2 was operating at near rated power with the 2B CRD pump O.O.S., when the 2A CRD pump tripped on overcurrent.

What is the impact, if any, on the CRD Exhaust Water Header pressure?

Which of the following actions are required to be taken?

- A. NO change in pressure;
Isolate the Recirc Pump Seal Purge System ONLY.
- B. NO change in pressure;
Isolate BOTH the Recirc Pump Seal Purge AND RVWLIS Backfill Systems.
- C. Pressure will decrease;
Isolate the Recirc Pump Seal Purge System ONLY.
- D. Pressure will decrease;
Isolate BOTH the Recirc Pump Seal Purge AND RVWLIS Backfill Systems.

Answer: D

Question 69 Details

Comments:

Objective: DRE201LN001.08

Reference: DAN 902-5 B-2, DOA 0300-01

K/A: 201001.A2.01 3.2 / 3.3

K/A: Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Pumps trips.

Level: High

Pedigree: New

Explanation: When the CRD pump tripped, the Drive Water header pressure is lost, which will cause the Exhaust Header pressure to bleed off by flow through the system stabilizing valves. Actions in the DOA are to secure BOTH the Seal Purge and RVWLIS systems.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

70

Points: 1.00

Both Units were operating at near rated power when Transmission Systems Operations (TSO) notified the Control Room that the predicted post Unit trip with LOCA switchyard voltages are:

- Unit 2: 325 KV
- Unit 3: 350 KV

What are the required actions from the Operating team AND the reason for these actions?

- A. Adjust TR 32 Tap Changer;
to restore system operability
- B. Adjust TR 32 Tap Changer;
to reduce circulating currents
- C. Adjust TR 86 Tap Changer;
to restore system operability
- D. Adjust TR 86 Tap Changer;
to reduce circulating currents

Answer: C

Question 70 Details

Comments:

Objective: DRE262LN003.12

Reference: DOA 6500-12

K/A:700000.A1.01 3.6 / 3.7

K/A: Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Grid frequency and voltage.

Level: Memory

Pedigree: Bank

Explanation: Given the voltages, only Unit 2 is below the procedural setpoint. The actions are to adjust the TR-86 Tap Changer (to position 31) to raise VOLTS (not VARs) to restore system operability.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

71

Points: 1.00

Unit 3 was operating at near rated power, with the Isolation Condenser O.O.S., when a Group 1 isolation occurred.

The NSO reported that ALL Relief Valve indicating lights on the 903-3 panel are EXTINGUISHED.

Without operator action, Reactor pressure will increase until ___(1)___ psig, when a ___(2)___ valve opens.

- A. (1) 1110;
(2) low-set relief
- B. (1) 1135;
(2) safety/relief
- C. (1) 1240;
(2) safety/relief
- D. (1) 1240;
(2) safety

Answer: B

Question 71 Details

Comments:

Objective: DRE239LN001.06

Reference: DOA 0250-01, DAN 902-3 D-9

K/A: 239002.K3.02 4.2 / 4.4

K/A: Knowledge of the effect that a loss or malfunction of the RELIEF/SAFETY VALVES will have on following: Reactor over pressurization.

Level: High

Pedigree: Bank

Explanation: All lights being extinguished means that control power is de-energized for the RELIEF function of the ERVs and Target Rock. Target rock SAFETY feature is set at 1135 psig. Under these conditions, the SAFETY valves/target rock will lift. 1110 is the value that ERVs would open, if they had power. 1240 is the value that two of the safety valves will open (value is higher than the 1135 of the Target Rock safety function).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

72

Points: 1.00

Unit 3 was is in a refuel outage with the shorting links INSTALLED, when the IRM 13 High Voltage power supply failed LOW.

What is the expected plant response?

- A. Rod Block ONLY.
- B. Scram Signal on BOTH channels ONLY.
- C. Rod Block AND Channel A half-scram ONLY.
- D. Rod Block AND Channel B half-scram ONLY.

Answer: C

Question 72 Details

Comments:

Objective: DRE215LN003.06

Reference: DAN 902-5 C-10, DOP 0700-02

K/A: 215003.K3.02 3.6 / 3.6

K/A: Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: Reactor manual control.

Level: High

Pedigree: Bank

Explanation: With an IRM hi-voltage power supply failing low, AND the mode switch NOT in run, an IRM HI HI INOP trip generated. This causes a rod block AND a half-scram signal (A channel because of IRM 13). A FULL scram signal would not be generated with the shorting links installed, since they jumper out the IRM coincidental scrams.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

73

Points: 1.00

Both Units were operating at near rated power, with 138 kV Bus 1 O.O.S., when annunciator 902-8 F-2, RES AUX TR 22 SUDDEN PRESS TRIP, is received. An EO reported that there is a fire on TR 22 and the deluge system has actuated.

Which of the following choices lists the circuit breaker(s) that would be expected to trip?

- A. TR 86 138 kV GCB
- B. 345 kV BT 1-2 CB;
345 kV BT 1-7 CB
- C. 345 kV BT 9-10 CB;
345 kV BT 10-11CB
- D. 345 kV BT 4-8 CB;
345 kV BT 8-9 CB;
345 kV BT 8-15 CB

Answer: A

Question 73 Details

Comments:

Objective: DRE262LN009.06

Reference: DOP 6400-13

K/A: 600000.K2.04 2.5 / 2.6

K/A: Knowledge of the interrelations between PLANT FIRE ON SITE and the following: Breakers / relays / and disconnects

Level: Memory

Pedigree: Modified

Explanation: TR 86 CB will be the only breaker that trips, given a normal power lineup (TR-22 powered via Bus 3 of the 138 kV yard).

CBs 1-7 AND 1-2 are the output CBs for TR-2.

CBs 9-10 and 10-11 are the output CBs for TR-3.

CBs 4-8, 8-9, and 8-15 are the input CBs for TR-32..

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

74

Points: 1.00

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

- A scram was inserted, all rods did NOT fully insert.
- RPV water level is +30" and steady.
- RPV pressure is 1075 psig and steady.
- The NSO initiated SBLC, per the hard card.

On the 902-5 panel, SBLC indicator PI 2-1140-1, PP DISCH HDR PRESS, the NSO would expect to observe SBLC pressure ramp up to approximately ___(1)___ psig, and then ___(2)___ .

- A. (1) 1100;
(2) trend with RPV pressure
- B. (1) 1100;
(2) be maintained at that pressure
- C. (1) 1450;
(2) trend with RPV pressure
- D. (1) 1450;
(2) be maintained at that pressure

Answer: A

Question 74 Details

Comments:

Objective: DRE211LN001.03

Reference: DOP 1100-04

K/A: 211000.A3.01 3.5 / 3.5

K/A: Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: Pump discharge pressure: Plant-Specific.

Level: Memory

Pedigree: Bank

Explanation: The positive displacement pump discharge pressure will ramp up to RPV pressure then track with RPV pressure. It does not go up to a specific pressure or maintain a set pressure. At pressures > 1400, the relief valves will lift.

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

75

Points: 1.00

Unit 2 was operating at near rated power when a transient occurred, resulting in a five (5) gpm leak in the TBCCW system **RETURN HEADER**, concurrent with a **COMPLETE** loss of Instrument Air.

How will the TBCCW system respond and what actions are required?

- A. The Expansion tank level control system will maintain tank inventory; dispatch an EO to locate the leak
- B. The Expansion tank will overflow; dispatch an EO to close the 2-3801, U2 TBCCW HEAD TK LCV.
- C. The TBCCW pumps will trip due to loss of suction pressure; dispatch an EO to open the 2-3801, U2 TBCCW HEAD TK LCV.
- D. The TBCCW pumps will cavitate due to loss of suction pressure; dispatch an EO to open the 2-3821-500, U2 TBCCW HEAD TK LCV BY VLV.

Answer: D

Question 75 Details

Comments:

Objective: DRE274LN001.08

Reference: Piping Diagram M-21, DAN 923-1 F-2

K/A: 295018.A2.05 2.9 / 2.9

K/A: Ability to determine and/or interpret the following as they apply to **PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER** : System pressure.

Level: High

Pedigree: New

Explanation: With a leak in the return header, the Expansion tank level will decrease. With a loss of Instrument Air, the LCV will be unable to open, thus allowing the Expansion tank to fully drain, which causes the TBCCW pumps to lose suction pressure and cavitate. The correct action to mitigate this is to open the bypass around the LCV. The TBCCW pumps will lose suction pressure, but will not trip (unlike RBCCW).

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

76

Points: 1.00

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

- 10:00:00 - a fire is reported in the 2/3 Cribhouse.
- 10:07:00 - the Fire Brigade begins fighting the fire.
- 10:21:00 - the Fire Brigade is still fighting the fire and reports no Visible Damage to structures or Safety System equipment.

Shift Supervision is required at

- A. 10:15, to declare an Unusual Event for a plant fire;
activate the TSC
- B. 10:15, declare an Unusual Event for a plant fire;
ensure a fire location announcement is made over the plant PA system
- C. 10:22, declare an Unusual Event for a plant fire;
ensure a fire location announcement is made over the plant PA system
- D. 10:22, declare an Alert for a plant fire;
activate the TSC

Answer: B

Question 76 Details

Comments:

Objective: 29501LP032

Reference: EP-AA-1004, DOA 0010-10

K/A: 600000.G.4.27 3.4 / 3.9

K/A: Plant Fire On Site: Knowledge of "fire in the plant" procedures.

Level: High

Pedigree: Bank

Explanation: With a fire in the Protected area that is not extinguished with 15 minutes an unusual event must be declared. Per the DOA, announcing the fire location is required. TSC activation is not REQUIRED until an Alert is declared.

SRO per Criteria: 4

REQUIRED REFERENCES: EP-AA-1004 charts.

EXAMINATION ANSWER KEY

09-1 NRC Exam

77

Points: 1.00

Unit 2 was operating at near rated power with TIRS 2-1640-200A, TORUS TEMP MON DIV I temperature recorder O.O.S., when a transient occurred, resulting in the following set of conditions:

- Drywell pressure is 1.55 psig.
- RPV water level is +12 inches.

An NSO reported that the TIRS 2-1640-200B TORUS TEMP MON DIV II temperature recorder currently indicates the following:

- Point 1 103°F
- Point 2 107°F
- Point 3 113°F
- Point 4 115°F
- Point 5 93°F
- Point 6 115°F
- Point 7 121°F
- Point 8 120°F

The Unit Supervisor is required to direct entering DEOP 200-1, PRIMARY CONTAINMENT CONTROL due to ___(1)___ and then ___(2)___ .

- A. (1) Torus temperature ONLY;
(2) start all available Torus cooling ONLY.
- B. (1) Torus temperature ONLY;
(2) start all available Torus cooling, AND scram.
- C. (1) Torus temperature AND Drywell pressure;
(2) start all available Torus cooling, and start Torus Sprays ONLY.
- D. (1) Torus temperature AND Drywell pressure;
(2) start all available Torus cooling, start Torus Sprays AND scram.

Answer: B

Question 77 Details

Comments: Objective: 29502LK011
Reference: DEOP 200-1
K/A: 295013.G.04.01 4.6 / 4.8
K/A: High Suppression Pool Temperature: Knowledge of EOP entry conditions and immediate action steps.
Level: High
Pedigree: New
Explanation: The average (bulk) Torus temperature is 110.9°F (which is above the DEOP 200-1 entry condition of 95°F). The required actions for this is to start all available Torus Cooling and also when average Torus temperature is above 110°F, the required actions are to scram. While a Drywell pressure of 1.5 psig is an Operations department action level, it is NOT an entry condition for DEOP 200-1. Starting Torus Sprays would be correct if DEOP 200-1 was entered on Drywell pressure.

SRO per Criteria: 5

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

EXAMINATION ANSWER KEY

09-1 NRC Exam

78

Points: 1.00

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

- RPV pressure is 300 psig.
- RPV water level is -71 inches.
- Drywell pressure is 3.0 psig and rising.
- NO Recirc system valves have repositioned.
- All LPCI valve GREEN indicating lights are illuminated.
- 'A' Recirc loop pressure is 4 psig higher than 'B' Recirc loop.

How will the LPCI system respond AND what is the Unit Supervisor required to direct?

- A. NO LPCI injection;
force LPCI logic to Div II per DOP 1500-09, LPCI LOOP SELECT DEFEAT.
- B. NO LPCI injection;
manually position the required valves per DAN 902-3 A-4, LPCI LOOP SELECTION LOGIC.
- C. LPCI injecting to BOTH loops;
force LPCI logic to Div II per DOP 1500-09, LPCI LOOP SELECT DEFEAT.
- D. LPCI injecting to BOTH loops;
manually position the required valves per DAN 902-3 A-4, LPCI LOOP SELECTION LOGIC.

Answer: B

Question 78 Details

Comments:

Objective: DRE203LN001.06

Reference: T.S. Bases 3.3.5.1, DAN 902-3 A-4

K/A: 203000.A2.15 4.2 / 4.2

K/A: Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loop selection logic failure: Plant-Specific.

Level: High

Pedigree: Bank

Explanation: For the given conditions LPCI Loop select logic should have chosen the 'A' loop for injection and closed the Recirc Discharge vlv on the 'A' loop and closed the LPCI 21 vlv for the 'B' loop of LPCI. The valves did not reposition therefore both 22 vlvs are in the normal closed position and no injection can occur. The correct actions to properly position the valves are directed in DAN 902-3 A-4.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

79

Points: 1.00

Unit 2 was operating at 70% power, with a power increase in progress, when Chemistry notified the Control Room of a significant increase in Iodine level in the Reactor coolant sample.

Which of the following actions is the Unit Supervisor required to direct?

- A. Verify the Mechanical Vacuum pump is tripped.
- B. Reduce power to keep activity level below the monitors trip point.
- C. Stop any power changes until the iodine concentration stabilizes, then continue the power increase.
- D. Stop any power changes until determined that the increase in iodine concentration is NOT from fuel failure, then the power increase may resume.

Answer: D

Question 79 Details

Comments:

Objective: 29501LK050

Reference: DGA-16

K/A: Generic.1.37 4.3 / 4.6

K/A: Knowledge of procedures, guidelines, or limitations associated with reactivity management.

Level: Memory

Pedigree: Bank

Explanation: Power should not be increased until it has been determined that failed fuel is NOT the cause of the increase.

Verifying the Mechanical Vacuum pump is tripped is NOT required unless MSL radiation is > 3000 mR/hr.

Reduce power to keep activity level below the monitors trip point is NOT required unless MSL or Offgas high radiation alarms annunciate.

SRO per Criteria: 6

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

80

Points: 1.00

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

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

The 2B Core Spray pump may experience potential pump damage due to violating its ___(1)___ AND the Unit Supervisor is required to direct ___(2)___ .

- A. (1) Vortex limits ONLY;
(2) continuing 'B' Core Spray pump operation regardless of potential pump damage.
- B. (1) Vortex limits ONLY;
(2) leaving the 'B' Core Spray pump running BUT open 2-1402-2B, Core Spray Pp Suct Vlv From CST, per DOP 1600-02 TORUS WATER LEVEL CONTROL.
- C. (1) Vortex AND NPSH limits;
(2) securing the 'B' Core Spray pump and flood the containment.
- D. (1) Vortex AND NPSH limits;
(2) securing the 'B' Core Spray pump, realign its suction to the CST, per DOP 1400-01, CORE SPRAY SYSTEM PREPARATION FOR STANDBY OPERATION, then recommence injection

Answer: A

Question 80 Details

Comments:

Objective: 29502LP005

Reference: DEOP 100, table V and table W. DEOP Bases section 5 page 16

K/A: 209001.A2.09 3.1 / 3.3

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: Low suppression pool level.

Level: High

Pedigree: Bank

Comments: With the Core Spray pump operating at rated flow (5000 gpm) the pump is only violating its vortex limit, NOT the NPSH. The second part of the answer is to CONTINUE injection (but not realign to the CST suction).

SRO per criteria 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

81

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.

- A. 1 ONLY
- B. 1 and 3 ONLY
- C. 1, 2 and 4 ONLY
- D. 1, 3 and 4 ONLY

Answer: D

Question 81 Details

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

Comments: The event is classified in the Reportability Manual a "Reportable Event Rad 1.2". It is required to submit a written report to the contractor, notify the NRC within 24 hours, and submit a written report to the NRC within 30 days. A 1 hour notification is NOT required.

SRO per criteria 4

REQUIRED REFERENCES: LS-AA-1120, pages 1-23.

EXAMINATION ANSWER KEY

09-1 NRC Exam

82

Points: 1.00

Which of the following list is REQUIRED to be ensured prior to removing control rod XX-YY from the core for blade replacement during REFUEL operations?

- 1) The control cell for control rod XX-YY is defueled.
- 2) Fuel has been unloaded from all adjacent control cells.
- 3) Two (2) SRMs are operable with at least one in an adjacent quadrant.
- 4) The REFUEL INTERLOCKS for control rod XX-YY have been defeated.

- A. 1 ONLY
- B. 1 and 2 ONLY
- C. 1, 2, and 3 ONLY
- D. 1, 2, 3, AND 4

Answer: A

Question 82 Details

Comments:

Objective: 29800LK084

Reference: DFP 0800-16, DGP 04-01

K/A: Generic.1.40 2.8 / 3.9

K/A: Knowledge of refueling administrative requirements.

Level: Memory

Pedigree: Bank

Comments: In the prerequisites section of DFP 0800-16, it states that prior to Control Rod removal, perform checklist D of DGP 04-01, which states that the cell for that particular (not adjacent) Control Rod must be defueled.

One (not two) SRMs must be operable with at least one in an adjacent quadrant.

MODE switch REFUEL INTERLOCKS must be operable, not defeated for a particular control rod.

SRO per criteria 7

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

83

Points: 1.00

Prior to returning to two loop operation from single loop operation, the temperature difference between the Recirc Loop coolant in the *loop to be started* and the Reactor Vessel coolant must be $\leq 50^{\circ}\text{F}$, in ___(1)___.

This bases for this LCO is PRIMARILY to prevent brittle fracture of the ___(2)___ .

- A. (1) ALL modes;
(2) Reactor Coolant Piping
- B. (1) ALL modes;
(2) Reactor Coolant Pressure Vessel
- C. (1) modes 1-4 ONLY;
(2) Reactor Coolant Piping
- D. (1) modes 1-4 ONLY;
(2) Reactor Coolant Pressure Vessel

Answer: D

Question 83 Details

Comments:

Objective: DRE202LN001.07

Reference: ITS 3.4.9, Bases 3.4.9, DOP 0202-01

K/A: Generic.2.25 3.2 / 4.2

K/A: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

Level: Memory

Pedigree: New

Explanation: Prior to returning to two loop operation, from single loop operation the temperature difference between the Recirc Loop coolant in the loop to be started and the Reactor Vessel coolant must be $< 50^{\circ}\text{F}$, in modes 1-4 ONLY, and this bases for this LCO is PRIMARILY to prevent brittle fracture of the Reactor Coolant Pressure Vessel.

SRO per criteria 2

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

84

Points: 1.00

Unit 2 was in STARTUP, with the RWCU system in operation and RPV pressure was 300 psig, when the Instrument Air supply line to RWCU FCV 2-1219, ruptured.

The RWCU ___(1)___ AND the Unit Supervisor is required to direct ___(2)___ .

- A. (1) FCV locks up;
(2) reducing system flow per DAN 902-4 C-12 RWCU RECIRC PP DISCH PRESS LO.
- B. (1) Recirc pump TRIPS;
(2) an operator to check the breaker relay targets per DAN 902-4 A-10 RWCU RECIRC PP TRIP.
- C. (1) system isolates on high pressure;
(2) verification of system isolation per DOP 1200-03, RWCU SYSTEM OPERATION WITH THE REACTOR AT PRESSURE hard card.
- D. (1) Recirc pump continues to operate;
(2) securing the RWCU system per DOP 1200-03, RWCU SYSTEM OPERATION WITH THE REACTOR AT PRESSURE hard card.

Answer: D

Question 84 Details

Comments:

Objective: DRE204LN001.12

Reference: M-30, DOA 4700-01, DOP 1200-03, DANs 902-4 A-10 & C-12

K/A: 204000.A2.03 2.9 / 2.9

K/A: Ability to (a) predict the impacts of the following on the REACTOR WATER CLEANUP SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Flow control valve failure.

Level: High

Pedigree: Bank

Explanation: Loss of IA to the FCV causes valve to fail closed (does not lock up). The pump experiences a dead headed situation (NOT a pump trip). Per DOP 1200-03, during a system transient, secure the system via the hard card. The high pressure isolation (downstream of the PCV) would not occur, since flow was isolated by the failing closed of the FCV.

SRO Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

85

Points: 1.00

Unit 3 was operating at near rated power when an NSO reported the following Isolation Condenser levels:

- Time 17:10:30 - 7 feet 2 inches.
- Time 17:11:30 - 7 feet 0 inches.
- Time 17:12:30 - 6 feet 10 inches.

If the trend continues at the current rate, what is the EARLIEST time, of the times below, that the Isolation Condenser will NOT meet its L.C.O. requirements AND the bases for the L.C.O.?

- A. 17:17:00;
provides the capability to remove heat consistent with the design requirements without makeup water, following a scram from 3016 megawatts thermal.
- B. 17:17:00;
provides sufficient decay heat removal capability for 20 minutes operation without makeup water following a scram from 102% rated thermal power.
- C. 17:18:00;
provides the capability to remove heat consistent with the design requirements without makeup water, following a scram from 3016 megawatts thermal.
- D. 17:18:00;
provides sufficient decay heat removal capability for 20 minutes operation without makeup water following a scram from 102% rated thermal power.

Answer: D

Question 85 Details

Comments:

Objective: DRE223LN001.07
Reference: Tech Spec and Bases 3.5.3
K/A: Generic.2.40 3.4 / 4.7
K/A: Ability to apply Technical Specifications for a system.
Level: High
Pedigree: Bank
Explanation: Tech Spec 3.5.3 states that the shellside level must be ≥ 6 feet. At the current trend the LCO will no longer be met after time 17:17:30, making time 17:18:00 (of the possible answers) the earliest time the LCO requirements are not met. The bases for this requirement is based on a scram from 102% power this provides sufficient decay heat removal capability for 20 minutes operation without makeup water. Verifying the capability to remove heat consistent with the design requirements of 252.5×10^6 Btu/hr is the bases for the heat removal capability to remove design heat load surveillance.

SRO Criteria: 2

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

86

Points: 1.00

Unit 2 was operating at near rated power, near the end of core life, when an EO reported that shad was building up on the traveling screens.

Several minutes later the EO reported that the level difference across the traveling screens was getting worse.

An NSO reported that Main Condenser vacuum is 24.0 inches Hg and trending down at a rate of 1.25 inches Hg per minute.

The Unit Supervisor is required to direct ___(1)___, to ___(2)___ .

- A. (1) scrambling the Reactor per DGP 02-03, REACTOR SCRAM;
(2) reduce the amount of energy required to be absorbed by the Condenser
- B. (1) scrambling the Reactor per DGP 02-03, REACTOR SCRAM;
(2) maintain Condenser vacuum and maintain Service Water system available
- C. (1) inserting Cram rods per DGP 03-04, CONTROL ROD MOVEMENTS;
(2) reduce the amount of energy required to be absorbed by the Condenser
- D. (1) inserting Cram rods per DGP 03-04, CONTROL ROD MOVEMENTS;
(2) maintain Condenser vacuum and maintain Service Water system available

Answer: A

Question 86 Details

Comments:

Objective: DRE275LN001.06

Reference: DOA 3300-02, OP-DR-103-102-1002, TS Bases 3.3.1.1

K/A: Generic.4.49 4.0 / 4.0

K/A: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Level: High

Pedigree: Bank

Explanation: The immediate actions state that if a scram is IMMINENT, then insert the scram before 22.5 in Hg. At the current rate and trend, this value would be reached in less than 2 minutes, thus there is not sufficient time to insert CRAMs. Per the Tech Spec Bases, the reactor scram reduces the amount of energy required to be absorbed by the main condenser.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

87

Points: 1.00

Unit 2 was operating at near rated power, when annunciator 902-4 C-19 LPCI/CS EAST SUMP LVL HI alarmed.

An EO, dispatched to the area, reported that the leak is coming from one of the pump seals and there is approximately one inch of water on the floor.

An NSO reported that Torus water level is 14.5 feet and trending down slowly.

What is the cause of the above indications, and what actions are the Unit Supervisor required to direct?

- A. LPCI pumps A and B Torus suction line break;
Scram and Enter DEOP 100, RPV CONTROL
- B. LPCI pumps A and B Torus suction line break;
Isolate all discharges into the area
AND
wait until 2 or more areas above max safe values
- C. LPCI pumps C and D Torus suction line break;
Scram and Enter DEOP 100, RPV CONTROL
- D. LPCI pumps C and D Torus suction line break;
Isolate all discharges into the area
AND
wait until 2 or more areas above max safe values

Answer: B

Question 87 Details

Comments:

Objective: 29502LK049

Reference: DEOP 300-1, DAN 902-4 C-19

K/A: 295036.A2.03 3.4/3.8

K/A: Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Cause of the high water level.

Level: High

Pedigree: New

Explanation: Based on the given conditions, the source of the leak can be determined to be the 'A' and 'B' LPCI suction line ('A' and 'B' in the east corner room and 'C' and 'D' are in the west corner room). With greater than 0 inches of water on the floor, this would be an entry into DEOP 300-1 and since the leak has not been determined to be unisolable, the correct action is to isolate discharge into the area and wait until another area goes max safe.

SRO Criteria: 5

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

EXAMINATION ANSWER KEY

09-1 NRC Exam

88

Points: 1.00

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

- Annunciator 902-7 G-3, TURB BYP VLV OPEN, alarmed.
- An NSO reported RPV water level is 22 inches and trending down.
- An NSO reported that Main Steam line pressure is 800 psig.
- An automatic scram occurred, with all rods reported as fully inserted.
- An NSO reported RPV water level is 10 inches and trending down.

The Reactor scrammed on ___(1)___ and the Unit Supervisor is required to direct ___(2)___ .

- A. (1) RPV water level;
(2) entering DGP 2-3, REACTOR SCRAM
- B. (1) 2 out of 3 DEHC Pressure Controller Processors failed low;
(2) entering DGP 2-3, REACTOR SCRAM
- C. (1) Main Steam Isolation Valves closure;
(2) opening the MSIVs, per DOA 5650-03, TURBINE CONTROL VALVE OR BYPASS VALVE FAILED OPEN
- D. (1) Main Steam Isolation Valves closure;
(2) verifying Control valves throttle closed, per DOA 5650-03, TURBINE CONTROL VALVE OR BYPASS VALVE FAILED OPEN

Answer: D

Question 88 Details

Comments:

Objective: DRE245LN001.06

Reference: DOA 5650-03

K/A: 295006.A2.06 3.5 / 3.8

K/A: Ability to determine and/or interpret the following as the apply to SCRAM: cause of reactor SCRAM.

Level: High

Pedigree: New

Explanation: When MSL pressure dropped below 827 psig and with the mode switch is in RUN, a scram will occur due to 9.5% Main Steam Isolation Valves closure. The required action is to verifying Control valves throttle closed, NOT open the MSIVs.

The scram setpoint for RPV water level is 6.02 inches.

2 out of 3 DEHC Pressure Controller Processors failing low will cause Bypass valves to close NOT open.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

89

Points: 1.00

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

Five (5) minutes later, the following set of conditions exist:

- Torus temperature is 83°F and steady.
- Drywell temperature is 170°F and rising slowly.
- Drywell pressure is 1.25 psig and rising slowly.
- An EO reported that the damage at Bus 33-1 is limited to the Main Feed Breaker from Bus 33.

The Unit Supervisor is required to direct

- A. initiating Torus Cooling per DEOP 200-1, PRIMARY CONTAINMENT CONTROL.
- B. crosstieing Bus 38 and Bus 39, per DGA 12, PARTIAL OR COMPLETE LOSS OF AC POWER.
- C. starting all available Drywell Coolers per DEOP 500-02, BYPASSING INTERLOCKS AND ISOLATIONS.
- D. starting all available RBCCW pumps per DOP 3700-02, REACTOR BUILDING CLOSED COOLING WATER SYSTEM OPERATION.

Answer: B

Question 89 Details

Comments:

Objective: 29501LP042

Reference: DEOP 200-1, DGA 12

K/A: 295028.G.01.06 3.8 / 4.8

K/A: High Drywell Temperature: Ability to manage the control room crew during plant transients.

Level: High

Pedigree: New

Explanation: DEOP 0200-01 has you start all available Drywell Coolers, and to do that you must re-energize Bus 38 from Bus 39 (no interlocks are preventing starting of Drywell Coolers, only the loss of power to Bus 38).

Initiating Torus Cooling is not required based on Torus temperature.

Spraying the Torus is not required to address Drywell temperature.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

90

Points: 1.00

Unit 2 was operating at near rated power, when the 'A' and 'B' NR RPV Level transmitters failed DOWNSCALE simultaneously.

The FWLC system will ___(1)___ and the Unit Supervisor will direct ___(2)___ .

- A. (1) enter Setpoint Setdown;
(2) reducing Recirc flow to 45 Mlbm/hr, per DOA 0600-01, TRANSIENT LEVEL CONTROL
- B. (1) enter Setpoint Setdown;
(2) manually matching feed flow and steam flow per DOA 0600-01, TRANSIENT LEVEL CONTROL
- C. (1) transfer to Single Element Control
(2) inserting a manual scram per DGP 02-03, REACTOR SCRAM
- D. (1) transfer to Single Element Control
(2) depressing 1-ELEM button per DAN 902-5 G-8, 1-ELEMENT FW CONTROL ACTIVE AT HI FLOW

Answer: B

Question 90 Details

Comments:

Objective: DRE259LN002.08

Reference: DAN 902-5 G-7, DOA 0600-01

K/A: 259002.A2.03 3.6 / 3.7

K/A: Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of reactor water level input.

Level: High

Pedigree: New

Explanation: With two of the three RPV level instruments failing low, the FWLCS will enter setpoint setdown and begin to drive RPV level to the preset setpoint of -10 inches. To prevent a reactor scram, the Unit Supervisor will direct entering the DOA for transient level control and then manually controlling RPV level, by matching steam and feed flow.

Reducing Recirc flow would be correct, but NOT below 56 Mlbm/hr.

Single element will NOT be entered unless a steam or feed flow signal (not Level) was lost.

SRO per criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

91

Points: 1.00

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

- A. Reactor Pressure: 500 psig
Torus Water Level: 15.0 feet
Torus Bulk Temperature: 170°F
- B. Reactor Pressure: 550 psig
Torus Water Level: 15.5 feet
Torus Bulk Temperature: 165°F
- C. Reactor Pressure: 600 psig
Torus Water Level: 16.5 feet
Torus Bulk Temperature: 175°F
- D. Reactor Pressure: 700 psig
Torus Water Level: 16.5 feet
Torus Bulk Temperature: 160°F

Answer: C

Question 91 Details

Comments:

Objective: 29501LP005

Reference: DEOP 200-1

K/A: 295026.A2.01 4.1 / 4.2

K/A: Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER

TEMPERATURE: Suppression pool water temperature.

Level: High

Pedigree: Bank

Comments: Utilizing the DEOP 200-1 Heat Capacity Temperature Limit (HCTL) curve (table M), the only one of the choices that is violating the curve is the RPV pressure of 600 psig and Torus temperature of 175°F.

SRO per Criteria: 5

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

EXAMINATION ANSWER KEY

09-1 NRC Exam

92

Points: 1.00

Unit 2 was operating at near rated power, with the Bus 23 and Bus 24 RFBs O.O.S. for TR-22 maintenance, when a transient occurred resulting in the following:

- 2A Circ Water pump lost power.
- 2B Circ Water pump lost power.
- Bus 25 became de-energized, then auto re-energized from Bus 26.

The cause of the above transient is that the ___(1)___ and the Unit Supervisor is required to direct ___(2)___.

- A. (1) Bus 23 MFB tripped;
(2) close the outboard MSIVs per DOA 4700-01, INSTRUMENT AIR SYSTEM FAILURE
- B. (1) Bus 23 MFB tripped;
(2) stop the 2C Circ Water pump per DOA 4400-01, CIRCULATING WATER SYSTEM FAILURE
- C. (1) Bus 24 MFB tripped;
(2) close the outboard MSIVs per DOA 4700-01, INSTRUMENT AIR SYSTEM FAILURE
- D. (1) Bus 24 MFB tripped;
(2) stop the 2C Circ Water pump per DOA 4400-01, CIRCULATING WATER SYSTEM FAILURE

Answer: B

Question 92 Details

Comments:

Objective: DRE262LN001.12

Reference: 12E-2303, DOA 4400-01

K/A: 295003.A2.01 3.4 / 3.7

K/A: Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Cause of partial or complete loss of A.C. power.

Level: High

Pedigree: New

Explanation: With the Reserve Feed Breakers (RFB) O.O.S., both Bus 23 and 24 are powered from their Main Feed Breakers (MFB) from TR-21. A loss of the MFB to Bus 23 (not Bus 24), will cause both the 2A and 2B Circ Water pumps to lose power and Bus 25 to become momentarily de-energized (until it is auto re-energized from Bus 26). With the loss of 2 out of the 3 Circ Water pumps, the correct action to trip the operating Circ Water pump to prevent backflow.

The Instrument Air Compressors will remain energized from Bus 26, thus closing the MSIVs per the Instrument Air DOA is not required.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

93

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

- 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 93 Details

Comments:

Objective: 29501LK029

Reference: DEOP 100

K/A: Generic.4.6 3.7 / 4.7

K/A: Knowledge of EOP mitigation strategies.

Level: High

Pedigree: Bank

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.

EXAMINATION ANSWER KEY

09-1 NRC Exam

94

Points: 1.00

Unit 3 was operating at near rated power when a transient occurred, causing the Unit to receive a scram signal, resulting in the following set of conditions:

- The SBLC system was NOT started.
- ALL RPS Scram lights are extinguished.
- All LPRM downscale lights are illuminated.
- RPV water level remained above +12 inches.
- RPV pressure is 900 psig and very slowly rising.
- The NSO reported that he can NOT confirm that all rods are fully inserted.
- IRMs are fully inserted and reading between range 3 and 4 and are lowering.

(1) Is the Reactor SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON?

(2) What is the Unit Supervisor required to direct NEXT?

- A. (1) No;
(2) Enter DEOP 100, RPV CONTROL.
- B. (1) No;
(2) Enter DGP 2-3, REACTOR SCRAM.
- C. (1) Yes;
(2) Enter DEOP 100, RPV CONTROL.
- D. (1) Yes;
(2) Enter DGP 2-3, REACTOR SCRAM.

Answer: B

Question 94 Details

Comments:

Objective: 29502LK005
Reference: DGP 2-3, Tech Spec Bases 1.1, DEOP Bases B-14-8
K/A: 295015.A2.01 4.1 / 4.3
K/A: Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM: Reactor Power.
Level: High
Pedigree: Bank
Explanation: The Reactor can NOT be determined to be "shutdown under all conditions" by relying on the Tech Spec bases definition of shutdown margin (xenon free core, moderator 68 degrees, all rods inserted except one fully withdrawn). This will have to be determined by a QNE. The correct action is to enter DGP 2-3, and execute the CONTINGENCY ACTION leg.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

95

Points: 1.00

Both units were operating at near rated power, when Unit 2 125 VDC Main Bus 2A-1 de-energized due to a fire.

The Operating team is required to

- A. restore U2 Div 1 125 VDC to operable within 2 hours or Unit 2 ONLY must be in MODE 3 within 12 hours.
- B. restore U2 Div 1 125 VDC to operable within 2 hours or Unit 2 AND Unit 3 must be in MODE 3 within 12 hours.
- C. place U2 125 VDC Alternate subsystem in-service within 2 hours or Unit 2 ONLY must be in MODE 3 within 12 hours.
- D. place U3 125 VDC Alternate subsystem in-service within 2 hours or Unit 2 AND Unit 3 must be in MODE 3 within 12 hours.

Answer: B

Question 95 Details

Comments:

Objective: DRE263LN002.07

Reference: Tech Spec Section 3.8.4

K/A: 263000.G.2.23 3.1 / 4.6

K/A: D.C. Electrical Distribution: Ability to track Technical Specification limiting conditions for operations.

Level: High

Pedigree: New

Explanation: The candidate must understand the cross-connection between Unit 2 and Unit 3 125 VDC systems.

When U2 loses its Div 1 supply (Main Bus 2A-1), this also is a loss of U3 Div 2. With each unit losing a division of its own 125 VDC, they both must enter T.S. 3.8.4 condition H, which is restore the lost power division within 2 hours or commence shutdown.

SRO per Criteria: 2

REQUIRED REFERENCES: TS 3.8.4, with less than 1 hour times removed.

EXAMINATION ANSWER KEY

09-1 NRC Exam

96

Points: 1.00

Unit 2 was operating at near rated power, when a transient occurred causing the Reactor to receive a full scram signal. All rods did NOT go in.

The Unit Supervisor directed the NSO to inject SBLC. The NSO placed the SBLC INJECTION CONTROL keylock switch to the "SYS 1" position and reported a SBLC STORAGE TANK level of 3850 gallons.

Then the following indications are observed:

- Pump 1 light: illuminated.
- Pump 2 light: extinguished.
- Squib A light: extinguished.
- Squib B light: extinguished.

After 15 minutes the NSO reported a SBLC STORAGE TANK level of 3250 gallons.

In response to the NSO's report, which of the following actions would be appropriate for the Unit Supervisor to direct?

- A. Align the Unit 2 Catex Tank for boron injection, per DEOP 500-1, ALTERNATE STANDBY LIQUID CONTROL INJECTION.
- B. Continue to monitor the SBLC system for proper operation, per DOP 1100-01, INJECTION OF STANDBY LIQUID CONTROL.
- C. Place the SBLC INJECTION CONTROL keylock switch to the "SYS 2" position, per DOP 1100-01, INJECTION OF STANDBY LIQUID CONTROL.
- D. Place the SBLC INJECTION CONTROL keylock switch to the "SYS 1 & 2" position, per DOP 1100-01, INJECTION OF STANDBY LIQUID CONTROL.

Answer: B

EXAMINATION ANSWER KEY

09-1 NRC Exam

Question 96 Details

Comments:

Objective: DRE211LN001.02

Reference: DOP 1100-02, DOS 1100-03

K/A: 295037.A2.03 4.3 / 4.4

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: SBLC tank level.

Pedigree: New

Level: High

Explanation: Each pump AND squib has ~ a 40 gpm capacity. The squibs are downstream of a common discharge header from the pumps. With the indications provided, only Pump 1 is injecting. At a rate of ~40 gpm, over a period of 15 minutes, the total drop in the storage tank level would be ~ 600 gpm, resulting in an ending tank level of ~3250 gallons. If Pump1 was not operating correctly, then the correct action would be to place the system control switch in the opposite position it was originally placed in, and subsequently try all positions. If both pumps failed to operate, then the correct action would be to line up alternate injection.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

97

Points: 1.00

Unit 2 was operating at near rated conditions when a transient caused RPV pressure to rise to 1060 psig.

The following annunciators were received:

- 902-5 H-5, RPV PRESS HI.
- 902-5 C-13, CHANNEL A/B RPV PRESSURE HI-HI.
- 902-5 D-10, CHANNEL A RX SCRAM.
- 902-5 D-15, CHANNEL B RX SCRAM.

The NSO reported that two RPS Scram Solenoid Group Lights at 902-5 Panel remained lit in each division.

Several seconds later the NSO depressed both scram pushbuttons and reported that all rods are indicating "double dashes".

Prior to the NSO's actions a ___(1)___ occurred, and the Shift Manager is required to declare ___(2)___ .

- A. (1) Partial 1/2 Scram;
(2) an ALERT
- B. (1) Partial 1/2 Scram;
(2) a SITE EMERGENCY
- C. (1) Partial Full Scram;
(2) an ALERT
- D. (1) Partial Full Scram;
(2) a SITE EMERGENCY

Answer: C

Question 97 Details

Comments:

Objective: DRE212LN001.06

Reference: DAN 902-5 C-13, DOA 0500-02, EP-AA-1004

K/A: 212000.G.04.29 3.1 / 4.4

K/A: Reactor Protection System: Knowledge of the emergency plan.

Level: High

Pedigree: New

Explanation: When RPV pressure rose above 1040 psig, an RPS scram signal was generated. With 2 RPS scram lights still lit in each division, the Unit has experienced a partial FULL scram. Upon a failure of the RPS system to complete or initiate an automatic reactor scram once a reactor protection system setpoint had been exceeded AND the success of the subsequent manual scram, an ALERT is declared.

SRO per Criteria: 5

REQUIRED REFERENCES: EP-AA-1004 charts.

EXAMINATION ANSWER KEY

09-1 NRC Exam

98

Points: 1.00

Which one of the following would qualify as a "Temporary Configuration Change" to be controlled by CC-AA-112, TEMPORARY CONFIGURATION CHANGES?

- A. Drywell Purge Fan dampers wired shut for a surveillance.
- B. Performing a freeze seal on a CRD accumulator for valve replacement.
- C. A Service Air hose is being used for maintenance on the 2/3 Diesel Fire Pump.
- D. Placing portable heaters around the 2/3 Diesel Fire Pump, due its block heater failing.

Answer: D

Question 98 Details

Comments:

Objective: 299L127
Reference: CC-AA-112
K/A: 286000.G.02.05 2.2 / 3.2
K/A: Fire Protection System: Knowledge of the process for making design or operating changes to the facility.
Level: Memory
Pedigree: Bank
Explanation: Placing temporary heaters are not excluded from the above procedure and are required to be controlled as a temp change.

SRO per Criteria: 3

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

99

Points: 1.00

Unit 2 was operating at near rated power when a transient caused RPV water level to decrease to -85 inches. Several minutes into the transient, a fire caused the Unit Supervisor to direct Control Room evacuation.

The Unit Supervisor is required to direct the NSO to monitor *current* RPV water level at the ___(1)___ racks and to throttle the 2-0301-9A(B), 2A(B) CRD FILTER INLET VLVs ___(2)___ to raise RPV water level.

- A. (1) 2202-5 and 2202-6
(2) closed per DGP 02-03, REACTOR SCRAM
- B. (1) 2202-5 and 2202-6
(2) open per DSSP 100-CR, HOT SHUTDOWN PROCEDURE - CONTROL ROOM EVACUATION
- C. (1) 2202-7 and 2202-8
(2) closed per DGP 02-03, REACTOR SCRAM
- D. (1) 2202-7 and 2202-8
(2) open per DSSP 100-CR, HOT SHUTDOWN PROCEDURE - CONTROL ROOM EVACUATION

Answer: D

Question 99 Details

Comments:

Objective: DRE201LN001.05
Reference: DSSP 0100-CR, DEOP 0010-00, DEOP 100
K/A: 295031.G.04.34 4.2 / 4.1
K/A: Reactor Low Water Level: Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.
Level: High
Pedigree: New
Explanation: With current RPV level at -85 inches, only the 2202-7 and 2202-8 racks (fuel zones) will be on-scale (+60 inches to -340 inches). The 2202-5 and 2202-6 racks (medium range) only read the ranges of +60 inches to -60 inches. The NSO will throttle open the 2-0301-9 valves, to allow more water into the RPV and raise level, which is done per the DSSP. The DGP actions for the CRD system is to close the charging water valve.

SRO per Criteria: 5

REQUIRED REFERENCES: None.

EXAMINATION ANSWER KEY

09-1 NRC Exam

100

Points: 1.00

Unit 2 was operating at near rated power when annunciator DAN 902-7 B-16, COND DEMIN TROUBLE alarmed.

The EO dispatched to the area reported that Condensate Demineralizer dP was 55 psid, with all seven Service Units in-service.

To prevent ___(1)___, the Unit Supervisor will direct the Operating team to ___(2)___.

- A. (1) channels from developing in the Demins and reducing efficiency;
(2) reduce Unit load per DGP 3-1, POWER CHANGES
- B. (1) channels from developing in the Demins and reducing efficiency;
(2) throttle the Condensate Demin bypass valve open per DOP 3300-02, CONDENSATE SYSTEM STARTUP
- C. (1) fractured beads from passing through the post-strainer and entering the RPV;
(2) reduce Unit load per DGP 3-1, POWER CHANGES
- D. (1) fractured beads from passing through the post-strainer and entering the RPV;
(2) throttle the Condensate Demin bypass valve closed per DOP 3300-02, CONDENSATE SYSTEM STARTUP

Answer: C

Question 100 Details

Comments:

Objective: DRE259LN001.08

Reference: GP Fundamentals, DOP 3300-02, DANs 902-7 B-16 and 2252-11 C-6

K/A: 256000.A2.16 2.8 / 2.8

K/A: Ability to (a) predict the impacts of the following on the REACTOR CONDENSATE SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High demineralizer differential pressure.

Level: Memory

Pedigree: New

Explanation: When Demin dP is excessive, there is a potential to crush resin beads and those beads can bypass the post strainer and enter the RPV. High flow is the cause of the high Demin dP. With all seven service units in operation, the correct action to reduce dP is to reduce reactor power, allowing Condensate pumps to be shut off, which reduces flow through the Demins. Channeling is experienced by low flow situations.

Throttling the Demin bypass closed will increase flow through the Demins, thus increasing dP.

SRO per Criteria: 5

REQUIRED REFERENCES: None.