

Final Submittal

**NORTH ANNA RETAKES
NOVEMBER 2006-301 EXAM**

05000338/2006302 & 05000339/2006302

NOVEMBER 14 AND 15, 2006

Reactor Operator Written Examination

Name: _____

RO Exam

1. 002 K3.03 001/BANK/KEWAUNEE/HIGHER/2/2/RO/

The plant was manually tripped because of a slow uncontrollable decrease in RCS pressure. A Safety Injection was manually initiated.

Current indications are as follows:

- RCS pressure is 1700 psig slowly decreasing
- Highest CET temperature reads 555°F
- All PRZR heaters are energized
- PRZR level is 20% and decreasing
- Containment pressure is 15.5 psia and increasing
- CONTAINMENT SUMP HI LEVEL annunciator (1J-A6) is in alarm
- PRT level is 74% and stable
- PRT temperature is 100°F and stable

Which ONE of the following has caused the above indications?

- A. A PRZR Spray Valve has failed open.
- B. A PRZR reference leg has ruptured.
- C. A PRZR heater well has ruptured.
- D. A PRZR PORV has failed open.

Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following: Containment.

Question Number: 62

Tier 2 Group 2

Importance Rating: RO 4.2

Technical Reference: 1J-A6

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: Kewaunee (WTSI 40962)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

2. 003 A1.03 001/NEW//LOWER//2/1/RO/

A Loss of Component Cooling Water has occurred.

Which ONE of the following describes the effect on RCP temperatures, and the action that is required to mitigate the event?

- A. Pump bearing temperatures will rise. Affected RCPs must be tripped if temperature reaches 185 deg F
- B. Pump bearing temperatures will rise. Affected RCPs must be tripped if temperature reaches 195 deg F
- C. Motor stator winding temperatures will rise. Affected RCPs must be tripped if temperature reaches 225 deg F
- D. Motor stator winding temperatures will rise. Affected RCPs must be tripped if temperature reaches 300 deg F

Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including: RCP motor stator winding temperatures.

Question Number: 54

Tier 2 Group 1

Importance Rating: RO 2.6

Technical Reference: 1-AP-15

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

3. 003 AA2.04 001/NEW//HIGHER//1/2/RO/

Unit 1 is at 100% power when ONE Control Bank D rod is dropped.

The following NI indications exist:

- PR N-41 - 96.6%
- PR N-42 - 101.8%
- PR N-43 - 102.6%
- PR N-44 - 103.1%

Which ONE of the following describes the status of the Rod Control System (assuming the reactor does NOT trip and NO operator actions are taken)?

- A. Manual rod withdrawal is available; automatic rod withdrawal is blocked due to the NIS POWER RANGE OVERPOWER ROD STOP caused by N-44 ONLY.
- B. Manual rod withdrawal is available; automatic rod withdrawal is blocked due to the NIS POWER RANGE OVERPOWER ROD STOP caused by N-43 AND N-44.
- C. Manual and automatic rod withdrawal are blocked due to the NIS POWER RANGE OVERPOWER ROD STOP caused by N-44 ONLY.
- D. Manual and automatic rod withdrawal are blocked due to the NIS POWER RANGE OVERPOWER ROD STOP caused by N-43 AND N-44.

Ability to determine and interpret the following as they apply to: Rod motion stops due to dropped rod.

Question Number: 19

Tier 1 Group 2

Importance Rating: RO 3.4

Technical Reference: NCRODP-62-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

4. 003 K6.04 001/BANK/PRAIRIE ISLAND/HIGHER/2/1/RO/

Unit 1 was at 100% power when an inadvertent Safety Injection occurred.

Which ONE of the following describes the effect on RCP #1 seal leakoff flow?

RCP seal leakoff flow is...

- A. Unaffected.
- B. Directed to the PRT.
- C. Directed to the containment sump.
- D. Directed to the PDTT.

Knowledge of the effect that a loss or malfunction of the following will have on the: Containment isolation valves affecting RCP operation.

Question Number: 28

Tier 2 Group 1

Importance Rating: RO 2.8

Technical Reference: NCRODP-38-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: Prairie Island (WTSI 42249)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

5. 004 K5.35 001/NEW//HIGHER//2/1/RO/
Given the following conditions:

Unit 1 is at 100% power.
Pressurizer level is lowering slowly.
VCT level is lowering slowly.
Regenerative Heat Exchanger Charging Outlet Temperature is lowering slowly.
Non-Regenerative Heat Exchanger Temperature Control Valve 1-CC-TCV-106 is throttling closed.

Which ONE of the following describes the event in progress?

- A. Letdown leak between the regenerative and non-regenerative heat exchangers.
- B. Letdown line leak downstream of the non-regenerative heat exchanger
- C. Charging line leak upstream of the regenerative heat exchanger
- D. Charging line leak downstream of the regenerative heat exchanger

Knowledge of the operational implications of the following concepts as they apply to the: Heat Exchanger principles and the effects of flow, temperature, and other parameters.

Question Number: 29

Tier 2 Group 1

Importance Rating: RO 2.5

Technical Reference: NCRODP-41-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

6. 005 K5.02 001/BANK/BVPS-1 2002 NRC/HIGHER/2/1/RO/

Given the following conditions:

Unit 1 is in Mode 5.

RHR is in service.

RCS temperature is 139 degrees F.

Reactor vessel level is 100 inches above loop centerline and slowly decreasing.

RCS drain down is in progress in preparation for refueling.

1-RH-HCV-1758, RHR Heat Exchanger Flow Control Valve begins to drift in the closed direction due to an electrical problem.

Assuming NO action by the operating crew, which ONE of the following describes the effect of this failure on plant operation?

- A. Uncontrolled RCS cooldown, potentially violating Tech Spec requirements
- B. LTOP PORV actuation due to overpressurization of the RCS.
- C. Lowering NPSH to the operating RHR pump due to increasing temperature.
- D. Loss of RHR letdown and uncontrolled RCS level increase.

Knowledge of the operational implications of the following concepts as they apply to the: Need for adequate subcooling.

Question Number: 30

Tier 2 Group 1

Importance Rating: RO 3.4

Technical Reference: NCRODP-40-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

7. 006 K6.19 001/NEW//HIGHER//2/1/RO/

Unit 1 is in Mode 6 with the following conditions:

- LHSI pump 1-SI-P-1A is dismantled for seal replacement.
- All Train "B" equipment is operable.

Which ONE of the following is the HIGHEST Mode the unit can operate in with this pump out of service?

Mode...

- A. 5
- B. 4
- C. 3
- D. 2

Knowledge of the effect that a loss or malfunction of the following will have on the: HPI/LPI systems (mode changes).

Question Number: 31

Tier 2 Group 1

Importance Rating: RO 3.7

Technical Reference: TS 3.5.2

Proposed references to be provided to applicants during examination: None

Learning Objective: 3416

Question Source: New

Question History:

Question Cognitive Level: HigherLower

10 CFR Part 55 Content: 41

Comments:

RO Exam

8. 007 A3.01 001/BANK/6092/HIGHER/2/1/RO/

With unit 1 at 100% power, a partial phase "A" containment isolation signal results in closure of letdown isolation valve 1-CH-TV-1204A.

NO other valves or components are affected by the signal.

Which ONE of the following is correct concerning the affect of this on letdown?

Letdown flow indication...

- A. fluctuates as the relief valve lifts; actual flow continues to the PRT.
- B. goes to zero; actual flow continues to the PDTT.
- C. fluctuates as the relief valve lifts; actual flow continues to the PDTT.
- D. goes to zero; actual flow continues to the PRT.

Ability to monitor automatic operations of the (SYSTEM) including: Components which discharge to the PRT.

Question Number: 32

Tier 2 Group 1

Importance Rating: RO 2.7

Technical Reference: Figure 41-3-NA (NCRODP-41-NA)

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: North Anna 6092

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

9. 007 EA2.05 001/NEW//LOWER//1/1/RO/
Given the following:

A reactor trip has occurred on Unit 1.
The OATC has acknowledged the control room annunciators.

Which ONE of the following describes how to determine the 'First Out' annunciator?

- A. Illuminated solid red; alarm will clear when the initiating condition is clear.
- B. Illuminated solid red; alarm will NOT clear until it is manually reset at Benchboard 1-2.
- C. Illuminated flashing red; alarm will clear when the initiating condition is clear.
- D. Illuminated flashing red; alarm will NOT clear until it is manually reset at Benchboard 1-2.

Ability to determine and interpret the following as they apply to: Reactor trip first-out indication.

Question Number: 1

Tier 1 Group 1

Importance Rating: RO 3.4

Technical Reference: Self Study Guide for Annunciator and Event Recorder System
Proposed references to be provided to applicants during examination: None

Learning Objective: 7840

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

10. 007 K3.01 001/NEW//HIGHER//2/1/RO/
Given the following:

A reactor trip has occurred due to low RCS pressure.
The crew is performing 1-E-0, Reactor Trip or Safety Injection.
ONE (1) PRZR Safety Valve is failed open.
Containment Pressure is 9.7 psia and stable.
PRT pressure is 26 psig and rising.

Which ONE of the following describes the highest indicated PRT pressure that will exist just prior to Containment pressure rising due to this event?

- A. 90.3 psig
- B. 100 psig
- C. 109.7 psig
- D. 115 psig

Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following: Containment.

Question Number: 50

Tier 2 Group 1

Importance Rating: RO 3.3

Technical Reference: NCRODP-38-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

11. 008 A4.07 001/NEW//LOWER/2/1/RO/

Given the following:

Both units are at 100% power.

A Component Cooling Water leak is occurring.

The crew is performing actions of 1-AP-15, Loss of Component Cooling Water.

The following alarm has JUST been received:

1G-A1, CC SURGE TK HI/LO LEVEL

Which ONE of the following describes the method that is normally used to raise CC Surge Tank level in accordance with 1-AP-15, Loss of Component Cooling Water?

- A. Ensure 1-CC-LCV-100 is automatically making up to the surge tank from the Service Water System.
- B. Initiate manual surge tank makeup by aligning Service Water and opening the bypass around 1-CC-LCV-100.
- C. Ensure 1-CC-LCV-100 is automatically making up to the surge tank from the unit-1 Condensate System.
- D. Initiate manual surge tank makeup by aligning either unit's Condensate System and opening the bypass around 1-CC-LCV-100.

Ability to manually operate and/or monitor in the control room: Control of minimum level in the CCWS surge tank.

Question Number: 33

Tier 2 Group 1

Importance Rating: RO 2.9

Technical Reference: 1-AP-15

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

12. 008 AA1.02 001/NEW//HIGHER//1/1/RO/

Given the following conditions:

- A Small Break LOCA has occurred.
- The crew is performing the actions of 1-ES-1.2, Post LOCA Cooldown and Depressurization.
- Both LHSI pumps have been stopped.
- One charging pump has been stopped.
- Normal charging is aligned.
- RCPs are OFF.
- The crew is depressurizing the RCS.
- When the depressurization is stopped, the following conditions exist:
 - RCS subcooling is 23 degrees F and trending DOWN.
 - PRZR level is 68% and trending UP.

Based on these indications, what actions should be taken in accordance with 1-ES-1.2?

- A. Start one RCP to collapse any RCS voids.
- B. Manually start charging pumps and align the BIT to restore RCS subcooling.
- C. Reinitiate SI and verify all safeguards equipment has actuated.
- D. Increase RCS pressure using PRZR heaters to regain RCS subcooling.

Ability to operate and/or monitor the following as they apply to: HPI pump to control PZR level/pressure.

Question Number: 2

Tier 1 Group 1

Importance Rating: RO 4.1

Technical Reference: ES-1.2 Continuous Action Page

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

13. 009 EK3.27 001/BANK/WOLF CREEK 2005 NRC/LOWER//1/1/RO/
Given the following conditions:

A small break LOCA has occurred.

The crew is performing the actions in 1-ES-1.2, Post LOCA Cooldown And
Depressurization.

The BIT is isolated.

Normal charging has been aligned.

The crew is depressurizing the RCS using normal spray.

Which ONE of the following describes the strategy for the continuing depressurization?

- A. Maximize subcooling to ensure continued RCP operation.
- B. Minimize subcooling to reduce RCS break flow.
- C. Maximize subcooling to prevent a challenge to the Core Cooling CSF.
- D. Minimize subcooling to ensure PRZR level remains above the lower limit to allow heater operation to reduce the rate of increase of PRZR level.

Knowledge of the reasons for the following responses as they apply to: Manual depressurization or HPI recirculation for sustained high pressure.

Question Number: 3

Tier 1 Group 1

Importance Rating: RO 3.6

Technical Reference: 1-ES-1.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: Wolf Creek 2005

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

14. 010 K2.02 001/NEW/LOWER/2/1/RO/

Which ONE of the following directly supplies power to PRZR Spray Valve 1455A and 1455B controllers?

- A. 125VDC busses 1-I and 1-II
- B. 480 volt MCCs 1J1 and 1H1
- C. 120VAC Vital Instrument Busses 1-I and 1-II
- D. Primary Plant Process Rack 8

Knowledge of electrical power supplies to the following: Controller for PZR spray valve.

Question Number: 34

Tier 2 Group 1

Importance Rating: RO 2.5
Technical Reference: NCRODP-74-NA
Proposed references to be provided to applicants during examination: None
Learning Objective:
Question Source: New
Question History:
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

15. 012 A2.07 001/BANK/505/HIGHER/12/1//
Unit 1 is at 100% power.

Which ONE of the following identifies how a loss of 48VDC from SSPS directly affects the operation of the associated reactor trip breaker, and what is the crew's required response?

- A. SFGDS PROT SYS TR (A/B) TROUBLE alarm ONLY. Ensure only one train is affected and direct Instrument Department to investigate.
- B. ONLY the reactor trip breaker UV coil will deenergize. Enter 1-E-0, Reactor Trip or Safety Injection.
- C. ONLY the reactor trip breaker auto shunt trip relay will deenergize. Enter the applicable Tech Spec action statement and submit an urgent Work Request.
- D. SFGDS PROT SYS TR (A/B) TROUBLE alarm, and reactor trip breaker UV coil and auto shunt trip relay will BOTH deenergize. Enter 1-E-0, Reactor Trip or Safety Injection.

Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Loss of DC Control Power.

Question Number: 49

Tier 2 Group 1

Importance Rating: RO 3.2

Technical Reference: NCRODP-65-NA; 11715-ESK-6V; 1-AR-K-G1
Proposed references to be provided to applicants during examination: None
Learning Objective: OB 19556
Question Source: Bank
Question History: 5085
Question Cognitive Level: Higher
10 CFR Part 55 Content: 41

Comments:

RO Exam

16. 012 A3.05 001/BANK/6054/HIGHER/2/1/RO/
The following plant conditions exist.

- Unit 1 is at 100% power.
- All SGWLC inputs are selected to Channel III.
- Channel III steam generator "C" feed flow fails off scale low.
- The operator takes manual control of "C" main feed regulating valve and controls "C" steam generator level.

Which ONE of the following subsequent failures will cause an immediate reactor trip?

- A. Loss of Vital Bus II
- B. Loss of Vital Bus IV
- C. "C" steam generator Channel III steam flow fails high
- D. "C" steam generator Channel III level fails low

Ability to monitor automatic operations of the (SYSTEM) including: Single and multiple channel trip indicators.

Question Number: 35

Tier 2 Group 1

Importance Rating: RO 3.6

Technical Reference:

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: 6054

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

17. 013 A1.06 001/BANK//HIGHER//2/1/RO/
Given the following conditions:

A large-break LOCA has occurred on Unit 1.
The Safety Injection system has automatically swapped to cold-leg recirculation mode.
The OATC observes RWST level increasing approximately 1% every 10 minutes.

Which ONE of the following would account for the increase in RWST level?

- A. "B" LHSI pump recirculation valves 1-SI-MOV-1885B and -1885D both failed to fully close during the swapover, but their CLOSED limits were made up.
- B. VCT to charging pump suction valve 1-CH-MOV-1115E failed to close during the swapover.
- C. The OATC failed to close charging pump recirculation valves 1-CH-MOV-1275A, -1275B, and -1275C when required.
- D. LHSI discharge to HHSI suction valve 1-SI-MOV-1863A failed to fully open during the swapover, but the OPEN limits were made up.

Ability to predict and/or monitor changes: RWST level.

Question Number: 36

Tier 2 Group 1

Importance Rating: RO 3.6

Technical Reference: NCRODP-52-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: 60297 (LORP open-reference)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

18. 014 K5.02 001/BANK/4091/HIGHER/2/2/RO/

During troubleshooting on the rod control system at 100% power, a power cabinet 2BD non-urgent alarm was received.

The Unit Supervisor directs the ALARM RESET push-button to be depressed, in accordance with a SNSOC approved test procedure.

The OATC mistakenly depresses the STARTUP RESET push buttons.

Which ONE of the following will occur?

- A. All IRPIs reset to zero and all rod bottom lights illuminate (actual rod position does not change).
- B. All control rod bank low and low-low insertion limit annunciators will illuminate.
- C. Non-Urgent failure internal alarm circuit will reset.
- D. CMPTR ALARM ROD DEV/SEQ alarm is disabled.

Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM): RPIS independent of demand position.

Question Number: 63

Tier 2 Group 2

Importance Rating: RO 2.8

Technical Reference: NCRODP-65

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 17853

Question Source: Bank

Question History: 4091

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

19. 015 AA1.07 001/NEW//HIGHER//1/1/RO/

Given the following:

Unit 1 is at 100% power.

The following annunciators are received 10 seconds apart in the control room:

Panel C, G-6, RCP 1A-B-C LABYTH SEAL LO FLOW

Panel C, C-4, RCP 1A-B-C THERM BARR CC HI/LO FLOW

The OATC determines that RCP 1A seal injection flow is 0 gpm, and RCP 1A thermal barrier CCW flow is lowering toward 0 gpm.

The US enters 1-AP-33.2, Loss of RCP Seal Cooling.

Which ONE of the following actions will be required?

- A. Restore either seal injection OR thermal barrier CCW flow within 5 minutes OR trip the reactor, trip RCP 1A, and isolate RCP 1A seal return
- B. Attempt to restore either seal injection OR thermal barrier CCW flow. If RCP 1A exceeds any temperature limits, THEN trip the reactor, trip RCP 1A, and isolate RCP 1A seal return
- C. Trip the reactor, trip RCP 1A, isolate RCP 1A seal return, and continue attempts to restore seal injection and thermal barrier CCW flow
- D. Trip the reactor, trip RCP 1A, isolate RCP 1A seal injection, seal return, and thermal barrier CCW flow

RO Exam

Ability to operate and/or monitor the following as they apply to: RCP seal water injection subsystem.

Question Number: 4

Tier 1 Group 1

Importance Rating: RO 3.5

Technical Reference: 1-AP-33.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

20. 017 K1.01 001/NEW//LOWER/12/2/RO/

Which ONE of the following describes a purpose of the Core Exit Thermocouple (CETC) input to the Plant Computer System (PCS)?

- A. Input to Integrity CSF Status Tree.
- B. Indication and PCS alarm for RCS cooldown/heatup limits.
- C. Indication and PCS alarm for average five high CETC.
- D. Input to Core Cooling CSF Status Tree.

Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following: Plant computer.

Question Number: 64

Tier 2 Group 2

Importance Rating: RO 3.2

Technical Reference: NCRODP-64-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

21. 022 K3.02 001/BANK/ROBINSON 2002/HIGHER/2/1/RO/

Given the following conditions:

- The plant is operating at 100% power.
- Due to a loss of cooling to Containment Air Recirc Fans, containment temperature has risen from 103 degrees F to 119 degrees F.
- Actions are in progress to restore containment cooling.

If the temperature continues to rise in containment, which ONE of the following describes the effect on pressurizer level indication?

- A. The controlling pressurizer level channel will indicate slightly lower than actual level, and remain higher than the cold-calibrated pressurizer level instrument.
- B. The controlling pressurizer level channel will indicate slightly higher than actual level, and remain higher than the cold-calibrated pressurizer level instrument.
- C. The controlling pressurizer level channel will indicate slightly lower than actual level, and remain lower than the cold-calibrated pressurizer level instrument.
- D. The controlling pressurizer level channel will indicate slightly higher than actual level, and remain lower than the cold-calibrated pressure level instrument.

Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following: Containment instrumentation readings.

Question Number: 37

Tier 2 Group 1

Importance Rating: RO 3.0

Technical Reference: NCRODP-74-NA; Self-study guide - PRZR Control & Protection
Proposed references to be provided to applicants during examination: None

Learning Objective: 15804

Question Source: Bank

Question History: Robinson 2002 NRC (WTSI 18564)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

22. 022AK3.05 001/NEW/NEW/HIGHER//1/1/RO/

Plant conditions are follows:

- A power reduction to 50% is scheduled for this shift.
- A loss of power has just rendered the boric acid blender control inoperable.
- Emergency boration is not available.

Which ONE of the following is correct concerning the planned power reduction?

- A. The downpower should continue as planned using the RWST as a source of borated makeup.
- B. The downpower should continue as planned using the opposite unit's blender as a source of borated makeup.
- C. The downpower should be postponed because the crew will be unable to borate to compensate for Xenon effects during the downpower.
- D✓ The downpower should be postponed because the crew will be unable to maintain control rods above the insertion limit.

Knowledge of the reasons for the following responses as they apply to the Loss of Reactor Coolant Makeup: Need to avoid plant transients.

Question Number: 22

Tier 1 Group 1

Importance Rating: RO 3.2

Technical Reference: NCRODP-41-NA: 11715-FE-4V

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

23. 025 AA1.03 001/NEW//HIGHER//1/1/RO/

Given the following:

Unit 1 is in Mode 5, Reduced Inventory conditions due to removal of "B" RCP for corrective maintenance on the pump impeller.

Reactor coolant loops are **NOT** isolated.

A loss of RHR occurs.

The crew is performing actions of 1-AP-11, Loss of RHR.

RCS temperature is rising and NEITHER RHR pump can be started.

Which ONE of the following describes the method, and the actions that will be taken to restore core cooling?

- A. Cold Leg Injection Forced Feed and Spill; start two charging pumps and both LHSI pumps.
- B. Cold Leg Injection Forced Feed and Spill; start one charging pump, and if necessary, one LHSI pump.
- C. Hot Leg Injection Forced Feed and Spill; start two charging pumps and both LHSI pumps.
- D. Hot Leg Injection Forced Feed and Spill; start one charging pump, and if necessary, one LHSI pump.

Ability to operate and/or monitor the following as they apply to: LPI Pumps

Question Number: 6

Tier 1 Group 1

Importance Rating: RO 3.4

Technical Reference: 1-AP-11

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

24. 026 A4.01 001/BANK/NORTH ANNA 2002 NRC/LOWER/2/1/RO/

In accordance with Attachment 3 of 1-E-1, Loss of Reactor or Secondary Coolant, which ONE of the following describes the correct sequence for securing Quench Spray?

- A. Reset CDA, Stop Quench Spray Pumps, close Quench Spray Pump discharge valves, and close Chemical Addition Tank outlet valves.
- B. Reset CDA, close Quench Spray Pump discharge valves, close Chemical Addition Tank outlet valves, stop Quench Spray Pumps.
- C. Ensure the initiating signal has cleared, reset CDA, Stop Quench Spray Pumps, close Quench Spray Pump discharge valves, and close Chemical Addition Tank outlet valves.
- D. Ensure the initiating signal has cleared, reset CDA, close Quench Spray Pump discharge valves, close Chemical Addition Tank outlet valves, stop Quench Spray Pumps.

Ability to manually operate and/or monitor in the control room: CSS controls.

Question Number: 38

Tier 2 Group 1

Importance Rating: RO 4.5

Technical Reference: 1-E-1, Attachment 3

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: North Anna 2002 NRC (Editorial Mods)

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

25. 027 AK2.03 001/BANK//HIGHER//1/1/RO/
Unit 1 is at 100% power.

PRZR pressure control channel 1-RC-PT-1445 fails high.

Which ONE of the following describes the response of the PRZR Pressure Control System?

Generates an OPEN signal to...

- A. both PRZR spray valves and 1-RC-PCV-1455C
- B. both PRZR spray valves and 1-RC-PCV-1456
- C. 1-RC-PCV-1456 ONLY**
- D. 1-RC-PCV-1455C ONLY

Knowledge of the interrelations between and the following: Controllers and positioners.

Question Number: 7

Tier 1 Group 1

Importance Rating: RO 2.6

Technical Reference: NCRODP-74-NA

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 16736

Question Source: Bank

Question History: 711

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

26. 029 A4.04 001/NEW//HIGHER//2/2/RO/

Given the following conditions:

Unit 1 is in Mode 6, core on-load in progress.

A recently-irradiated fuel assembly appears to fall apart during removal from the containment upender.

Bubbles are coming to the surface of the Refueling Cavity.

The following Containment radiation monitors are in alarm:

-1-RM-RMS-159

-1-RM-RMS-160

-1-RM-RMS-162

Which ONE of the following describes actions that will initially be required in accordance with 0-AP-30, Fuel Failure During Handling?

- A. Manually initiate Control Room bottled air dump; evacuate the Fuel Building.
- B. Place Fuel Building ventilation in service through the charcoal filters; evacuate the containment.
- C. Manually initiate Control Room bottled air dump; evacuate the Containment.
- D. Isolate reactor cavity from the Spent Fuel Pool; place Fuel Building ventilation in service through the charcoal filters.

Ability to manually operate and/or monitor in the control room: Containment evacuation signal.

Question Number: 56

Tier 2 Group 2

Importance Rating: RO 3.5

Technical Reference: 0-AP-30

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

27. 029 EG2.2.22 001/NEW//LOWER//1/1/RO/

In the case of an Anticipated Transient Without Scram (ATWS), the ATWS Mitigation System Actuation Circuitry (AMSAC) is designed to...

- A. open reactor trip breakers and actuate AFW to limit DNBR and maintain RCS parameters within the reactor core safety limits; does NOT directly trip the turbine.
- B. open the Rod Drive MG Set supply breakers, trip the turbine, and actuate AFW to limit DNBR and maintain RCS parameters within the reactor core safety limits.
- C. open reactor trip breakers and actuate AFW to limit the RCS pressure excursion for the event coincident with loss of feedwater; does NOT directly trip the turbine.
- D. open the Rod Drive MG Set supply breakers, trip the turbine, and actuate AFW to limit the RCS pressure excursion for the event coincident with loss of feedwater.

Knowledge of limiting conditions for operations and safety limits.

Question Number: 8

Tier 1 Group 1

Importance Rating: RO 3.4

Technical Reference: NCRODP-77

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

28. 033 K4.05 001/NEW//LOWER//2/2/RO/

Which ONE of the following describes one method for maintaining Spent Fuel Pool water volume and Shutdown Margin?

Minimum required boron concentration is...

- A. 2600 ppm. Evaporation is compensated for by making up with Primary Grade water.
- B. 2300 ppm. Evaporation is compensated for by making up with blended flow from the boric acid blender.
- C. 2600 ppm. Leakage is compensated for by making up with Primary Grade water.
- D. 2300 ppm. Leakage is compensated for by making up with blended flow from the boric acid blender.

Knowledge of design feature(s) and interlock(s) which provide for the following: Adequate SDM (boron concentration).

Question Number: 57

Tier 2 Group 2

Importance Rating: RO 3.1

Technical Reference: NCRODP-49-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

29. 034 A4.02 001/NEW//HIGHER//2/2/RO/
Given the following:

Unit 1 in Mode 6.

Refueling Operations are in progress.

Source Range counts on N31 and N32 have been approximately 120 CPS throughout the core reload process.

Which ONE of the following describes the minimum Source Range Count Rate required to automatically initiate the Containment Evacuation alarm?

- A. 240 CPS on EITHER channel
- B. 240 CPS on BOTH channels
- C. 600 CPS on EITHER channel
- D. 600 CPS on BOTH channels

Ability to manually operate and/or monitor in the control room: Neutron levels.

Question Number: 58

Tier 2 Group 2

Importance Rating: RO 3.5

Technical Reference: NCRODP-62-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

30. 035 K4.03 001/NEW//LOWER//2/2/RO/

Which ONE of the following is correct concerning the signals that will close the Blowdown Trip Valves in the Auxiliary Building (1-BD-TV-100A, -100C, and -100E) and the actions necessary to re-open the valves following closure?

- A. Containment Isolation Phase A closes the valves; depress CLOSE button on each valve to reset signal, then depress OPEN button to re-open.
- B. High flow condition from the associated SG closes the valves; depress CLOSE button on each valve to reset signal, then depress OPEN button to re-open.
- C. High flow condition from the associated SG closes the valves; depress OPEN button to re-open (signal resets automatically when valves close)
- D. Containment Isolation Phase A closes the valves; place the Phase A reset switches in RESET, then depress OPEN buttons to re-open.

Knowledge of design feature(s) and or interlock(s) which provide for the following: Automatic blowdown and sample line isolation and reset.

Question Number: 59

Tier 2 Group 2

Importance Rating: RO 2.6
Technical Reference: NCRODP-37-NA
Proposed references to be provided to applicants during examination: None
Learning Objective:
Question Source: New
Question History:
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

31. 036 AA1.04 001/NEW/LOWER//1/2/RO/
Given the following conditions:

Unit 1 is in Mode 6, core off-load is in progress.
A fuel assembly being withdrawn from the core has visible signs of damage.
0-AP-30, Fuel Failure During Handling, has been entered.

Which ONE of the following describes the location where the fuel assembly should be placed?

- A. Back in its original location in the core
- B. In the RCCA change fixture
- C. In a horizontal position in the upender
- D. Transport to the Spent Fuel Pool

Ability to operate and/or monitor the following as they apply to: Fuel Handling Equipment during an incident

Question Number: 20

Tier 1 Group 2

Importance Rating: RO 3.1

Technical Reference: 0-AP-30

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41/43

Comments:

RO Exam

32. 038 EA2.16 001/NEW//LOWER//1/1/RO/

Given the following:

A Steam Generator Tube Rupture has occurred on Unit 1.
The crew is preparing to initiate RCS depressurization to minimize break flow in accordance with 1-E-3, Steam Generator Tube Rupture.
Ruptured SG level is OFF-SCALE HIGH.
All equipment is available and operating as required.

Which ONE of the following describes the action that will be required to initiate RCS depressurization?

- A. Initiate Normal PRZR Spray flow
- B. Open one PRZR PORV
- C. Initiate Auxiliary Spray flow
- D. Open both PRZR PORVs

Ability to determine and interpret the following as they apply to: Actions to be taken if S/G goes solid and water enters steam line.

Question Number: 9

Tier 1 Group 1

Importance Rating: RO 4.2
Technical Reference: 1-E-3 Step 15, 16
Proposed references to be provided to applicants during examination: None
Learning Objective:
Question Source: New
Question History:
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

33. 039 A2.05 001/NEW//HIGHER//2/1/RO/
Given the following conditions:

Unit 1 is at 95% power.
The Main Turbine Generator is operating in IMP-IN.
Steam Dump valve 1-MS-TCV-1408C fails open.

Which ONE of the following describes the effect on the unit and the MINIMUM action required in accordance with 1-AP-38, Excessive Load Increase?

- A. Reactor power will rise. Place the affected Condenser Steam Dump Interlock Switch to OFF/RESET.
- B. Reactor power will rise. Place BOTH Condenser Steam Dump Interlock Switches to OFF/RESET.
- C. Reactor power will lower. Place the affected Condenser Steam Dump Interlock Switch to OFF/RESET.
- D. Reactor power will lower. Place BOTH Condenser Steam Dump Interlock Switches to OFF/RESET.

Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Increasing steam demand, its relationship to increases in reactor power.

Question Number: 39

Tier 2 Group 1

Importance Rating: RO 3.3

Technical Reference: 1-AP-38

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

34. 039 K1.04 002/BANK/3800/LOWER/2/1/RO/

A turbine runback has occurred from 100% to 55% power.

Steam Dump Banks 1, 2, 3, and 4 are TRIPPED OPEN.

Which ONE (1) of the following is the MINIMUM plant condition that would cause this alignment?

A. 10° F mismatch between T_{avg} and $T_{no-load}$

B. 10° F mismatch between T_{avg} and T_{ref}

C. 16° F mismatch between T_{avg} and $T_{no-load}$

D. 16° F mismatch between T_{avg} and T_{ref}

Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following: RCS temperature monitoring and control.

Question Number: 52

Tier 2 Group 1

Importance Rating: RO 3.1

Technical Reference: NCRODP-23-NA

Proposed references to be provided to applicants during examination: None

Learning Objective: OB16716

Question Source: Bank

Question History: 3800

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

35. 045 A2.12 001/NEW//HIGHER//2/2/RO/

A turbine runback has occurred on Unit 1.

Reactor power is 61% and stable.

Generator load is approximately 600 MWe and stable.

No operator actions have been taken.

The cause of the runback has been determined and the US directs the crew to restore affected systems to normal.

Which ONE of the following describes the method used to accomplish this?

A. Initiate RCS boration and manually withdraw control rods above the insertion limits.

B. Manually withdraw control rods to maintain Tav_g on program. Place steam dumps in Steam Pressure mode and manually close.

C. Raise generator load to close steam dumps while borating the RCS to maintain Tav_g on program.

D. Manually withdraw control rods to raise Tav_g and reactor power. Ensure steam dumps close as Tav_g is raised.

Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Control rod insertion limits exceeded (stabilize secondary).

Question Number: 60

Tier 2 Group 2

Importance Rating: RO 2.5

Technical Reference: 1-AR-A-H4

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

36. 056 AK1.03 001/NEW//HIGHER//1/1/RO/

Given the following conditions:

Unit 1 reactor trip from 100% power.

A loss of off-site power has occurred.

Natural Circulation cooldown is being established in accordance with 1-ES-0.2A,

Natural Circulation Cooldown with CRDM Fans.

RCS pressure is 1880 psig.

Tavg is 557.5 degrees F

Thot is 575 degrees F

Tcold is 540 degrees F

Core Exit Thermocouples are 580 degrees F

1-ES-0.2A directs the crew to determine RCS subcooling.

Which ONE of the following describes the value of subcooling that will be reported in accordance with 1-ES-0.2A?

A. 46 degrees F

B. 48 degrees F

C. 51 degrees F

D. 53 degrees F

Knowledge of the operational implications of the following concepts as they apply to the: Definition of subcooling; use of steam tables to determine it.

Question Number: 10

Tier 1 Group 1

Importance Rating: RO 3.1

Technical Reference: ES-0.2A, Steam Tables

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

37. 056 G2.1.30 001/BANK/1608/LOWER/2/2/RO/

Given the following plant conditions:

- A fire occurred in the main control room.
- The crew relocated to the Auxiliary Shutdown Panel.
- The unit-1 OATC is preparing to secure the main feedwater (MFW) and condensate pumps.

Which ONE of the following is correct concerning the method that will be used to secure the pumps in accordance with 0-FCA-1, Control Room Fire.?

- A. The condensate pump breakers will be manually opened from the normal switchgear; then the turbine building operator will verify the MFW pumps trip on low suction pressure.
- B. The condensate pump breakers will be manually opened from the emergency switchgear; then the turbine building operator will verify the MFW pumps trip on low suction pressure.
- C. The MFW pump breakers will be manually opened from the normal switchgear; then the condensate pump breakers will be manually opened from the normal switchgear.
- D. The MFW pump breakers will be manually opened from the emergency switchgear; then the condensate pump breakers will be manually opened from the emergency switchgear.

Ability to locate and operate components, including local controls.

Question Number: 65

Tier 2 Group 2

Importance Rating: RO 3.9

Technical Reference: ~~NCRODP-250~~-FCA-1

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 16478

Question Source: BankNew

Question History: 1608

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

38. 057 AA2.15 001/NEW//HIGHER//1/1/RO/
Given the following conditions:

Unit 1 is at 100% power.
All equipment is in service.
The following events occur:

RPS Channel III status lights illuminate.
NIS Cabinet N-43 indication is extinguished.
Multiple control room annunciators are received.
The crew is performing appropriate actions in accordance with plant procedures.

Which ONE of the following describes the event that has occurred, and the initial response of the unit?

- A. Loss of Bus 1J; an automatic reactor trip will occur.
- B. Loss of Inverter 1-III; an automatic reactor trip will occur.
- C. Loss of Bus 1J; an automatic reactor trip will NOT occur.
- D. Loss of Inverter 1-III; an automatic reactor trip will NOT occur.

Ability to determine and interpret the following as they apply to: That a loss of AC has occurred.

Question Number: 11

Tier 1 Group 1

Importance Rating: RO 3.8

Technical Reference: NCRODP-35-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

39. 058 AK1.01 001/NEW//HIGHER//1/1/RO/
Given the following conditions:

Unit 1 is at 100% power.

The following alarm is received in the control room:

1H-B2, BATTERY CHGR 1-II TROUBLE

Battery Charger 1-II DC Output breaker has tripped and CANNOT be reset.
DC Bus 1-II voltage is 110 volts and lowering.

Which ONE of the following describes the action that will be taken, and the indication available when the bus is restored?

- A. Place Battery Charger 1C-I in service. Charger output voltage will indicate 122 - 129 volts.
- B. Place Battery Charger 1C-I in service. Charger output voltage will indicate 132 - 139 volts.
- C. Place Battery Charger 1C-II in service. Charger output voltage will indicate 122 - 129 volts.
- D. Place Battery Charger 1C-II in service. Charger output voltage will indicate 132 - 139 volts.

Knowledge of the operational implications of the following concepts as they apply to the: Battery charger equipment and instrumentation.

Question Number: 12

Tier 1 Group 1

Importance Rating: RO 2.8

Technical Reference: 1-OP-26.4.2, 0-AP-10

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

40. 059 K1.03 001/NEW//HIGHER/2/1/RO/
Given the following:

- Unit 1 is at 75% power.
- "B" Main Feedwater Regulating Valve fails open.
- "B" SG level indicates 76% NR and trending up.

Which ONE of the following describes the plant response to the FIRST signal from RPS/ESF?

Directly initiates a...

- A. reactor Trip and Feedwater Isolation. Main Feedwater Pumps remain running.
- B. reactor Trip, Feedwater Isolation, and Main Feedwater Pump trip.
- C. turbine Trip and Feedwater Isolation. Main Feedwater Pumps remain running.
- D. turbine Trip, Feedwater Isolation, and Main Feedwater Pump trip.

Knowledge of the physical connections and/or cause-effect relationships between MFW and the following: S/GS.

Question Number: 40

Tier 2 Group 1

Importance Rating: RO 3.1

Technical Reference: NCRODP-26-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

41. 059 K3.02 001/NEW//HIGHER/2/1//

Given the following conditions:

Unit 1 is at 100% power.

A Main Feed Line Rupture has occurred in the Turbine Building.

SG N/R levels are lowering at a rate of approximately 50% per minute and are currently as follows:

SG "A" 26% N/R

SG "B" 24% N/R

SG "C" 21% N/R

All equipment operates as required.

Which ONE of the following describes the status of the unit?

- A. A reactor trip setpoint has been exceeded. AFW Pumps are running.
- B. A reactor trip setpoint has been exceeded. AFW Pumps are NOT running.
- C. A reactor trip setpoint has NOT been exceeded. AFW Pumps are running.
- D. A reactor trip setpoint has NOT been exceeded. AFW Pumps are NOT running.

Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following: AFW system.

Question Number: 53

Tier 2 Group 1

Importance Rating: RO 3.6

Technical Reference: NCRODP-26-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

42. 061 AK1.01 001/NEW//LOWER//1/2/RO/

Which ONE of the following describes the MAXIMUM reading that can be obtained on the Containment High Range Area Radiation Monitors, 1-RMS-RM-165 and 166?

- A. 10^3 R/Hr
- B. 10^5 R/Hr
- C. 10^7 R/Hr
- D. 10^9 R/Hr

Knowledge of the operational implications of the following concepts as they apply to the: Detector limitations.

Question Number: 21

Tier 1 Group 2

Importance Rating: RO 2.5
Technical Reference: NCRODP-46-NA
Proposed references to be provided to applicants during examination: None
Learning Objective:
Question Source: New
Question History:
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

43. 061 K6.02 001/NEW//HIGHER//2/1/RO/
Given the following conditions:

A reactor trip has occurred on Unit 1 due to a loss of Main Feedwater.
During the performance of 1-E-0, Reactor Trip or Safety Injection, AFW Pump
1-FW-P-2 trips on overspeed.

Prior to any action by the crew, which ONE of the following describes the Steam
Generators that are being supplied with AFW flow?

- A. All SGs
- B. A and B SGs only
- C. A and C SGs only
- D. B and C SGs only

Knowledge of the effect that a loss of malfunction of the following will have on the (SYSTEM): Pumps.

Question Number: 41

Tier 2 Group 1

Importance Rating: RO 2.6

Technical Reference: NCRODP-26-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

44. 062 AG2.4.6 001/NEW//HIGHER//1/1/RO/

Given the following:

A large-break LOCA has occurred on Unit 1.
The crew is performing actions of 1-E-0, Reactor Trip or Safety Injection.
The crew determines that there is **NO** SW flow to the RS Heat Exchangers.

Which ONE of the following actions is required in accordance with 1-E-0?

- A. Go to 0-AP-12, Loss of Service Water. When completed, return to 1-E-0.
- B. Perform 0-AP-12, Loss of Service Water, while continuing with 1-E-0.
- C. Initiate Attachment 5, Verification of Phase A Isolation, to establish RSHX SW flow while continuing with 1-E-0.
- D. Initiate Attachment 2, Verification of Phase B Isolation, to establish RSHX SW flow while continuing with 1-E-0.

Knowledge of symptom based EOP mitigation strategies.

Question Number: 13

Tier 1 Group 1

Importance Rating: RO 3.1

Technical Reference: 1-E-0

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

45. 062 K2.01 001/BANK/5998/HIGHER/2/1/RO/
The following plant conditions exist.

- Unit 1 is at 100% power
- Unit 2 is in Mode 3 following a refueling outage with all 3 RCPs running
- Bus 5 in the switchyard is out of service
- An earthquake occurs that causes Unit 1 to trip and the loss of bus 4 in the switchyard

Which ONE of the following describes the Unit 1 and Unit 2 Reactor Coolant Pump (RCP) status? (assume all equipment operates normally)

- A. Only Unit 1 "C" and Unit 2 "C" RCPs are running.
- B. All RCP's running except Unit 2 "A" & "B".
- C. All RCPs running except Unit 1 "C" and Unit 2 "C".
- D. Only Unit 1 "A" and Unit 2 "A" RCPs are running.

Knowledge of electrical power supplies to the following: Major system loads.

Question Number: 42

Tier 2 Group 1

Importance Rating: RO 3.3

Technical Reference:

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 16091

Question Source: Bank

Question History: 5998

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

46. 063 K2.01 001/BANK/3136/HIGHER/2/1/RO/

Given the following conditions:

- Unit 2 was operating at 100% power.
- 2-CH-P-1A was running.
- A loss of DC bus 2-III has occurred.
- While stabilizing the unit, Safety Injection actuated.

Which ONE of the following pump combinations will exist as a result of these failures?

- A. 2-CH-P-1A running, 2-CH-P-1B not running, 2-CH-P-1C not running
- B. 2-CH-P-1A running, 2-CH-P-1B not running, 2-CH-P-1C running
- C. 2-CH-P-1A running, 2-CH-P-1B running, 2-CH-P-1C not running
- D. 2-CH-P-1A not running, 2-CH-P-1B running, 2-CH-P-1C running

Knowledge of electrical power supplies to the following: Major DC loads.

Question Number: 43

Tier 2 Group 1

Importance Rating: RO 2.9

Technical Reference: NCRODP-18-NA

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 11969

Question Source: Bank

Question History: 3136

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

47. 064 A3.01 001/NEW//HIGHER//2/1/RO/
Given the following:

Unit 1 is at 100% power.

1H 4160V bus normal feeder breaker 15H11 spuriously tripped open.

Which ONE of the following describes the response of 1H EDG and starting air system?

1H EDG will...

- A. start and load. The starting air compressors will start directly from the EDG start signal, and will stop when air receiver pressure reaches 200 psig.
- B. start and load. The starting air compressors will start when air receiver pressure drops to 200 psig, and will stop when air receiver pressure reaches 240 psig.
- C. start and run unloaded. The starting air compressors will start directly from the EDG start signal, and will stop when air receiver pressure reaches 200 psig.
- D. start and run unloaded. The starting air compressors will start when air receiver pressure drops to 200 psig, and will stop when air receiver pressure reaches 240 psig.

Ability to monitor automatic operations of the (SYSTEM) including: Automatic start of compressor and EDG.

Question Number: 44

Tier 2 Group 1

Importance Rating: RO 4.1

Technical Reference: NCRODP-55-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

48. 065 AG2.1.23 001/BANK/3744/HIGHER//1/1/RO/
Unit 1 is at 100% power.

The crew is responding to a loss of instrument air using 1-AP-28, "Loss of Instrument Air," when the RO identifies that pressurizer level is 85% and rising.

Which ONE of the following describes the actions required?

- A. Continue performance of 1-AP-28 until an automatic reactor trip occurs, then exit 1-AP-28 and initiate performance of 1-E-0.
- B. Immediately initiate performance of 1-E-0, "Reactor Trip or Safety Injection," and continue performance of 1-AP-28 as resources permit.
- C. Exit 1-AP-28 and immediately initiate performance of 1-E-0. Resume actions of 1-AP-28 upon exiting the EOPs.
- D. Continue performance of 1-AP-28 until completion, then if the cause for the pressurizer level increase has not been corrected, trip the reactor and perform 1-E-0.

Ability to perform specific system and integrated plant procedure during all modes of plant operation.

Question Number: 14

Tier 1 Group 1

Importance Rating: RO 3.9

Technical Reference: 1-AP-28

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 18877

Question Source: Bank

Question History: 3744

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

49. 069 AK1.01 001/BANK//HIGHER//1/2/RO/

Given the following conditions:

A loss of Containment Integrity has occurred.

In accordance with the accident analyses, which ONE of the following events would result in the HIGHEST rate of Containment mass leakage to atmosphere?

- A. DBA LOCA, Beginning of Core Life, 100% power.
- B. DBA LOCA, End of Core Life, 0% power.
- C. Main Steam Break inside Containment, Beginning of Core Life, 100% power.
- D. Main Steam Break inside Containment, End of Core Life, 0% power.

Knowledge of the operational implications of the following concepts as they apply to the: Effect of pressure on leak rate.

Question Number: 22

Tier 1 Group 2

Importance Rating: RO 2.6

Technical Reference: TS 3.6.4.1 Basis

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41/43

Comments:

RO Exam

50. 073 A1.01 001/BANK/5164/LOWER/2/1/RO/

With a containment vacuum pump running on each unit, process vent particulate radiation monitor 1-GW-RI-178-3 indication spiked, causing an ALERT and HIGH alarm to lock in.

Which ONE of the following describes the plant response?

- A. ONLY the unit 1 vacuum pump will trip.
- B. Both units' vacuum pumps will trip, but discharge valves remain open.
- C. Both units' vacuum pump discharge valves will automatically close.
- D. ONLY the unit 1 vacuum pump discharge valve will automatically close.

Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including: Radiation levels.

Question Number: 45

Tier 2 Group 1

Importance Rating: RO 3.2
Technical Reference: NCRODP-46-NA
Proposed references to be provided to applicants during examination: None
Learning Objective: OB 17679
Question Source: Bank
Question History: 5164
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

51. 076 GG2.1.2 001/BANK/5901/HIGHER/2/1/RO/

Given the following:

- Both units are operating at 100% power.
- The unit 2 Service Water pumps are running.
- A rupture occurs on an expansion joint on the "B" SW header in the Auxiliary Building.
- The control room crew enters 0-AP-12, Loss of Service Water.
- The unit 2 "B" SW pump trips and the unit 1 "A" pump CANNOT be started.

Which ONE of the following describes the required action?

- A. Enter action of T.S. 3.0.3 and commence a shutdown of Unit 1 ONLY within one hour.
- B. Start unit 1 "B" SW pump to restore flow to one header.
- C. Trip both reactors due to no flow to an intact header.
- D. Evaluate the need to perform an orderly shut down on both units.

Knowledge of operator responsibilities during all modes of plant operation.

Question Number: 46

Tier 2 Group 1

Importance Rating: RO 3.0

Technical Reference: 0-AP-12; TS-3.7.8

Proposed references to be provided to applicants during examination: None

Learning Objective: OB 19102

Question Source: Bank

Question History: 5901

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

52. 076 K1.17 001/NEW//LOWER//2/1/RO/

Which ONE of the following describes the operation of the Radiation Monitoring Pumps on the Recirculation Spray Heat Exchangers following a large-break LOCA?

- A. Starts immediately. Pump will stop when Phase B isolation is reset.
- B. Starts immediately. Pump will only stop by resetting Phase B isolation and placing the pump in STOP.
- C. Starts after 2 minutes. Pump will stop when Phase B isolation is reset.
- D. Starts after 2 minutes. Pump will only stop by resetting Phase B isolation and placing the pump in STOP.

Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:
PRMS.

Question Number: 51

Tier 2 Group 1

Importance Rating: RO 3.6

Technical Reference: NCRODP-46-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

53. 078 GG2.1.28 001/NEW//LOWER//2/1/RO/
Which ONE of the following describes the function of the Turbine Building Instrument Air Dryer Bypass Valve, 2-IA-TV-211?
- A. Opens at 90 psig decreasing instrument air header pressure; automatically closes above 90 psig increasing instrument air header pressure.
 - B. Opens at 90 psig decreasing instrument air header pressure; must be manually reset to close above 90 psig increasing instrument air header pressure.
 - C. Opens at 80 psig decreasing instrument air header pressure; automatically closes above 80 psig increasing instrument air header pressure.
 - D. Opens at 80 psig decreasing instrument air header pressure; must be manually reset to close above 80 psig increasing instrument air header pressure.

Knowledge of the purpose and function of major system components and controls.

Question Number: 47

Tier 2 Group 1

Importance Rating: RO 3.2
Technical Reference: NCRODP-17-NA; 12050-P-IA-222
Proposed references to be provided to applicants during examination: None
Learning Objective: OB 18573
Question Source: New
Question History:
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:
Similar to bank questions

RO Exam

54. 078 K4.01 001/NEW//LOWER//2/1/RO/

Given the following:

Service Air Compressor 1-SA-C-1 is in HAND.
Service Air Compressor 2-SA-C-1 is in AUTO.

Which ONE of the following describes the operation of each compressor in this configuration?

- A. 1-SA-C-1 will run unloaded as long as SA pressure remains above its unload setpoint.
- B. 2-SA-C-1 will run unloaded as long as SA pressure remains above its unload setpoint.
- C. 1-SA-C-1 will load and unload at lower air pressure setpoints than 2-SA-C-1.
- D. BOTH Service Air Compressors will load and unload at the same air pressure setpoints.

Knowledge of design feature(s) and or interlock(s) which provide for the following: Manual/automatic transfers of control.

Question Number: 54

Tier 2 Group 1

Importance Rating: RO 2.7

Technical Reference: NCRODP-17-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

55. 086 G2.1.28 001/BANK/LOWER/2/2/RO/

Which ONE of the following best describes the operation of the pre-action sprinkler system for the Records Room vault?

- A. Piping is always full of water requiring only sprinkler head actuation based on detection of either heat or smoke.
- B. Sprinkler head actuates when heat is detected, to discharge compressed air, allowing water to flow through the system against a lowering pressure.
- C. Compressed air is bled off when smoke is detected, allowing water to flow through the system against a lowering pressure.
- D. A stop valve opens when smoke is detected, and then the sprinkler head actuates if exposed to heat.

Knowledge of the purpose and function of major system components and controls.

Question Number: 61

Tier 2 Group 2

Importance Rating: RO 3.2

Technical Reference: NCRODP-6-NA

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

Modified distractors significantly, but editorial in nature

RO Exam

56. 103 K4.01 001/NEW//LOWER//2/1/RO/

Which ONE of the following describes the operation of Containment Vacuum pumps 3A and 3B?

- A. Automatically operate to maintain Containment Vacuum. A vacuum breaker ensures containment vacuum is not reduced below 5.5 psia.
- B. Automatically operate to maintain Containment Vacuum. Vacuum breaker protection is NOT provided.
- C. Manually operated to maintain Containment Vacuum. A vacuum breaker ensures containment vacuum is not reduced below 5.5 psia.
- D. Manually operated to maintain Containment Vacuum. Vacuum breaker protection is NOT provided.

Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following: Vacuum breaker protection.

Question Number: 48

Tier 2 Group 1

Importance Rating: RO 3.0
Technical Reference: NCRODP-57-NA
Proposed references to be provided to applicants during examination: None
Learning Objective:
Question Source: New
Question History:
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

57. E03 EA2.1 002/BANK/WTSI/HIGHER//1///

Given the following conditions:

- A LOCA has occurred
- The crew is performing 1-E-1, Loss of Reactor or Secondary Coolant
- The following parameters exist:
 - All SG pressures – 930 psig and slowly trending down
 - All SG levels – being controlled at 42% NR
 - PRZR level – off-scale high
 - RVLIS Full Range indicates 20%
 - Containment Pressure – 23 psia
 - RWST level – 74% and decreasing slowly
 - RCS pressure – 800 psig and decreasing slowly

Based on these indications, which ONE of the following procedures will the crew enter next?

- A. 1-ES-1.1, SI Termination
- B. 1-ES-1.2, Post-LOCA Cooldown and Depressurization
- C. 1-ES-1.3, Transfer to Cold Leg Recirculation
- D. 1-E-2, Faulted Steam Generator Isolation

Ability to determine and interpret the following as they apply to: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Question Number: 24

Tier 1 Group 2

Importance Rating: RO 3.4

Technical Reference: 1-E-1

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: WTSI Bank (Harris 2005 Audit)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41/43

Comments:

RO Exam

58. E04 EK3.4 001/BANK/HARRIS 2005 NRC/LOWER//1/1/RO/

Given the following conditions:

- A LOCA outside containment has occurred.
- The crew is performing the actions in 1-ECA-1.2, LOCA Outside Containment.

Which ONE of the following actions will be attempted to isolate the break and which indication is used to determine if the leak has been isolated in accordance with 1-ECA-1.2?

- A. Isolate Low Head Safety Injection piping; RCS pressure is monitored, because SI flow will repressurize the RCS with the break isolated.
- B. Isolate Low Head Safety Injection piping; PRZR level is monitored, because with the break isolated, RCS inventory will rapidly rise.
- C. Isolate High Head Safety Injection piping; RCS pressure is monitored, because SI flow will repressurize the RCS with the break isolated.
- D. Isolate High Head Safety Injection piping; PRZR level is monitored, because with the break isolated, RCS inventory will rapidly rise.

Knowledge of the reasons for the following responses as they apply to: RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.

Question Number: 15

Tier 1 Group 1

Importance Rating: RO 3.6

Technical Reference: 1-ECA-1.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: Harris 2005 NRC (Editorially Modified)

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

59. E05 EK1.3 001/BANK/BVPS-2 2002/HIGHER//1/1/RO/

A reactor trip has occurred due to a loss of all feedwater.

The following conditions exist:

The crew has entered 1-FR-H.1, Response To Loss of Secondary Heat Sink.
SG levels are 38% wide range and slowly trending down.
RCS pressure is 2040 psig and lowering.
SG pressure is 1040 psig and lowering.
Annunciators AUX FD PP 3A-3B AUTO TRIP and TURBINE DRIVEN AFW
PUMP TROUBLE OR LUBE OIL TRBL are both lit.

Which ONE of the following is performed NEXT?

- A. Stop RCPs and attempt to initiate main feedwater flow.
- B. Stop RCPs and establish bleed and feed cooling of the RCS.
- C. Return to 1-E-1, Loss Of Reactor Or Secondary Coolant, for the LOCA in progress.
- D. Depressurize SGs and initiate feed using the condensate pumps.

Knowledge of the operational implications of the following concepts as they apply to the: Annunciators and conditions indicating signals, and remedial actions associated with the Loss of Secondary Heat Sink.

Question Number: 18

Tier 1 Group 1

Importance Rating: RO 3.9

Technical Reference: 1-FR-H.1, 1-AR-F-D8, 1-AR-F-C5

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: BVPS-2 2002 NRC

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

60. E06 EK3.1 004/NEW//LOWER//1/2/RO/

Which ONE of the following describes the parameter and the reason that a RED condition on the Integrity CSF status tree may develop while performing actions of 1-FR-C.2, Response to Degraded Core Cooling?

- A. Core exit thermocouple temperature will decrease rapidly when charging or LHSI pumps are started and SI flow is initiated.
- B. Core exit thermocouple temperature will decrease rapidly when SG depressurization and SI accumulator injection occur.
- C. RCS cold leg temperature will decrease rapidly when charging or LHSI pumps are started and SI flow is initiated.
- D. RCS cold leg temperature will decrease rapidly when SG depressurization and SI accumulator injection occur.

Knowledge of the reasons for the following responses as they apply to: Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure and reactivity changes and operating limitations and reasons for these operating characteristics.

Question Number: 27

Tier 1 Group 2

Importance Rating: RO 3.4

Technical Reference: 1-FR-C.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

61. E09 EA1.3 002/BANK/WTSI/HIGHER//1/2/RO/

Given the following conditions:

A reactor trip has occurred due to a loss of offsite power.
The crew is performing actions of 1-ES-0.2A, Natural Circulation Cooldown with CRDM Fans.

RVLIS is NOT available.

The crew has commenced RCS cooldown and depressurization.

The following conditions are indicated:

RCS pressure is 2030 psig and trending DOWN.

RCS Tavg is 547°F and trending DOWN slowly.

PRZR Level is 26% and stable.

Which ONE of the following actions is required?

- A. Continue depressurization to 1950 psig and block the Low PRZR Pressure SI inputs.
- B. Initiate Safety Injection and go to 1-E-0, Reactor Trip Or Safety Injection.
- C. Stop the cooldown and depressurization, block the Low PRZR Pressure SI inputs, and resume cooldown and depressurization.
- D. Stop the depressurization and go to 1-ES-0.4, Natural Circulation Cooldown With Steam Void In Vessel (Without RVLIS)

RO Exam

Ability to operate and/or monitor the following as they apply to : Desired operating results during abnormal and emergency situations.

Question Number: 25

Tier 1 Group 2

Importance Rating: RO 3.5

Technical Reference: 1-ES-0.2A

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: WTSI Bank (Harris Audit Exam)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

62. E10 EK2.2 001/BANK/WOLF CREEK/HIGHER//1/2/RO/

Given the following:

- The reactor was tripped due to a loss of all Component Cooling Water.
- The crew is performing the actions of 1-ES-0.4, Natural Circulation Cooldown with Steam Void in Vessel (without RVLIS)

The following conditions currently exist:

- RCS pressure is 1600 psig
- RCS temperature is 450°F

Which ONE of the following describes the reason for equalizing charging and letdown flows during the subsequent depressurization?

- A. Allows pressurizer level to be used to monitor void growth.
- B. Charging and letdown flows by themselves are the only true measure of RCS inventory at this point in the procedure.
- C. Ensures that stable conditions are established to ensure that the pressurizer does not go solid.
- D. Ensures pressurizer heaters will remain energized and available to collapse any voids that may be present.

Knowledge of the interrelations between (Emergency Plant Evolution) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.

Question Number: 26

Tier 1 Group 2

Importance Rating: RO 3.6

Technical Reference: 1-ES-0.4

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: Wolf Creek (2006 Audit)

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

63. E11 EK2.1 001/BANK/BVPS-2 2005 NRC/HIGHER//1/1/RO/

Given the following conditions:

- A LOCA has occurred.
- Due to multiple equipment failures, the crew is performing actions of 1-ECA-1.1, Loss Of Emergency Coolant Recirculation.
- Two charging pumps and two LHSI pumps are running.
- RWST level is approximately 3% and continues to lower.

Which ONE of the following describes the NEXT actions required in accordance with 1-ECA-1.1?

- A. Stop BOTH Quench Spray pumps, ONE charging pump and ONE LHSI pump and verify NO backflow from the RWST to containment sump.
- B. Stop BOTH Quench Spray pumps, ONE charging pump and ONE LHSI pump and initiate secondary depressurization to facilitate SI accumulator injection.
- C. Stop ALL pumps taking a suction from the RWST and verify NO backflow from the RWST to containment sump.
- D. Stop ALL pumps taking a suction from the RWST and initiate secondary depressurization to facilitate SI accumulator injection.

Knowledge of the interrelations between (Emergency Plant Evolution) and the following: Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

Question Number: 16

Tier 1 Group 1

Importance Rating: RO 3.6

Technical Reference: ECA-1.1

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: BVPS-2 2005 NRC

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

64. E12 EK2.1 001/BANK/HARRIS 2003 NRC/HIGHER//1/1/RO/
Given the following conditions:

- 1-ECA-2.1, Uncontrolled Depressurization of All Steam Generators is being performed.
- The crew has reduced AFW flow to all steam generators (SG) to minimum as they continue attempts to isolate the SGs.

Which ONE of the following describes the expected plant response to the AFW flow reduction and what actions are to be taken as SG pressures decrease?

- A. RCS hot leg temperatures will eventually begin to increase due to reduction of SG inventory and the crew will then transition to 1-ES-1.1, Safety Injection Termination.
- B. RCS hot leg temperatures will eventually begin to increase due to reduction in SG inventory and the crew will then increase AFW flow while continuing in 1-ECA-2.1, Uncontrolled Depressurization of All Steam Generators.
- C. The SGs will eventually become completely depressurized due to inadequate secondary heat sink and the crew will then transition to 1-E-2, Faulted Steam Generator Isolation.
- D. The SGs will eventually become completely depressurized due to inadequate secondary heat sink and the crew will then transition to 1-ES-1.1, Safety Injection Termination.

Knowledge of the interrelations between (Emergency Plant Evolution) and the following: Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

Question Number: 17

Tier 1 Group 1

Importance Rating: RO 3.4

Technical Reference: 1-ECA-2.1

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: Harris 2003 NRC

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

65. E15 EG2.1.23 001/NEW//HIGHER//1/2/RO/

Given the following conditions:

- A LOCA has occurred.
- RCS pressure is 220 psig.
- Containment pressure peaked at 41 psia.
- Containment Pressure is 26 psia and lowering slowly.
- All automatic actuations have occurred as required.
- The crew is about to transition from 1-E-0, Reactor Trip or Safety Injection.
- Due to an ORANGE condition on the Containment CSF Status Tree, the US has determined that transition to FR-Z.2, Response to High Containment Sump Level is required.

Which ONE of the following describes the likely sources of leakage that may require action to isolate?

- A. Component Cooling Water
- B. Service Water
- C. Primary Grade Water
- D. Chilled Water

Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Question Number: 23

Tier 1 Group 2

Importance Rating: RO 3.9

Technical Reference: 1-FR-Z.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

66. G2.1.1 001/BANK/NORTH ANNA 2004 NRC/LOWER//3/1/RO/NORTH ANNA 2004 NRC
Valve lineups are in progress to support unit startup. The valve lineup being worked specifies that a valve should be "locked 2 turns open."

Which ONE of the following correctly describes the process for initially checking, and for independently verifying the valve's position?

- A. The valve should be fully closed, then re-opened 2 turns with a simultaneous verifier observing and concurring that the valve is opened 2 turns, then the lock should be installed.
The independent verifier should verify the lock is properly installed on the correct valve.
- B. The valve should be fully closed, then re-opened 2 turns, then the lock should be installed. No SV is required.
The independent verifier should visually verify valve position and check that the lock is properly installed.
- C. The valve should be fully closed, then re-opened 2 turns with a simultaneous verifier observing and concurring that the valve is opened 2 turns, then the lock should be installed.
The independent verifier should remove the lock and fully close the valve, then re-open the valve 2 turns and install the lock.
- D. The valve should be fully closed, then re-opened 2 turns with a simultaneous verifier observing and concurring that the valve is opened 2 turns.
The independent verifier should visually verify valve position and install the lock.

RO Exam

Knowledge of conduct of operations requirements.

Question Number: 68

Tier 3 Group 1

Importance Rating: RO 3.7

Technical Reference: OPAP-0012

Proposed references to be provided to applicants during examination: None

Learning Objective: 13611

Question Source: Bank

Question History: North Anna 2004 NRC

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

Conduct of Operations

Knowledge of conduct of operations requirements

North Anna bank question 60113

References:

OPAP-0012

Objective 13611 in study guide for Administrative procedures (Not included as is parrots OPAP-0012)

RO Exam

67. G2.1.22 001/MODIFIED/NORTH ANNA 2004 NRC/LOWER/3/2/RO/
RCS temperature is currently stable at 355° F. Rated thermal power is <5% and Keff is <0.99.

Which ONE of the following is the correct operational mode for the given condition?

- A. Mode 5
- B. Mode 4
- C. Mode 3
- D. Mode 2

Ability to determine Mode of Operation.

Question Number: 67

Tier 3 Group 1

Importance Rating: RO 2.8
Technical Reference: TS Table 1.1-1
Proposed references to be provided to applicants during examination: None
Learning Objective:
Question Source: MODIFIED
Question History: MOD From 2004 NRC Exam
Question Cognitive Level: Lower
10 CFR Part 55 Content: 41

Comments:

RO Exam

68. G2.1.3 001/NEW//LOWER//3/1/RO/

As the Unit-2 OATC, you are preparing to take a mid-day meal break.

Based on the requirements of OPAP-0005, "Shift Relief and Turnover," which of the following is required?

- A. All OATC activities in progress prior to turnover must be suspended for the duration of the break.
- B. Your relief may NOT have any other concurrent duties while at the controls.
- C. You must complete a shift turnover checklist.
- D. BOTH unit SROs must be informed of the turnover.

Knowledge of shift turnover practices.

Question Number: 66

Tier 3 Group 1

Importance Rating: RO 3.0

Technical Reference: OPAP-0005

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

69. G2.2.11 001/NEW//LOWER/3/2/RO/

In accordance with VPAP-1403, Temporary Modifications, which **ONE** of the following conditions must be controlled as a Procedurally Controlled Temporary Modification?

- A✓** Plugs installed in floor drains in the New Fuel Receiving area.
- B.** Portable HVAC unit installed in Warehouse #5 fire pump house.
- C.** Temporary lead shielding package installed per applicable VPAP.
- D.** Hose connected to 2-CD-289, CD circ pumps discharge drain valve, for CD system blowdown.

Knowledge of the process for controlling temporary changes.

Question Number: **69**

Tier 3 Group 2

Importance Rating: **RO 2.5**

Technical Reference: **VPAP-1403**

Proposed references to be provided to applicants during examination: **None**

Learning Objective:

Question Source: **New**

Question History:

Question Cognitive Level: **Lower**

10 CFR Part 55 Content: **41**

Comments:

RO Exam

70. G2.2.24 001/NEW//LOWER//3/2/RO/

Which ONE of the following activities requires entry into a technical specification LCO limiting action statement? Assume both units at 100% power.

- A. 1-CC-P-1B seal repair with the remaining CCW subsystems operable
- B. Breaker PMs on PRZR backup heater group 5 supply breaker
- C. Casing cooling tank level transmitter loop calibration per ICP
- D. Boron injection tank recirculation local flow indicator leak repair

Ability to analyze the affect of maintenance activities on LCO status.

Question Number: 70

Tier 3 Group 2

Importance Rating: RO 2.6

Technical Reference: 1-ICP-RS-L-103A; TS-3.7.19; TS-3.4.9; TS-3.5.6; PRZR Control & Protection Self-Study Guide, p. 20

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

71. G2.2.4 001/BANK//LOWER//3/2/RO/

Which ONE of the following identifies a difference between unit 1 and unit 2?

- A. Unit 1 train "A" emergency loads are normally powered from "B" RSST;
Unit 2 train "A" emergency loads are normally powered from "A" RSST.
- B. Common radiation monitors are powered from either unit 1 train "B" (1J1-1) or unit 2 train "A" (2H1-1).
- C. Unit 1 train "A" emergency loads are normally powered from "C" RSST;
Unit 2 train "A" emergency loads are normally powered from "B" RSST.
- D. Common radiation monitors are powered from either unit 1 train "A" (1H1-1) or unit 2 train "B" (2J1-1).

Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.

Question Number: 71

Tier 3 Group 2

Importance Rating: RO 2.8

Technical Reference:

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

72. G2.3.2 001/BANK/NORTH ANNA 2004 NRC/LOWER/2.9/3/3/RO/Y

Which ONE of the following is NOT part of the ALARA plan for reducing dose during a unit refueling outage?

- A. Using the gas stripper to degas the primary during RCS cooldown.
- B. Fully opening one RCS loop bypass MOV during RCS cooldown.
- C. Fully opening PRZR spray valves one at a time after blocking Low PRZR Pressure SI inputs.
- D. Keeping RCPs running as long as possible during RCS cooldown.

Knowledge of facility ALARA program.

Question Number: 73

Tier 3 Group 3

Importance Rating: RO 2.5

Technical Reference: 1-OP-3.2, "Unit Shutdown from Mode 3 to Mode 4."

Proposed references to be provided to applicants during examination: None

Learning Objective: 12958

Question Source: Bank

Question History: 2004 NRC Exam

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

73. G2.3.9 001/NEW//LOWER//3/3/RO/

Given the following:

Unit 1 has just entered Mode 5.

A Containment Purge is being initiated per 1-OP-21.2, Containment Purge.

Containment Partial Pressure is 9.8 psia.

The crew is preparing to establish atmospheric conditions in Containment.

Which ONE of the following describes the method that will be used to establish atmospheric conditions in Containment?

- A. Open 1-HV-MOV-102, CONT PURGE RELIEF VALVE
- B. Open 1-MOV-HV-100A OR 1-MOV-HV-100B, CONT PURGE SUPPLY VALVE
- C. Open 1-MOV-HV-100A AND 1-MOV-HV-100B, CONT PURGE SUPPLY VALVE
- D. Open 1-MOV-HV-101, CONT PURGE EXH BYPASS VALVE

Knowledge of the process for performing a containment purge.

Question Number: 72

Tier 3 Group 3

Importance Rating: RO 2.5

Technical Reference: 1-OP-21.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments:

RO Exam

74. G2.4.14 001/BANK/BVPS-2 NRC 2005/HIGHER/3/4/RO/
Given the following conditions:

A LOCA has occurred.

'A' train ECCS equipment is operating as required.

'B' train is deenergized and ECCS equipment HAS NOT been started.

The US has announced transition to 1-E-1, Loss of Reactor or Secondary Coolant.

Critical Safety Function Status Trees indicate the following:

SUBCRITICALITY

CORE COOLING, INTEGRITY, and CONTAINMENT

HEAT SINK and INVENTORY

GREEN

ORANGE

YELLOW

Which ONE of the following actions shall be taken?

A. Transition to 1-FR-C.1, Response to Inadequate Core Cooling.

B. Transition to 1-FR-C.2, Response to Degraded Core Cooling.

C. Transition to 1-FR-Z.1, Response to High Containment Pressure.

D. Attempt to restore power to Train 'B' equipment in 1-E-1, then transition to the highest priority procedure if conditions cannot be cleared.

Knowledge of general guidelines for EOP flowchart use.

Question Number: 74

Tier 3 Group 4

Importance Rating: RO 3.0

Technical Reference: EOP User's Guide, F-0.2

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank

Question History: BVPS-2 NRC 2005

Question Cognitive Level: Higher

10 CFR Part 55 Content: 41

Comments:

RO Exam

75. G2.4.43 001/NEW//LOWER//3/4/RO/

A Notification of Unusual Event has been declared.

Which ONE of the following describes the MINIMUM requirement for notification or communication with the NRC?

Notify the NRC within...

- A. 15 minutes of event classification using the Emergency Notification System phone.
- B. 15 minutes of event classification using a commercial phone line and Emergency Response Data System (ERDS) link.
- C. 1 hour of event classification using the Emergency Notification System phone.
- D. 1 hour of event classification using a commercial phone line and ERDS link.

Knowledge of emergency communications systems and techniques.

Question Number: 75

Tier 3 Group 4

Importance Rating: RO 2.8

Technical Reference: EPIP-2.02

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: New

Question History:

Question Cognitive Level: Lower

10 CFR Part 55 Content: 41

Comments: