## U.S. Nuclear Regulatory Commission

## Site-Specific RO Written Examination

| Applicant Information | |
|---|---|
| Name: | |
| Date: | Facility/Unit: **Browns Ferry** |
| Region: II | Reactor Type: **GE** |
| Start Time: | Finish Time: |

**Instructions**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80.00 percent. Examination papers will be collected 6 hours after the examination begins.

**Applicant Certification**

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

| Results | |
|---|---|
| Examination Value | **75** Points |
| Applicant's Score | _____ Points |
| Applicant's Grade | _____ Percent |

Test: 15-01 NKC Exam KEY

Class: RO Exam

Instructor: Q# 1-75

LXR•TEST™ Response Form
LXR-20020
**Side 1**

Name: _____

Signature: _____

Date: _____

**READ CAREFULLY!**
OK NOT OK

- Use black ink only.
- Mark responses darkly and fill completely.
- Erase unwanted marks clearly.
- Do NOT make any stray marks on the page.
- No credit will be given for improper marks.
- If Side 2 is used, fill in ID on both sides.

## DOCKET NUMBER

Version

C 1 C 2 C 3 C 4 V

## SECTION 1

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

## SECTION 2

1 2 3

4 5 6

7 8 9

10 11 12

RO Exam Q# 1 - 75

| QUESTION ID | NUREG K/A CROSS REF | QUESTION ID | NUREG K/A CROSS REF | QUESTION ID | NUREG K/A CROSS REF | QUESTION ID | NUREG K/A CROSS REF |
|---|---|---|---|---|---|---|---|
| 1 | 295001 AA2.02 | 26 | 295033 EK2.01 | 51 | 264000 A1.01 | 76 | 295006 G2.4.30 |
| 2 | 295003 AA1.02 | 27 | 295035 EA1.01 | 52 | 300000 A4.01 | 77 | 295021 AA2.02 |
| 3 | 295004 AK1.05 | 28 | 203000 G2.2.38 | 53 | 400000 K3.01 | 78 | 295023 G2.4.21 |
| 4 | 295005 G2.4.21 | 29 | 205000 K6.04 | 54 | 201006 A2.05 | 79 | 295026 EA2.03 |
| 5 | 295006 AK2.06 | 30 | 206000 K2.04 | 55 | 202002 A1.07 | 80 | 295028 EA2.05 |
| 6 | 295016 G2.4.34 | 31 | 209001 A4.03 | 56 | 215001 K1.02 | 81 | 295037 EA2.03 |
| 7 | 295018 AK1.01 | 32 | 209001 K6.04 | 57 | 223001 K6.09 | 82 | 295038 G2.4.41 |
| 8 | 295019 AK3.02 | 33 | 211000 A2.02 | 58 | 226001 K3.02 | 83 | 295015 AA2.01 |
| 9 | 295021 AK1.01 | 34 | 212000 A2.21 | 59 | 230000 K2.02 | 84 | 295032 EA2.02 |
| 10 | 295023 AK1.03 | 35 | 215003 K1.02 | 60 | 233000 A4.05 | 85 | 295010 G2.4.45 |
| 11 | 295024 EK2.03 | 36 | 215003 K4.04 | 61 | 239001 K4.05 | 86 | 203000 G2.2.37 |
| 12 | 295025 G2.2.44 | 37 | 215004 A1.05 | 62 | 256000 G2.2.4 | 87 | 215004 G2.4.47 |
| 13 | 295026 EK3.04 | 38 | 215004 K5.03 | 63 | 271000 K3.02 | 88 | 215005 A2.04 |
| 14 | 295028 EK3.05 | 39 | 215005 K4.01 | 64 | 290002 K5.07 | 89 | 218000 A2.02 |
| 15 | 295030 EA2.04 | 40 | 217000 K1.04 | 65 | 290003 A3.01 | 90 | 223002 A2.07 |
| 16 | 295031 EA1.05 | 41 | 218000 K5.01 | 66 | 2.1.19 | 91 | 201001 A2.08 |
| 17 | 295037 EA1.08 | 42 | 223002 G2.1.7 | 67 | 2.1.6 | 92 | 215001 G2.1.20 |
| 18 | 295038 EK2.02 | 43 | 239002 A3.02 | 68 | 2.2.17 | 93 | 272000 A2.02 |
| 19 | 600000 AA2.02 | 44 | 239002 K3.03 | 69 | 2.2.2 | 94 | 2.1.34 |
| 20 | 700000 AK3.02 | 45 | 259002 A2.04 | 70 | 2.2.40 | 95 | 2.1.7 |
| 21 | 295002 G2.4.11 | 46 | 259002 K3.03 | 71 | 2.3.11 | 96 | 2.2.19 |
| 22 | 295009 AA1.04 | 47 | 261000 A1.02 | 72 | 2.3.15 | 97 | 2.2.21 |
| 23 | 295017 AK1.02 | 48 | 262001 K2.01 | 73 | 2.3.7 | 98 | 2.3.14 |
| 24 | 295020 AK3.01 | 49 | 262002 A4.01 | 74 | 2.4.29 | 99 | 2.4.11 |
| 25 | 295029 G2.1.7 | 50 | 263000 K1.01 | 75 | 2.4.5 | 100 | 2.4.29 |

**Q 1**

Unit 3 is at 100% Reactor Power when Reactor Recirc Pump 3A tripped. The crew enters 3-AOI-68-1, "A" Recirc Pump Trip/Core Flow Decrease OPRMs Operable.

- Core Flow is indicating 42% on the APRM monitors.
- **No actions have been taken.**

In accordance with 3-OI-92B, Average Power Range Monitoring, which one of the following identifies the **current** APRM Flow Biased scram setpoint?

A. 86.1%

B. 92.7%

C. 86.7%

D. 80.1%

**Q 2**

Unit 1 and 2 are operating in MODE 1 with the following conditions:

- 4 KV Shutdown Boards A through D 43 Switches are in Manual.
- 4 KV Shutdown Bus 2 is being supplied from 4 KV Unit Board 1B through 4 KV SD BUS 2 ALT FDR BKR 1712.
- 4 KV Shutdown Bus 2 NORM SUPPLY BKR 1226 is tagged out of service

**Subsequently**, Alternate Feeder Breaker 1712 trips open.

Which ONE of the following is the expected response of the Unit 1/2 Diesel Generators?

A. ONLY A and B Diesel Generators are supplying their Shutdown boards.

B. All four Unit 1/2 Diesel Generators are supplying their Shutdown boards.

C. ONLY C and D Diesel Generators are supplying their Shutdown boards.

D. All four Unit 1/2 Diesel Generators are running unloaded.

**Q 3**

All units are operating at 100% power.

- Battery Board 2 de-energized.

Which 4kV Shutdown Board has no breaker protection for any of its pump loads?
**(Assume no operator actions have been taken.)**

A. 3EA

B. 3ED

C. B

D. C

**Q 4**

Unit 1 is operating at 100% power when a Turbine Control Valve Fast Closure Trip occurs.

What is the Emergency Trip System (RETS) low oil pressure **actual** RPS trip setpoint and what does it protect?

A. 550 psig to ensure that the Reactor Core - MCPR Safety Limit is **Not** exceeded

B. 550 psig to ensure that the Reactor Coolant System - Pressure Safety Limit is **Not** exceeded

C. 850 psig to ensure that the Reactor Core - MCPR Safety Limit is **Not** exceeded

D. 850 psig to ensure that the Reactor Coolant System - Pressure Safety Limit is **Not** exceeded

**Q 5**

Five minutes following a Reactor SCRAM:

Which ONE of the following reports from the Reactor Operator, allows the Unit Supervisor to exit RC/Q and enter 1-AOI-100-1, Reactor Scram in accordance with EOI-1, RPV control and EOIPM SECTION 0-III-C?

"The SRMs and IRMs are fully inserted and…"

A. 4 Control Rods are at position 24.

B. the IRMs are on range 4, Not all Control Rods are in, and injecting boron.

C. Reactor power is on range 5 of the IRMs and SRM period indicates positive.

D. 12 Control Rods Not fully inserted; Reactor power is on range 6 of the IRMs, and SRM period indicates negative.

**Q 6**

U3 has entered 3-AOI-100-2, Control Room Abandonment, and the UO has relocated to the Backup Control Panel 25-32.

Which one of the following completes the statements below?

The MSIV control switches at panel 25-32 are required to be placed in __ (1) __ prior to placing the MSIV transfer switches in EMERG.

Once Reactor pressure control has been established at panel 25-32, IF plant conditions worsen to the point where conditions for an ADS initiation are met, THEN the ADS valves __ (1) __ auto open.

A. (1) CLOSE
   (2) will

B. (1) CLOSE
   (2) will Not

C. (1) OPEN
   (2) will

D. (1) OPEN
   (2) will Not

**Q 7**

Unit 3 is operating at 100% with the Spare RBCCW pump disassembled for maintenance. When the following occurs:

- 3A RBCCW pump trips and cannot be restarted
- 3-FCV-070-0048, RBCCW Sectionalizing Valve closes

Which ONE of the following completes the statements below?

A U3 manual Reactor scram __ (1) __ required in accordance with 3-AOI-70-1, Loss of Reactor Building Closed Cooling Water.

The temperature of the __ (2) __ is expected to rise for this condition.

A. (1) is Not
(2) Reactor Building Equipment Drain Sump

B. (1) is Not
(2) Drywell Equipment Drain Sump

C. (1) is
(2) Reactor Building Equipment Drain Sump

D. (1) is
(2) Drywell Equipment Drain Sump

**Q 8**

Units 1, 2, and 3 are operating at 100% power.

- G Control Air Compressor is running and loaded.
- A and B Control Air Compressors are in LEAD
- C and D Control Air Compressors are in LAG

Subsequently, a Loss of ALL Offsite Power occurs.

- A, C, and D Emergency Diesel Generators are supplying their 4KV Shutdown boards.
- The B Diesel Generator failed to start.
- 2A 480V Shutdown board has been transferred to alternate.

Which ONE of the following completes the statements below?

In accordance with 0-AOI-57-1A, Loss of Offsite Power (161 and 500KV)/Station Blackout, and the current conditions, the ___ (1) ___ air compressor(s) is (are) to be restarted.

The reason that the B and C control air compressors are not started is __ (2) __.

A. (1) A and D
(2) they are locked out by 480V load shed logic

B. (1) A and D
(2) their associated 480 volt boards are de-energized

C. (1) G
(2) they are locked out by 480V load shed logic

D. (1) G
(2) their associated 480 volt boards are de-energized

**Q 9**

Unit 2 is in MODE 4 when a loss of Shutdown Cooling occurs at 00:00 on June 1.
The crew enters 2-AOI-74-1, Loss of Shutdown Cooling and is tracking the heatup rate.

- The most limiting Reactor coolant temperature is 124° F.
- It has been 16 days since the plant was shut down.
- Shutdown Cooling flow can NOT be established.

Based on Illustration 1, what is the earliest time that Mode 3 will be entered due to rising Reactor coolant temperature?

**Illustration 1 attached**

A. 03:48 on June 1

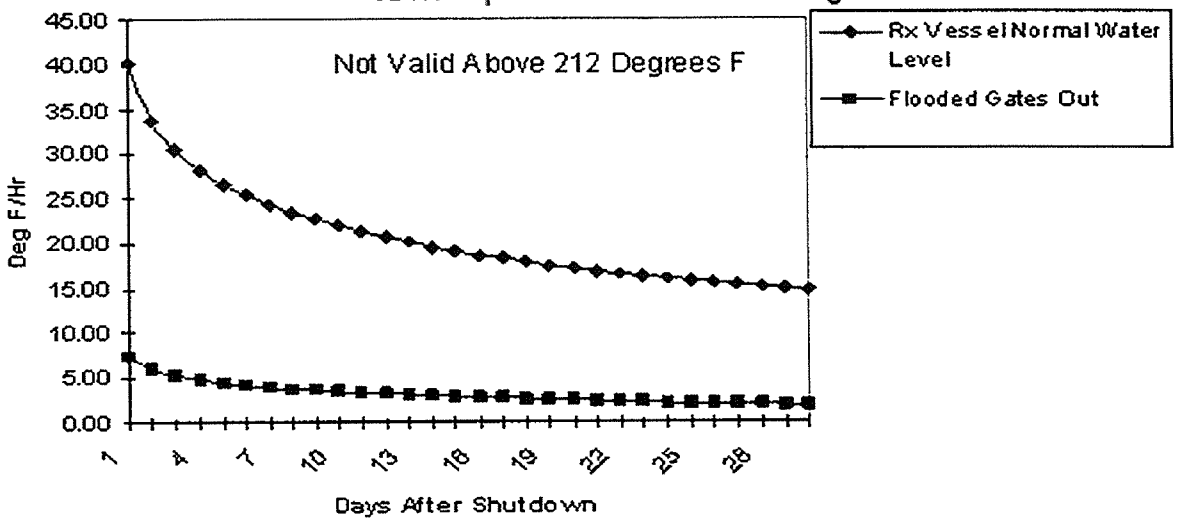
B. 04:24 on June 1

C. 06:24 on June 2

D. 11:12 on June 2

**Illustration 1**
**(Page 1 of 1)**

**U2 Heatup Rate with Loss of Cooling**




Graph represents Conservative Values for any Cycle

**Q 10**

As the Refueling bridge operator lowered an irradiated fuel assembly into the core, the Unit 1 Operator observed indications of criticality in the main control room.

Which of the following completes the statement below in accordance with the immediate operator actions of 1-AOI-79-2, Inadvertent Criticality During Incore Fuel Movements?

**IF** unexpected criticality is observed, following the insertion of a fuel assembly, **THEN** immediately _____.

A. start an SLC pump

B. verify all control rods inserted

C. secure the running CRD pump

D. remove the fuel bundle from the core

**Q 11**

Unit 1 is operating at 100% power when a LOCA occurs resulting in the following:

- Drywell Pressure 3 psig
- Reactor Pressure is 300 psig
- 4 KV Shutdown Board C is locked out.

The Unit Supervisor has directed the Unit Operator to use Core Spray to restore Reactor Water level using EOI Appendix 6D, Injection Subsystem Lineup Core Spray System I, and Appendix 6E, Injection Subsystem Lineup Core Spray System II.

Which of the following indicates the Core Spray pumps that have auto started?

A. 1A, 1B, and 1D only

B. 1A and 1C only

C. 1B and 1D only

D. 1A, 1C and 1D only

**Q 12**

Unit 1 is operating at 100% power when a load reject occurs. The following indications are observed after the Reactor Scram:

- RPV water level lowered to (-) 100 inches and is now rising
- Multiple Control Rods failed to insert
- 2 MSRVs are open and 1 is cycling

Which ONE of the following completes the statement below in accordance with 1-EOI-1, RPV Control, Step RC/P-6?

The Unit Operator is required to manually open _____ until _____.

A. MSRVs; no MSRVs are cycling

B. main turbine bypass valves; all MSRVs are closed

C. main turbine bypass valves; no MSRVs are cycling

D. MSRVs; all main turbine bypass valves are maintained fully open

**Q 13**

An ATWS has occurred on Unit 3.

Which of the following completes both statements?

In accordance with EOI-1, RC/Q, before suppression pool temperature rises to __ (1) __ boron injection is required.

In accordance with EOIPM Section 0-V-C, EOI-1, RPV Control Bases, the reason boron is injected at this temperature is to __ (2) __.

A. (1) 110 °F
(2) preclude emergency RPV depressurization

B. (1) 110 °F
(2) prevent Thermal Hydraulic Instabilities (THI)

C. (1) 120 °F
(2) preclude emergency RPV depressurization

D. (1) 120 °F
(2) prevent Thermal Hydraulic Instabilities (THI)

**Q 14**

Which ONE of the following completes the statements below?

In accordance with **EOI-2**, Primary Containment Control, step DW/T-4,
**Before Drywell Temperature** rises to __ (1) __ entry into **EOI-1**, RPV Control, is required.

In accordance with EOIPM 0-V-D, Primary Containment Control Bases, entering EOI-1, RPV Control, ensures that the Reactor is scrammed before__ (2) __.

A. (1) 160 °F
   (2) Drywell sprays are initiated

B. (1) 160 °F
   (2) the Suppression Chamber design temperature limit is exceeded

C. (1) 200 °F
   (2) Drywell sprays are initiated

D. (1) 200 °F
   (2) the Suppression Chamber design temperature limit is exceeded

**Q 15**

Unit 1 is operating at 100% power.

- Suppression Pool water level starts lowering due to a leak
- **No operator action has been taken**

What is the **HIGHEST** Suppression Pool water level where the Drywell to Suppression Chamber differential pressure ($\triangle$P) equalized and cannot be re-established?

A. 14.64 feet

B. 12.75 feet

C. 11.50 feet

D. 5.50 feet

**Q 16**

Unit 2 is operating at 100% power when a Group 1 isolation occurs resulting in the following sequence of events concerning RCIC and Reactor Water Level:

- RCIC starts and injects along with HPCI and feeds the vessel up to Level 8 ((+) 51 inches)
- Reactor Water Level begins to lower
- Reactor Water Level is (-) 20 inches

What is/are the **MINIMUM** action(s) required to inject with RCIC?

A. Reopen the Steam Supply Valve (FCV-71-8) only.

B. Depress the RCIC Turbine Trip Reset Pushbutton only.

C. Depress the RCIC Turbine Trip Reset Pushbutton and reopen the RCIC Turbine Trip and Throttle Valve (2-FCV-71-9).

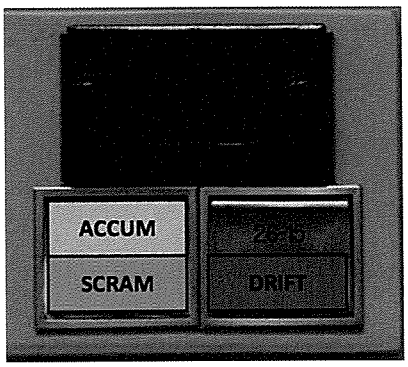
D. Depress the RCIC High Reactor Water Level Trip Reset Pushbutton and reopen the Steam Supply Valve (FCV-71-8).

**Q 17**

A hydraulic ATWS has occurred on Unit 2.

The following conditions currently exist:

- Reactor Power 35%
- 2-EOI Appendix-1F, Manual Scram, is in progress.
- The current display for Control Rod 26-15 is indicated below.




Which ONE of the following completes both statements below?

The position of Control Rod 26-15 __ (1) __ appear after step 2 (Reset Reactor Scram) of Appendix 1F is performed.

The limit switch logic required to illuminate the blue SCRAM light is __ (2) __.

A. (1) will Not
(2) only one scram valve must be open

B. (1) will Not
(2) both of the scram valves must be open

C. (1) will
(2) only one scram valve must be open

D. (1) will
(2) both of the scram valves must be open

**Q 18**

Which of the following alarms, if valid, requires an immediate operator action to manually scram the Reactor, to limit Off-Site Release Rate?

A. OG POST TREATMENT RADIATION HI-HI-HI/INOP, 2-9-4C Window 35

B. OG PRE-TREATMENT RADIATION HIGH, 2-9-3A Window 5

C. STACK GAS RAD HIGH, 2-9-3A Window 13

D. OG AVG ANNUAL RELEASE LIMIT EXCEEDED, 2-9-4C Window 27

**Q 19**

A loss of all off site power has occurred.

The following conditions exist:

- All DGs are supplying their respective shutdown boards

Subsequently:

- A fire occurs in the B Diesel Generator room and $CO_2$ initiates.

NOTE: 0-DMP-030-0066A - Fan A Discharge Damper
0-DMP-030-0066C - DSL Gen RM B Inlet Damper
0-30-1020 - DSL GEN Room B Fire Damper
0-30-1024 - DSL GEN Room B Fire Damper (INTAKE)

Which ONE of the following completes the statements below?

When $CO_2$initiates, an interlock trips the running Diesel exhaust fan and closes __ (1) __.
The motive force used to close fire dampers 0-30-1020 and 0-30-1024 is __ (2) __.

A. (1) 0-DMP-030-0066A only
(2) gravity

B. (1) 0-DMP-030-0066A only
(2) spring pressure

C. (1) 0-DMP-030-0066A, and 0-DMP-030-0066C
(2) gravity

D. (1) 0-DMP-030-0066A, and 0-DMP-030-0066C
(2) spring pressure

**Q 20**

0-AOI-57-1E, Grid Instability, has been entered by all three units.

- The 500KV Voltage as indicated on ICS is 507 KV
- Grid frequency is 59.90 Hz

Which ONE of the following completes both statements below as directed by 0-AOI-57-1E, Grid Instability?

To assist in maintaining grid stability, the UOs will adjust__ (1) __.

For degrading voltage conditions, the initial rising trend in pump amps will be indicated on 4KV UNIT boards 1C, 2C, and 3C because they__(2)__ .

A. (1) Recirc Flow Control
(2) carry a heavier electrical load

B. (1) Recirc Flow Control
(2) do Not have tap changer regulation

C. (1) Voltage Regulator Lower/Raise Adjust
(2) carry a heavier electrical load

D. (1) Voltage Regulator Lower/Raise Adjust
(2) do Not have tap changer regulation

**Q 21**

Unit 2 is in the process of starting up and Reactor Power is 20% when the following conditions occur:

- CONDENSER A, B, OR C VACUUM LOW alarms (2-9-7B, window 17)
- Condensate temperature is 137 °F at the inlet to the SJAE
- The A SJAE is experiencing reduced First stage performance (stalling).

Which ONE of the following completes the statements below in accordance with 2-AOI-47-3, Loss of Condenser Vacuum?

The Off Gas Panel 2-9-53 annunciator expected for this condition is __ (1) __.

If vacuum degrades to (-) 24.7 inches Hg on 2-XR 2-26, the required action is to __ (2) __.

A. (1) OG HOLDUP LINE INLET FLOW LOW (2-9-53, window 4)
(2) insert a manual scram and then trip the main turbine

B. (1) OG HOLDUP LINE INLET FLOW LOW (2-9-53, window 4)
(2) trip the main turbine ONLY

C. (1) OG HOLDUP LINE INLET FLOW HIGH (2-9-53, window 14)
(2) insert a manual scram and then trip the main turbine

D. (1) OG HOLDUP LINE INLET FLOW HIGH (2-9-53, window 14)
(2) trip the main turbine ONLY

**Q 22**

Unit 1 is at 100% Reactor power when a failure of the Reactor Feed Water Control System results in an automatic Reactor scram on low RPV water level.

Which ONE of the following completes the statements below?

The reason the RWCU pumps automatically trip is __ (1) __.

The RWCU Return Isolation valve, 1-FCV-69-12, will be __ (2) __.

A. (1) system flow less than 56 gpm
(2) closed

B. (1) system flow less than 56 gpm
(2) open

C. (1) RWCU INBD (OUTBD) SUCT Isolation valves, 1-FCV-69-1(2) NOT full open
(2) closed

D. (1) RWCU INBD (OUTBD) SUCT Isolation valves, 1-FCV-69-1(2) NOT full open
(2) open

**Q 23**

Which ONE of the following completes the statement below in accordance with 2-EOI-Appendix-13, Emergency Venting Primary Containment?

The preferred containment vent path is from the __ (1) __.

It __ (2) __ permitted to exceed the radiological release rate limits when the preferred vent path is used.

A. (1) Drywell
   (2) is

B. (1) Suppression Chamber
   (2) is

C. (1) Drywell
   (2) is Not

D. (1) Suppression Chamber
   (2) is Not

**Q 24**

Unit 2 is operating at 80% power.
IMs are performing 2-SR-3.3.6.1.2(1D/A1), Main Steam Line Tunnel High Temperature Functional Test Channel A1.
During the test the following condition exists:

- 2-IL-64-A1, MSIV Group A1, red indication light on Panel 2-9-4 is extinguished.
- Subsequently, the 2B1 RPS circuit protector trips open.

Which one of the following completes the statement below?

The first Reactor scram signal is generated when _____.

A. Reactor pressure exceeds 1050 psig

B. APRMs exceed 113%

C. MSIVs less than 90% open

D. Reactor Water level below (+) 2 inches

**Q 25**

Unit 3has inserted a manual Reactor scram and locked out the EHC pumps due to lowering EHC tank level.

The following conditions currently exist:

- Reactor Water Level (-) 5 inches, lowest indicated level was (-) 25 inches.
- Reactor Pressure is 958 psig and rising
- Drywell Pressure remains stable at 1.5 psig
- Main Condenser vacuum has lowered to (-) 15 inches Hg
- 3-LI-64-54A Suppression Pool Water Level is reading (+) 6.0 inches
- 3-LI-64-66 Suppression Pool Water Level is reading (+) 5.5 inches

Which of the following systems listed in RC/P-11 are currently available to augment RPV pressure control?

A. HPCI and Main Steam system drains

B. RFPTs on min flow and Main Steam system drains

C. Steam Seals and RWCU

D. RCIC and RFPTs on min flow

## Q 26

Which one of the following completes the statements below in accordance with, EOI-3 Secondary Containment Control.

EOI-3 is entered when an Area Rad Monitor listed in EOI-3 table 4, Secondary Containment Area Radiation, indicates above its __ (1) __ value.

With one area radiation monitor and one area temperature indicating above Max Safe, Emergency Depressization __ (2) __ required.

A. (1) Maximum normal
   (2) is Not

B. (1) Maximum normal
   (2) is

C. (1) Maximum safe
   (2) is Not

D. (1) Maximum safe
   (2) is

**Q 27**

Unit 2 is operating at 100% power with the 2B Reactor Zone Exhaust Fan tagged out of service.

Subsequently,

- RX BLDG VENTILATION ABNORMAL, 2-9-3D window 3 alarms.

  The UO reports:
  - 2A Reactor Zone Exhaust Fan tripped
  - 2A Reactor Zone Supply Fan is running

A few minutes later,

- REACTOR ZONE DIFFERENTIAL PRESSURE LOW, 2-9-3D window 32 alarms.

  The UO reports:
  - 2A Reactor Zone Supply Fan tripped
  - Amber light 2-ZI-064-0123, Reactor Zone Isolation, is lit at Panel 2-9-25

Which one of the following completes both statements?

__ (1) __ caused the 2A Reactor Zone Supply Fan to trip.

2-EOI-3, Secondary Containment Control, entry condition on Secondary Containment differential pressure is __ (2) __.

A. (1) A Group 6 isolation signal
   (2) -0.25 inch of $H_2O$

B. (1) A Group 6 isolation signal
   (2) -0.17 inch of $H_2O$

C. (1) A Static pressure isolation
   (2) -0.25 inch of $H_2O$

D. (1) A Static pressure isolation
   (2) -0.17 inch of $H_2O$

**Q 28**

Unit 2 is operating at 100% power with suppression pool cooling in service.

Which one of the following completes the statement with regard to the Loop II LOCA closure time light 2-IL-74-73Y.

When the light is __ (1) __, this means that during a LOCA, the required __ (2) __.

**2-FCV-74-73**
**LOCA CLOSURE TIME**
**2-IL-74-73Y**

A. (1) illuminated
(2) LPCI injection time will be exceeded

B. (1) illuminated
(2) Containment Cooling flow rate cannot be achieved

C. (1) extinguished
(2) LPCI injection time will be exceeded

D. (1) extinguished
(2) Containment Cooling flow rate cannot be achieved

**Q 29**

Unit 3 is in cold shutdown with the 3A RHR pump in Shutdown Cooling.

**Subsequently**, the Unit 3 Reactor water level lowers to 0 inches.

Which ONE of the following completes the statements below?

Based on the current RPV water level the RHR System I LPCI __ (1) __ automatically closes.

RHR Pump 3A will automatically trip because of __ (2) __.

A. (1) Inboard Injection Valve
   (2) low suction pressure

B. (1) Inboard Injection Valve
   (2) a suction valve interlock

C. (1) Outboard Injection Valve
   (2) low suction pressure

D. (1) Outboard Injection Valve
   (2) a suction valve interlock

**Q 30**

What is the power supply to the Unit 1 HPCI turbine trip logic?

A. 250VDC RMOV BD 1A

B. 250VDC RMOV BD 1B

C. DIV I ECCS INVERTER

D. DIV II ECCS INVERTER

**Q 31**

Which ONE of the following completes the statements below?

When manually aligning Core Spray to inject, the Core Spray SYS I __ (1) __ INJECTION VALVE must be opened first.

CORE SPRAY SYS I __ (2) __ INJECTION VALVE is a throttling valve and, as such, does Not have a seal in circuit for valve closure.

A. (1) OUTBOARD
   (2) INBOARD

B. (1) OUTBOARD
   (2) OUTBOARD

C. (1) INBOARD
   (2) INBOARD

D. (1) INBOARD
   (2) OUTBOARD

**Q 32**

Unit 2 was operating at 100% Reactor Power, when a plant event resulted in a Reactor scram AND loss of 250VDC RMOV BD 2A. Degrading plant conditions have resulted in the following:

- Reactor Pressure is 325 psig and stable
- Drywell Pressure is 2.8 psig

Based on the above conditions, which ONE of the following predicts how Core Spray will be affected by the bus loss?

A. ONLY the Loop 1 Core Spray pumps will start and Loop 1 injection valves will open.

B. ONLY the Loop 2 Core Spray pumps will start and Loop 2 injection valves will open.

C. ALL Core Spray pumps will start and ALL injection valves will open.

D. ONLY the Loop 1 Core Spray pumps will start and NO injection valves will open.

**Q 33**

Unit 2 is at 40% power when the following occurs:

An electrical fault caused 250V Distribution Board SB B to de-energize.

Which ONE of the following completes the statements below?

SLC can be injected using the __ (1) __ SLC pump.

If no Unit 2 SLC squib valve fires, SLC can be injected in accordance with EOI Appendix 3B using the __ (2) __.

A. (1) 2A
(2) Unit 1 SLC tank and 1B CRD pump

B. (1) 2A
(2) Unit 2 SLC tank and 1B CRD pump

C. (1) 2B
(2) Unit 1 SLC tank and 1B CRD pump

D. (1) 2B
(2) Unit 2 SLC tank and 1B CRD pump

**Q 34**

While performing 1-SR-3.3.1.1.8(7A/A), RPS And Rod Block High Water Level in Scram Discharge Tank Functional Test (1-LS-85-45A & 1-LS-85-45L), the IMs identified that:

- 1-RLY-099-05AK01A, RPS CH A1 WEST CRD SCRAM DISCH VOL HI WTR LVL, did not de-energize as expected when level switch 1-LS-85-45A, SDV HIGH LEVEL A1 Channel, Resistance Temperature Detector was tested.

- A Tag Out has been prepared to tag 1-FU1-85-45AA in accordance with 1-OI-99 Illustration 3 to allow the level switch replacement.

Which one of the following completes the statements below?

Prior to the fuse removal, if a valid high SDV water level occurs in the West SDV, a trip of the 'A' RPS trip system, __ (1) __ occur.

Following replacement of 1-LS-85-45A and when fuse 1-FU1-85-45AA is replaced, the RPS half scram can be reset __ (2) __.

A. (1) can Not
   (2) immediately

B. (1) can Not
   (2) after 37 seconds

C. (1) can still
   (2) immediately

D. (1) can still
   (2) after 37 seconds

**Q 35**

In accordance with **2-OI-92A**, Intermediate Range Monitors, what are the **Unit 2 IRMs** downscale rod block and high rod block setpoints?

A. < 5/125 and >90/125

B. < 5/125 and > 104.6/125

C. < 7.5/125 and > 90/125

D. < 7.5/125 and > 104.6/125

**Q 36**

Which ONE of the following completes the statements below?

Readings on each IRM range scale change by a factor of __ (1) __ when the IRM is ranged up or down.

When switching an IRM channel from range __ (2) __ a different preamplifier is put into service.

A. (1) *e* (2.72)
   (2) 5 to 6

B. (1) *e* (2.72)
   (2) 6 to 7

C. (1) $\sqrt{10}$ (3.16)
   (2) 5 to 6

D. (1) $\sqrt{10}$ (3.16)
   (2) 6 to 7

**Q 37**

Unit 1 Reactor startup is in progress.

The OATC reports the following after withdrawing a control rod a single notch.

- SRM PERIOD (1-9-5A, Window 20) alarmed and will Not reset (sealed in)
- Stable positive SRM period

Note: 1-SR-3.1.3.5(A) Control Rod Coupling Integrity Check

(1) What is the setpoint for SRM PERIOD (1-9-5A, window 20) alarm?

(2) In addition to inserting the last control rod pulled, what action is required to be performed in accordance with 1-GOI-100-1A, Unit Startup?

A. (1) 30 seconds
(2) Insert additional control rods, if necessary, in accordance with 1-SR-3.1.3.5(A) to obtain a period of > 60 seconds.

B. (1) 60 seconds
(2) Insert additional control rods, if necessary, in accordance with 1-SR-3.1.3.5(A) to obtain a period of > 60 seconds.

C. (1) 30 seconds
(2) Insert additional control rods, if necessary, in accordance with 1-SR-3.1.3.5(A) until the Reactor is subcritical.

D. (1) 60 seconds
(2) Insert additional control rods, if necessary, in accordance with 1-SR-3.1.3.5(A) until the Reactor is subcritical.

**Q 38**

A plant startup on Unit 3 is in progress and a control rod withdrawal block has occurred. The SRMs are in the following conditions:

- SRM A is fully inserted reading $7.1 \times 10^4$ cps.
- SRM B is at an intermediate position and is reading 105 cps.
- SRM C is at an intermediate position and is reading 150 cps.
- SRM D is fully inserted reading $8.0 \times 10^3$ cps.

- All IRMs are on Range 1

Which ONE, of the following identifies the MINIMUM action(s) needed to clear the Control Rod Withdrawal Block?

A. Insert SRM B **only**.

B. Insert SRM C **only**.

C. Bypass SRM A **and** Insert SRM B.

D. Bypass SRM A **and** Insert SRM C.

**Q 39**

Which one of the following completes the statement below?

Each operable APRM channel requires a MINIMUM of __ (1) __ LPRM inputs and at least __ (2) __ LPRM inputs per level; otherwise an APRM INOP condition is generated.

A. (1) 20
(2) 2

B. (1) 20
(2) 3

C. (1) 23
(2) 2

D. (1) 23
(2) 3

**Q 40**

Unit 3 is operating at 100% power when the unit scrams.

Reactor water level lowered to the initiation setpoint for RCIC injection.

Reactor water level recovered and **RCIC is tripped on high level**.

Which ONE of the following completes the statement below?
**(Assume NO operator action)**

The RCIC Steam Line Drain Pot is currently aligned to the...

A. Suppression Pool

B. Reactor Building Equipment Drain sump

C. Main Condenser

D. RCIC pump suction

**Q 41**

Unit 3 is operating at 100% power, when a LOCA occurs.

At time 09:02:00

- REACTOR LEVEL LOW ADS BLOWDOWN PERMISSIVE (3-9-3C, window 3) alarmed
- DRYWELL PRESS APPROACHING SCRAM (3-9-3B, window 30) alarmed
- The Reactor is manually scrammed.

At time 09:03:00

- ADS BLOWDOWN HIGH DRYWELL PRESS SEAL-IN (3-9-3C, window 33) alarmed

At time 09:04:00

- RX WTR LOW-LOW-LOW ECCS/ESF INIT (3-9-3C, window 28) alarmed
- RHR OR CS PUMPS RUNNING ADS BLOWDOWN PERMISSIVE (3-9-3C, window 10) alarmed
- **No operator actions have been taken**

The earliest time that ADS will auto initiate is.

A. 09:05:35

B. 09:07:25

C. 09:08:25

D. 09:10:00

**Q 42**

Unit 2 is at 15% power. The UO reports the following:

- Generator output lowering
- Main Turbine Bypass Valves opening
- Reactor Pressure is 915 psig and lowering

If Reactor pressure continues to lower, which one of the following predicts how the plant will respond?

A. MSIVs remain open; Reactor scrams

B. MSIVs remain open; Reactor does NOT scram

C. MSIVs auto close; Reactor scrams

D. MSIVs auto close; Reactor does NOT scram

**Q 43**

Which ONE of the following completes the statement below?

The **LOWEST** MSRV safety function lift setpoint is __ (1) __ psig and at this pressure __ (2) __ MSRVs will lift.

A. (1) 1135
   (2) 4

B. (1) 1135
   (2) 5

C. (1) 1145
   (2) 4

D. (1) 1145
   (2) 5

**Q 44**

Emergency Depressurization is required.

Which one of the following completes both statements below?

For each Unit there are __ (1) __ ADS valves equipped with alternate power supplies.

In accordance with C-2, Emergency Depressurization, the minimum number of MSRVs that are required to be opened to avoid using alternate methods (EOI appendix 11B-11H) to RAPIDLY DEPRESSURIZE the RPV is __ (2) __.

A. (1) 4
   (2) 4

B. (1) 4
   (2) 5

C. (1) 5
   (2) 4

D. (1) 5
   (2) 5

**Q 45**

Unit 2 is at 85% power and RFPT 2A and 2B are being controlled by 2-LIC-46-5, Master Level Controller in three element control when the Unit Operator notes the following Reactor Water Level transient:

- Reactor Water level, on all narrow range level instruments, has risen to 38 inches.

Then the following conditions are noted:

- RFPT 2A speed is lowering
- RFPT 2B speed is rising

Which ONE of the following completes the statements below?

The Unit 2 RFPT control system upper speed limit is __ (1) __ rpm.

In accordance with 2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low, the __ (2) __ RFPT controller is required to be taken to manual to correct this condition.

A. (1) 5600
   (2) 2A

B. (1) 5600
   (2) 2B

C. (1) 5850
   (2) 2A

D. (1) 5850
   (2) 2B

**Q 46**

Unit 2 is at 30% Reactor power, when a malfunction occurs resulting in the total feedwater flow input to the Rod Worth Minimizer (RWM) failing downscale.

Which ONE of the following completes both statements concerning the RWM?

The total Feedwater Flow signal is used to determine the __ (1) __.

Given this condition, a control rod __ (2) __ be selected.

A. (1) LPSP and LPAP
   (2) can

B. (1) LPSP and LPAP
   (2) cannot

C. (1) LPSP only
   (2) can

D. (1) LPSP only
   (2) cannot

**Q 47**

All Three Units are at 100% power.

Drywell venting is in progress on **Unit 2** in accordance with 2-OI-64, Primary Containment System, Section 6.1 Venting the Drywell with Standby Gas Treatment Fan.

**Subsequently, Unit 3** Reactor Scrams on Low Reactor Water Level.

Which ONE of the following completes the statements below?

On Unit 2, an isolation will occur on the __ (1) __.

Drywell pressure on Unit 2 will __ (2) __.

A. (1) Refuel Zone ONLY
(2) continue to lower

B. (1) Refuel Zone ONLY
(2) stop lowering

C. (1) Reactor and Refuel Zone
(2) continue to lower

D. (1) Reactor and Refuel Zone
(2) stop lowering

**Q 48**

Which ONE of the following completes the statements below?

For Unit 3 one of the qualified offsite circuits comes through Unit Station Service Transformer (USST) __(1)__.

For Unit 3 to meet the Limiting Condition for Operation (LCO) requirement of Technical Specification 3.8.1, __(2)__ qualified offsite circuits are required to be OPERABLE.

| | (1) | (2) |
|---|---|---|
| A. | 3A | 2 |
| B. | 3A | 3 |
| C. | 3B | 2 |
| D. | 3B | 3 |

**Q 49**

Unit 1 is operating at 100% Reactor Power.
Unit Preferred power to Battery Board 1 Panel 11is lost due to the 1001 breaker tripping.

Panel 1-9-9 cabinet 5, Non Preferred, and cabinet 6, Unit Preferred, are on their alternate power supply in accordance with 1-AOI-57-4 Loss of Unit Preferred.

The Unit Operator is now ready to re-energize Battery Board 1, Panel 11using the 1002 breaker in accordance with 1-AOI-57-4 Loss of Unit Preferred.

Which ONE of the following completes the statement below?

Upon re-energization of the Unit Preferred Bus, (Battery Board 1 Panel 11) Panel 1-9-9 Cabinet 5 will __ (1) __ transfer to normal power AND Panel 1-9-9 Cabinet 6 will __ (2) __ transfer to normal power.

A. (1) AUTO
   (2) AUTO

B. (1) require MANUAL
   (2) AUTO

C. (1) AUTO
   (2) require MANUAL

D. (1) require MANUAL
   (2) require MANUAL

**Q 50**

Which ONE of the following identifies the Normal and Alternate power supplies to the 250V DC Unit Battery Chargers 1, 2A, 2B, and 3?

| | (1) NORMAL | (2) ALTERNATE |
|---|---|---|
| A. | 480V Shutdown Boards | 480V Common Board 1 |
| B. | 480V Shutdown Boards | 480V Unit Boards |
| C. | 480V Common Boards | 480V Common Board 1 |
| D. | 480V Common Boards | 480V Unit Boards |

**Q 51**

The A Diesel Generator has been untagged following an overhaul. The tagged components were returned to the standby readiness positions in accordance with 0-OI-82 section 4.2, DG A Pre-startup/Standby readiness Requirements.

The ambient temperature in the A Diesel Generator room is 60° F.

Which ONE of the following completes the statements below?

The A Diesel Generator Lube Oil Temperature will be warmed by an immersion heater located in the __ (1) __.

For the A Diesel Generator to be in Standby Readiness in accordance with 0-OI-82 section 4.2, DG A Pre-startup/Standby readiness Requirements, the LO CLR LUBE OIL OUTLET TEMP, 0-TI-82-35A is required to be greater than __ (2) __ degrees F.

A. (1) cooling water system
   (2) 85

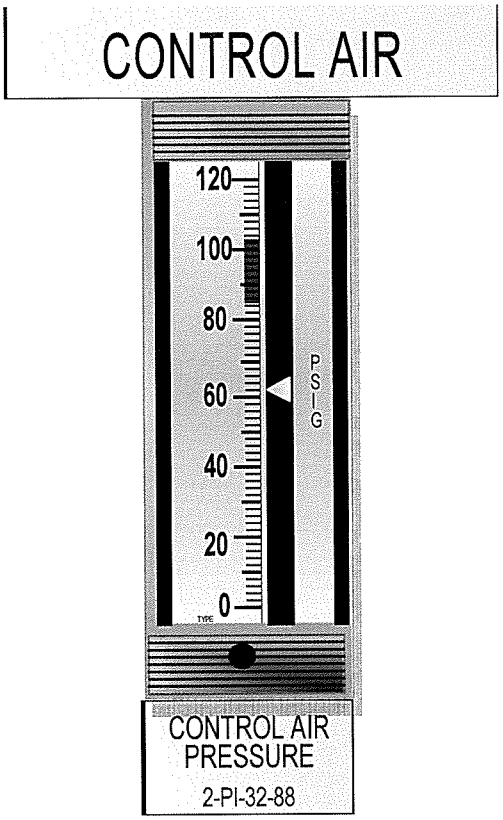
B. (1) cooling water system
   (2) 100

C. (1) soakback oil subsystem
   (2) 85

D. (1) soakback oil subsystem
   (2) 100

**Q 52**

Unit 2 is at 100% Reactor Power when a Control Air leak results in the following indication:




Which one of the following identifies the plant status based upon the **ABOVE** indication?

A. SERVICE AIR XTIE VLV, 0-FCV-33-1, is CLOSED

B. CONDENSATE DEMIN BYPASS VALVE, 2-FCV-2-130, is OPEN

C. Unit 2 OUTBOARD MSIV accumulator check valves have OPENED

D. Unit 2 to Unit 3 CONTROL AIR CROSSTIE, 2-PCV-032-3901, is CLOSED

**Q 53**

Which ONE of the following completes the statement below?

A sustained loss of Raw Cooling Water will result in **NO** cooling to the _____.

A. Drywell

B. Fuel pool

C. CRD pumps

D. Control air compressors

**Q 54**

A Unit 3 startup is in progress.

- The control rods in groups 2-6 are repeating groups
- All control rods in group 5 are at their withdraw limit (16) except 26-23, 42-23, and 34-31 which are at position 12.
- The Unit Operator selects and withdraws 02-31 (which is the first control rod in group 6) one notch, causing the RWM ROD BLOCK annunciator 3-9-5B, window 35 to alarm.

Which one of the following completes the statements below?

When Control Rod 02-31 was initially selected, before it was moved, the RWM screen ___(1)___ indicate a Select Error.

In accordance with 3-AOI-85-7, Mispositioned Control Rod, Control Rod 02-31 ___(2)____mispositioned.

A. (1) will
   (2) is

B. (1) will
   (2) is Not

C. (1) will Not
   (2) is

D. (1) will Not
   (2) is Not

**Q 55**

09:00 Unit 3 is at 100% power with a Rod Line of 110%, Total Core Flow on 3-XR-68-50 is 87 MLB/HR

09:10 Operators inserted a manual Recirc pump runback which caused Total Core Flow on 3-XR-68-50 to lower and stabilize at 62 MLB/HR.

Following completion of the manual runback, the RECIRC MASTER CONTROL LOWER MEDIUM push button 3-HS-96-34 is depressed once.

Which ONE of the following completes the statements below?

At 09:10, the__ (1) __ Power Runback was inserted.

After depressing push button 3-HS-96-34 once, Recirc Pump 3A and 3B speed will lower __ (2) __.

A. (1) Mid
(2) 5 rpm at 5 rpm per second

B. (1) Mid
(2) 5 rpm at 1 rpm per second

C. (1) Upper
(2) 5 rpm at 5 rpm per second

D. (1) Upper
(2) 5 rpm at 1 rpm per second

**Q 56**

Which ONE of the following completes the statements below?

The Reactor Engineer obtains TIP trace data using the __(1)__.
TIP trace data is used to directly calibrate the __(2)__.

**NOTE:** ICS - Integrated Computer System
PEDS-Plant Engineering Data Storage

A. (1) ICS
(2) APRMs

B. (1) ICS
(2) LPRMs

C. (1) PEDS
(2) APRMs

D. (1) PEDS
(2) LPRMs

**Q 57**

Unit 2 is starting up and is currently at 12% power.

During a panel walkdown the operator notices the indication for Drywell Vacuum Relief Valve M is as shown on the attached illustration.

All other Drywell Vacuum Relief Valve Test Switch indications are green only.

Which ONE of the following completes the statements below?

Technical Specification 3.6.1.6 Suppression Chamber-to-Drywell Vacuum Breakers LCO __(1)__ met.

The condition of Drywell Vacuum Relief Valve M will cause __(2)__ should a LOCA occur.

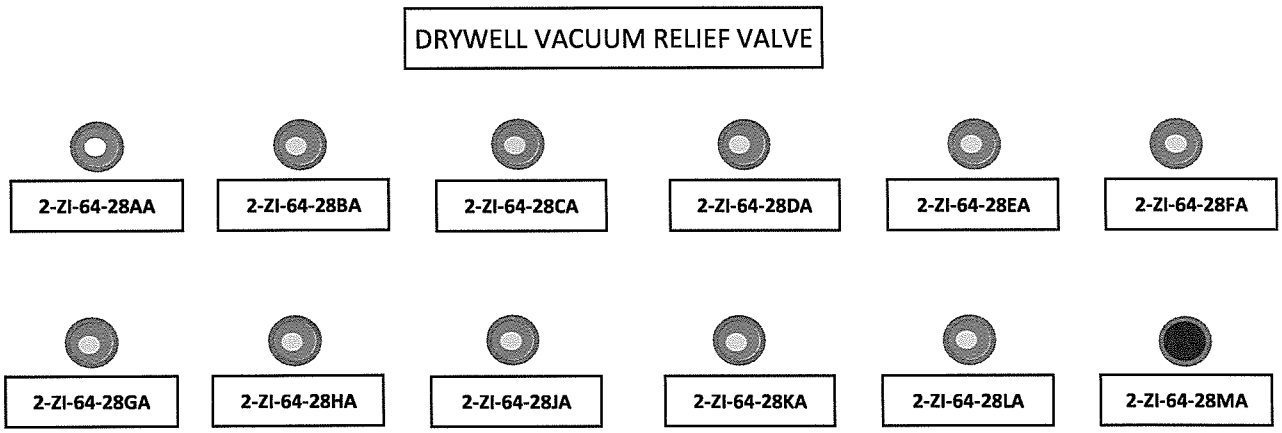
**[Illustration Attached]**

A. (1) is
   (2) excessive bypass leakage resulting in the potential for suppression chamber over pressurization

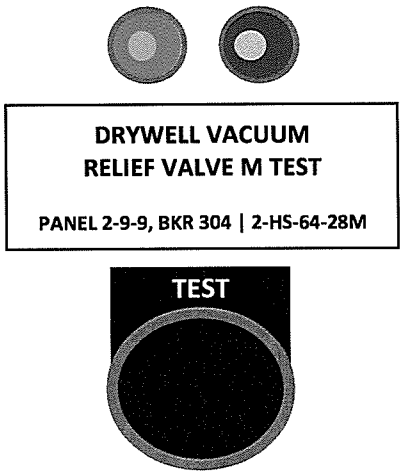
B. (1) is
   (2) Drywell pressure to lower such that Drywell external design pressure is reached

C. (1) is NOT
   (2) excessive bypass leakage resulting in the potential for suppression chamber over pressurization

D. (1) is NOT
   (2) Drywell pressure to lower such that Drywell external design pressure is reached




**NOTE:** ALL LIGHTS ARE SHOWN **LIT**
**EXCEPT 2-ZI-64-28MA** which is**EXTINGUISHED**



**Q 58**

Unit 2 is operating at 100% power when the unit scrams due to a steam leak in the Drywell. A few minutes following the scram the following conditions are noted:

- RPV Level is (-) 75 inches
- Reactor Pressure is 580 psig
- Drywell Pressure is 10 psig
- Suppression Chamber Pressure is 11 psig
- Drywell Temperature is 265 °F

The crew is implementing 2-EOI Appendix-17B, RHR System Operation Drywell Sprays, and has completed aligning the CTMT SPRAY/CLG VALVE Control switches and the Loop 1 RHR Pumps are operating.

- See Attached Illustration for current CTMT SPRAY/CLG VALVE Control switch positions and light indications.

Which ONE of the following completes the statements below?

A LPCI initiation signal __(1)__ present on Unit 2.

Based on the indications shown on the Attached Illustration, when 2-HS-74-60A, RHR SYS I DW SPRAY OUTBD VLV and 2-HS-74-61A, RHR SYS I DW SPRAY INBD VLV are placed in the OPEN position, Drywell temperature will __(2)__.

**Illustration Attached**

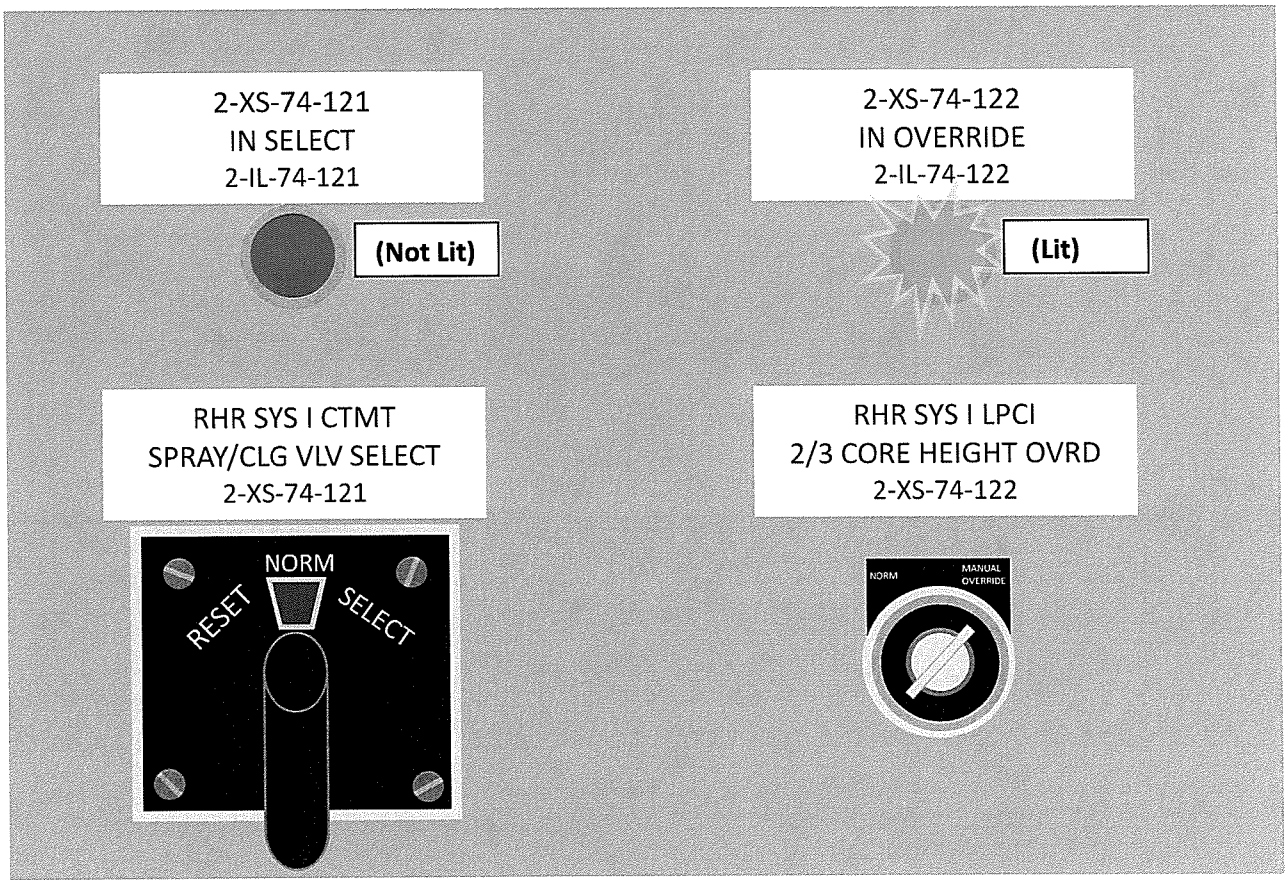
A. (1) is
(2) lower

B. (1) is
(2) remain the same

C. (1) is Not
(2) lower

D. (1) is Not
(2) remain the same

## Illustration



**Q 59**

The Unit 3 Board Operator is directed to place Loop 1 RHR in Torus Spray in accordance with 3-EOI-APPENDIX-17C, RHR SYSTEM OPERATION SUPPRESSION CHAMBER SPRAYS.

What are the electrical power supplies to the Loop 1 RHR Pumps to be placed in torus spray?

A. 4KV Shutdown Boards 3EB and 3ED

B. 4KV Shutdown Boards 3EA and 3EC

C. 4KV Shutdown Boards 3EB and 3EC

D. 4KV Shutdown Boards 3EA and 3EB

**Q 60**

Given the following conditions for Unit 3:

- The Reactor is at 100% power
- The Spent Fuel Pool temperature is 80 °F
- Fuel Pool Cooling Pump '3A' is tagged out

**Subsequently**, '3B' Fuel Pool Cooling Pump trips, due to an electrical fault.

Which ONE of the following completes the statement below?

The Fuel Pooling Cooling System Temperature indication on Panel __ (1) __ is __ (2) __.

A. (1) 3-9-4
   (2) accurate

B. (1) 3-9-4
   (2) inaccurate

C. (1) 3-9-21
   (2) accurate

D. (1) 3-9-21
   (2) inaccurate

**Q 61**

Which ONE of the following completes the statements below?

The Main Steam System uses flow restrictors __ (1) __ of the Main Steam Relief Valves (MSRVs) to provide Main Steam Line flow measurement.

In accordance with 2-OI-1, Main Steam System, the setpoint for a Group One isolation on Main Steam Line High Flow is __ (2) __.

A. (1) downstream
(2) <135%

B. (1) downstream
(2) <150%

C. (1) upstream
(2) <135%

D. (1) upstream
(2) <150%

**Q 62**

Which ONE of the following completes the statement below?

When a Condensate Booster Pump control switch is placed in START, the Auxiliary Oil Pump will start immediately and the pump motor breaker will close fifteen seconds after oil pressure is ___ (1) ___ for UNIT 2 and ___ (2) ____ for UNIT 3.

A. (1) 8 psig
   (2) 8 psig

B. (1) 8 psig
   (2) 20 psig

C. (1) 20 psig
   (2) 8 psig

D. (1) 20 psig
   (2) 20 psig

**Q 63**

Unit 2 is operating at 100% power.

The Off-gas System is in service in accordance with 2-OI-66, Off-Gas System, with the following equipment in service.

- 2A Recombiner
- 2B Steam Jet Air Ejector
- 2A Cooler Condenser

Which one of the following power supply losses would result in a lowering off-site radioactive release rate?

A. Panel 2-9-9 Cabinet 3 I&C Bus B

B. Panel 2-9-9 Cabinet 4 Plant Preferred

C. Panel 2-9-9 Cabinet 5 Unit Non-Preferred

D. Panel 2-9-9 Cabinet 6 Unit Preferred

**Q 64**

A plant transient and subsequent safety relief valve malfunction results in Reactor steam dome pressure reaching 1300 psig.

Which one of the following choices completes the following statements?

Reactor vessel design pressure ___ (1) ___ been exceeded.
Tech Spec 2.1.2, Reactor Coolant System Pressure Safety Limit ___ (2) ___ been exceeded.

A. (1) has
(2) has

B (1) has
(2) has Not

C. (1) has Not
(2) has

D. (1) has Not
(2) has Not

**Q 65**

Concerning the Control Room Isolation Radiation Monitors 0-RM-90-259A and B, which one of the following completes both statements below?

High radiation sensed at ONE of the detector locations __ (1) __ initiate CREVs.

Upon auto initiation of CREVs, the unit selected as the lead train starts __ (2) __.

A. (1) will
(2) before the inlet damper is full open

B. (1) will
(2) after the inlet damper is full open

C. (1) will Not
(2) before the inlet damper is full open

D. (1) will Not
(2) after the inlet damper is full open

**Q 66**

Which one of the following completes both statements below in accordance with 0-OI-48, Integrated Computer System?

The Safety Parameter Display System (SPDS) component of the Integrated Computer System (ICS) __ (1) __ qualified instrumentation.

The SPDS target in the upper right corner of the display will be __ (2) __ if an EOI entry condition value is reached.

A. (1) is
(2) yellow

B. (1) is
(2) red

C. (1) is Not
(2) yellow

D. (1) is Not
(2) red

## Q 67

Which one of the following completes the statements below concerning Reactor Water level control in accordance with ODM 4.20, Strategies for Successful Transient Mitigation?

If HPCI initiates on a high drywell pressure signal, and HPCI IS NOT needed for reactor water level control, the Operator is directed to __ (1) __.

If HPCI has a sealed in high Reactor water level trip but, Reactor water level has lowered below the high level trip setpoint, when a high drywell pressure signal is received the Operator is directed to __ (2) __ the high Reactor water level trip signal.

A. (1) Verify HPCI automatically trips on high RPV level (do not trip HPCI)
   (2) reset

B. (1) Verify HPCI automatically trips on high RPV level (do not trip HPCI)
   (2) Not reset

C. (1) Trip HPCI and place the AOP in PTL
   (2) reset

D. (1) Trip HPCI and place the AOP in PTL
   (2) Not reset

**Q 68**

Which one of the following completes the statement below?

In accordance with 0-GOI-300-4, Switchyard Manual, to verify qualification of the offsite source (500kv or 161kv) BFN Operations is required to contact the _____.

A. Operations Duty Specialist (ODS)

B. Transmission System Operator (TOp)

C. Balancing Authority System Operator (BA)

D. Area Dispatch Control Center (ADCC)

**Q 69**

Unit 1 Startup is in progress in accordance with 1-GOI-100-1A, Unit Startup.

When is control rod withdrawal limited to single notch withdrawal and when may continuous rod withdrawal resume?

A. At the fourth SRM count rate doubling; once IRMs are middle of scale on Range 7.

B. At the fifth SRM count rate doubling; once IRMs are middle of scale on Range 7.

C. At the fourth SRM count rate doubling; once IRM/APRM overlap is verified.

D. At the fifth SRM count rate doubling; once IRM/APRM overlap is verified.

**Q 70**

In accordance with Tech Specs, what is required to be performed to fulfill the term "administratively verify", and what does "immediately" mean?

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. LCO not met. | A.1 Administratively verify that X,Y,Z is Operable. | Immediately |

A. Perform the applicable X,Y,Z surveillance; an hour is allowed to coordinate activities to perform the action.

B. Perform the applicable X,Y,Z surveillance; by pursuing it without delay and in a controlled manner.

C. Check X,Y,Z status, by examining logs or other information; an hour is allowed to coordinate activities to perform the action.

D. Check X,Y,Z status, by examining logs or other information; by pursuing it without delay and in a controlled manner.

**Q 71**

0-EOI-4, Radioactivity Release Control, step RR-1 states:

**IF** Turbine building ventilation is shutdown **THEN** RESTART turbine building ventilation fans.

Which one of the following completes the statement below in accordance with EOIPM SECTION 0-II-T, RADIOACTIVITY RELEASE CONTROL BASES?

Operating turbine building ventilation preserves __ (1) __ and discharges radioactivity through an elevated, __ (2) __ release point.

A. (1) building accessibility
   (2) monitored

B. (1) building accessibility
   (2) filtered

C. (1) equipment operability
   (2) monitored

D. (1) equipment operability
   (2) filtered

**Q 72**

Which ONE of the following completes the statement below?

The Wide Range Gaseous Effluent Radiation Monitor System (WRGERMS) consists of __ (1) __ ranges, AND can be monitored remotely from __ (2) __.

A. (1) TWO
(2) all three Units Control Room

B. (1) TWO
(2) the UNIT 2 Control Room

C. (1) THREE
(2) all three Units Control Room

D. (1) THREE
(2) the UNIT 2 Control Room

**Q 73**

Which ONE of the following completes the statements below in accordance with RCI-9.1, Radiation Work Permits?

The Shift Manager has authorized immediate entry to a radiation area in emergency situations, Radiation Protection __ (1) __ be required to escort personnel entering the area.

When the area has been exited and the emergency situation is over an RWP __ (2) __ required to be completed for this entry.

A. (1) will
(2) is Not

B. (1) will
(2) is

C. (1) will Not
(2) is Not

D. (1) will Not
(2) is

**Q 74**

Which one of the following completes the statements below concerning implementation of the EPIP, Emergency Plan Implementing Procedure once all applicable facilities are staffed?

Command and control of the emergency response is the responsibility of the __ (1) __.

The dispatch and tracking of maintenance teams into the RCA is performed by personnel located in the __ (2) __.

A. (1) Main Control Room (MCR)
   (2) Operations Support Center (OSC)

B. (1) Technical Support Center (TSC)
   (2) Operations Support Center (OSC)

C. (1) Main Control Room (MCR)
   (2) Technical Support Center (TSC)

D. (1) Technical Support Center (TSC)
   (2) Technical Support Center (TSC)

**Q 75**

Which of the following completes both statements in accordance with 0-SSI-1, Safe Shutdown Instructions?

_____ are allowed to be implemented in parallel with the EOIs.

While these procedures are being implemented in parallel, IF there is a conflict between a SSI and an EOI, THEN the _____ takes precedence.

A. 0-SSI-1-1 through 0-SSI-24; EOIs

B. 0-SSI-1-1 through 0-SSI-24; SSIs

C. 0-SSI-25-1 through 0-SSI-25-3 and 26; EOIs

D. 0-SSI-25-1 through 0-SSI-25-3 and 26; SSIs

RO EXAM REFERENCES

RO Q 9. 2-AOI-74-1, Loss of Shutdown Cooling, Rev 39

SRO EXAM REFERENCES

SRO Q 76. NPG-SPP-03.5, Regulatory Reporting Requirements, Rev. 0010

SRO Q 77. EPIP-1, EMERGENCY CLASSIFICATION PROCEDURE, Rev 50

SRO Q 78. EPIP-1, EMERGENCY CLASSIFICATION PROCEDURE, Rev 50

SRO Q 82. EPIP-1, EMERGENCY CLASSIFICATION PROCEDURE, Rev 50

SRO Q 98. EPIP-1, EMERGENCY CLASSIFICATION PROCEDURE, Rev 50

SRO Q 79. EOI-CURVE 3, Heat Capacity Temp Limit.

SRO Q 84. EOI-CAUTION 1, EOI-CURVE 8 and Table 6.

SRO Q 87. T.S. 3.3.1.2 Source Range Monitor (SRM) Instrumentation

SRO Q 88. T.S. 3.3.1.1 Reactor Protection System (RPS) Instrumentation

SRO Q 90. T.S. 3.3.6.1 Primary Containment Isolation Instrumentation

SRO Q 91. T.S. 3.1.4 Control Rod Scram Times / Core Matrix showing location of slow rods

SRO Q 93. T.S. 3.4.5 RCS Leakage Detection Instrumentation

SRO Q 94. TR 3.4.1 Coolant Chemistry

Browns Ferry Nuclear Plant

**Unit 2**

Abnormal Operating Instruction

# 2-AOI-74-1

# Loss of Shutdown Cooling

Revision 0039

Quality Related

Level of Use: Continuous Use

Effective Date: 11-23-2013

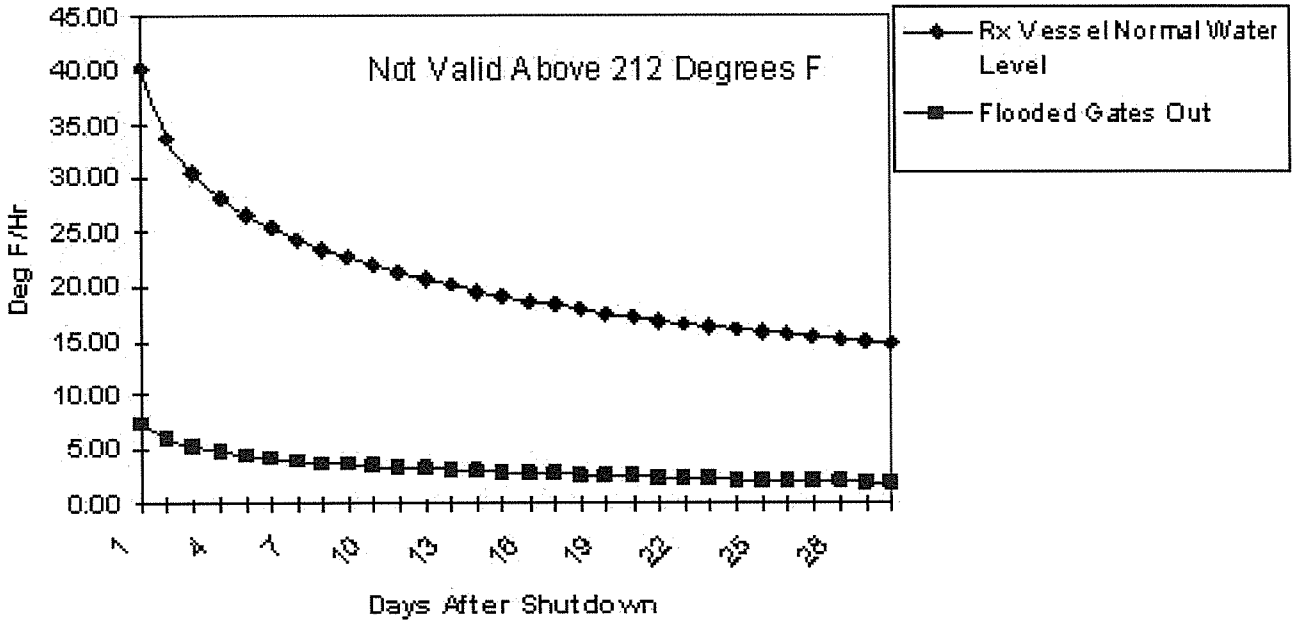
Responsible Organization: OPS, Operations

Prepared By: Phillip C. Chadwell

Approved By: Phillip Chadwell

**Illustration 1**
**(Page 1 of 1)**

**U2 Heatup Rate with Loss of Cooling**




Graph represents Conservative Values for any Cycle