ILT 2404 Written Exam-KEY

1. Which **ONE** of the following completes the statement below in accordance with EOIPM Section 0-I(J), User's Guide for the Emergency Operating Instructions (EOIs)?

   EOIs are _____ .

   A. event-based procedures where entry is keyed to abnormal events

   B. event-based procedures where entry is keyed to abnormal states of systems

   C. symptom-based procedures where entry is keyed to abnormal states of systems

   D. symptom-based procedures where entry is keyed to abnormal event symptoms

2. A LOCA occurred on Unit 3 resulting in the following conditions:

- Reactor Water Level reaches (-) 130 inches, slowly lowering
- '3B' EDG fails to start

Subsequently,

- 4KV Shutdown Board 3ED is powered from '3D' EDG

Given the conditions above, which **ONE** of the following completes both statements below?

Core Spray Pump 3A **(1)**.

Core Spray Pump 3D starts **(2)**.

A. (1) starts automatically
(2) immediately

B. (1) starts automatically
(2) in 7 seconds

C. (1) can be manually started **ONLY**
(2) immediately

D. (1) can be manually started **ONLY**
(2) in 7 seconds

3. Which **ONE** of the following completes the statement below in accordance with 2-EOI-2, Primary Containment Control?

The **LOWEST** Suppression Pool Temperature at which Suppression Pool Cooling is **REQUIRED** is _____.

A. 95 °F

B. 100 °F

C. 105 °F

D. 110 °F

4. Unit 2 is operating at 21% RTP, when the Main Turbine trips.

Which **ONE** of the following completes the statements below?

Following a Main Turbine trip, the Extraction Non-Return Valves close in order to prevent Main Turbine **(1)** . As a result of this transient, the Reactor **(2)** SCRAM.

A. (1) overspeed
(2) will

B. (1) overspeed
(2) will NOT

C. (1) overheating
(2) will

D. (1) overheating
(2) will NOT

5. Which **ONE** of the following completes the statement below in accordance with 1-EOI-1A, ATWS?

Cold Shutdown Boron Weight (CSBW) is **FIRST** reached when Standby Liquid Control (SLC) injection has lowered SLC Tank Level by approximately _____ from indicated initial tank level.

A. 9%

B. 12%

C. 30%

D. 90%

6. Unit 2 is in MODE 2 with the following conditions:

- A Reactor startup is in progress
- IRM 'B' is currently on Range 7 reading as indicated

Given the conditions above, which **ONE** of the following completes the statements below?

The as-given IRM indication pictured above **(1)** on Panel 2-9-5.

IRM CHANNEL 'B', 'D', 'F', 'H' **HI-HI/INOP** (2-9-5A, Window 34), will **FIRST** be in alarm at **(2)** of the indicated scale.

A. (1) is NOT
(2) 95

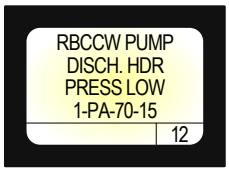
B. (1) is NOT
(2) 118

C. (1) is
(2) 95

D. (1) is
(2) 118

7. Unit 1 is operating at 100% RTP when the following conditions occur:

- RBCCW PUMP DISCHARGE HEADER PRESSURE LOW (1-9-4C, Window 12) alarms
- **NO** Operator actions have been taken



Given the conditions above and in accordance with the appropriate ARP, the spare RBCCW Pump can be started from _____.

A. Unit 1 **ONLY**

B. Unit 2 **ONLY**

C. Unit 1 and 2 **ONLY**

D. Unit 3 **ONLY**

8. Unit 2 is operating at 100% RTP when the following occurs:

- REACTOR WATER LEVEL ABNORMAL (2-9-5A, Window 8) alarms

Given the current conditions, which **ONE** of the following completes the statement below?

The setpoints for the given annunciator alarms when Reactor Water Level lowers to less than or equal to (≤) **(1)** and rises to greater than or equal to (≥) **(2)**.

A. (1) 27 inches
(2) 36 inches

B. (1) 27 inches
(2) 39 inches

C. (1) 30 inches
(2) 36 inches

D. (1) 30 inches
(2) 39 inches

9. Unit 2 startup is in progress, Reactor Power is approximately 20% with the following conditions:

- 2-HS-99-5A/S1, REACTOR MODE SWITCH, in RUN
- Main Turbine has just been paralleled with the grid
- Main Turbine First Stage Shell Pressure is 101 psig
- No IRMs are bypassed
- No APRMs are bypassed

Given the conditions above, which **ONE** of the following will result in a **FULL** Reactor SCRAM in accordance with 2-OI-99, Reactor Protection System (RPS)?

A. IRMs 2A and 2F failing UPSCALE

B. Critical Self-Test Fault on APRM #2

C. A Main Turbine Trip resulting from a Main Generator Breaker fault

D. EHC System failure resulting in Reactor Pressure rising to 1080 psig

10. Unit 2 is operating at 100% RTP when the following occurs:

- MAIN STEAM RELIEF VALVE OPEN (2-9-3C, Window 25) alarms

Which **ONE** of the following completes the statements below in accordance with the applicable ARP?

2-9-3C, Window 25, annunciates based on exceeding SRV Tailpipe **(1)** setpoint value.

It **(2)** permissible to monitor MSRV Discharge Tailpipe Temperatures **SOLELY** using the corresponding Integrated Computer System (ICS) temperature computer points.

A. (1) Flow
(2) is

B. (1) Flow
(2) is NOT

C. (1) Temperature
(2) is

D. (1) Temperature
(2) is NOT

11. A Unit 3 startup is in progress with the following conditions:

- 3-HS-99-5A/S1, REACTOR MODE SWITCH, in STARTUP/HOT STANDBY
- **ALL** IRMs are on Range 1
- SRM indications are as follows:
  - SRM A: 2 cps, full in
  - SRM B: 130 cps, full in
  - SRM C: 160 cps, partially withdrawn
  - SRM D: 8.6 x 10^3 cps, partially withdrawn
- **NO** Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statement below?

An SRM Rod Block is _____.

A. NOT received

B. received due to an SRM High signal

C. received due to an SRM Downscale signal

D. received due to an SRM Retract Permit signal

12. Unit 1 was operating at 100% RTP when a manual SCRAM was required. The crew just completed a successful reset of both RPS ‘A’ and ‘B’, when a transient occurred resulting in the following conditions:

- 1-FCV-1-14 (26) (37) (51), INBOARD MSIVs, are OPEN
- 1-FCV-1-15 (27) (38) (52), OUTBOARD MSIVs, are CLOSED
- 1-FCV-85-39A (B), SCRAM INLET and OUTLET VALVES, are OPEN
- 1-FCV-85-11A (B), CRD SYSTEM FLOW CONTROL VALVES, are CLOSED
- 1-FCV-3-20 (13) (6), RFP 1A (1B) (1C) MINIMUM FLOW VALVES, are OPEN

Which **ONE** of the following completes the statement below?

Given the conditions above, a loss of _____ has occurred.

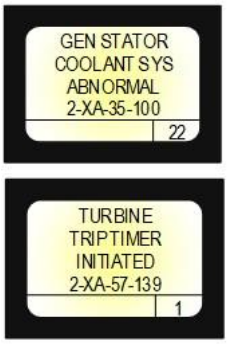
A. Control Air

B. both RPS Buses

C. Drywell Control Air

D. 9-9 Cabinet 5, Unit Non-Preferred

13. Unit 2 is operating at 100% RTP when the following conditions occur:



- GENERATOR STATOR COOLANT SYSTEM ABNORMAL (2-9-7A, WINDOW 22) alarms
- TURBINE TRIP TIMER INITIATED (2-9-8A, WINDOW 1) alarms
- Operator reports that no Stator Cooling Water Pumps are running
- The standby Stator Cooling Water Pump was then started manually

Given the conditions above, which **ONE** of the following completes the statements below?

In accordance with 2-9-7A, WINDOW 22, the Operator **(1)** required to attempt to reset 2-9-8A, WINDOW 1.

If the standby Stator Cooling Water Pump could **NOT** be started, the Main Turbine will automatically trip no later than **(2)** after 2-9-8A, WINDOW 1, alarms.

A. (1) is
(2) 27 seconds

B. (1) is NOT
(2) 27 seconds

C. (1) is
(2) 60 seconds

D. (1) is NOT
(2) 60 seconds

14. In accordance with EOI-2, Primary Containment Control and its associated Bases, which **ONE** of the following completes the statements below?

Drywell Sprays are required **BEFORE** exceeding a **MAXIMUM** Drywell Temperature of **(1)** and **(2)** based on protection of the qualification of the Automatic Depressurization System (ADS).

A. (1) 280 ºF
(2) is

B. (1) 280 ºF
(2) is NOT

C. (1) 350 ºF
(2) is

D. (1) 350 ºF
(2) is NOT

15. Which **ONE** of the following completes the statements below in accordance with 0-AOI-32-1, Loss of Control and Service Air Compressors?

0-FCV-33-1, SERVICE AIR CROSSTIE VALVE, will automatically open below a MAXIMUM of **(1)** Control Air Pressure.

1-PCV-32-3901, UNIT 1 TO UNIT 2 CONTROL AIR CROSSTIE, **(2)** automatically close at 65 psig.

A. (1) 70 psig
(2) will

B. (1) 70 psig
(2) will NOT

C. (1) 85 psig
(2) will

D. (1) 85 psig
(2) will NOT

16. Unit 3 was operating at 100% RTP when an event resulted in lowering Suppression Pool Water Level.

Which **ONE** of the following completes the statements below?

During the performance of 3-EOI Appendix-18, Suppression Pool Water Inventory Removal and Makeup, the High Pressure Coolant Injection (HPCI) System **(1)** available for make-up to the Suppression Pool.

With lowering Suppression Pool Water Level, the **(2)** will be reached **FIRST**.

A. (1) is NOT
(2) Downcomer Opening

B. (1) is NOT
(2) HPCI/RCIC Turbine exhaust

C. (1) is
(2) Downcomer Opening

D. (1) is
(2) HPCI/RCIC Turbine exhaust

17. Unit 2 was operating at 100% RTP when an event occurred, resulting in the following conditions:

- A manual Reactor SCRAM was inserted
- 2-AOI-100-1, Reactor SCRAM, ATWS Actions are reported as complete
- **ALL** 8 red lights for RPS Group A (4) and B (4), remain illuminated on Panel 2-9-5
- Reactor Water Level is (-) 55 inches, steady
- Reactor Power at 30%, lowering
- The crew has **NOT** completed any Subsequent or EOI actions

Given the conditions above, which **ONE** of the following completes the statement below?

The crew **(1)** initiated Alternate Rod Insertion System (ARI), and SLC **(2)** been initiated.

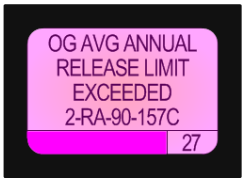
A. (1) has
(2) has

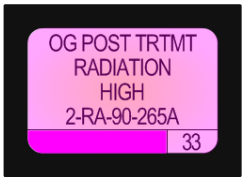
B. (1) has
(2) has NOT

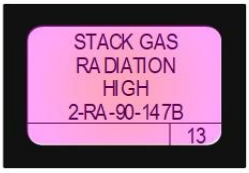
C. (1) has NOT
(2) has

D. (1) has NOT
(2) has NOT

18. Unit 2 is performing 2-GOI-100-1A, Unit Startup, Section 5.5 – MODE 1 Operations, when the following alarms occur:







- OFFGAS AVERAGE ANNUAL RELEASE RATE EXCEEDED (2-9-4C, Window 27)
- OFFGAS POST TREATMENT RADIATION HIGH (2-9-4C, Window 33)
- STACK GAS RADIATION HIGH (2-9-3A, WINDOW 13)

Given the conditions above, which **ONE** of the following completes the statements below in accordance with the applicable procedure(s)?

The crew is required to verify the charcoal adsorbers are in service prior to reaching a **MAXIMUM** of **(1)** Reactor Power.

2-FCV-66-113B, ADSORBER BYPASS VALVE, **(2)** receive an automatic CLOSE signal.

A. (1) 25%
(2) will NOT

B. (1) 25%
(2) will

C. (1) 40%
(2) will NOT

D. (1) 40%
(2) will

19. Fire Operations has responded to a fire in the Unit 3 Auxiliary Instrument Room.

The Incident Commander has requested securing ventilation.

Which **ONE** of the following completes the statements below in accordance with 0-AOI-26-1, Fire Response?

If ventilation **CANNOT** be secured from the control switch on Attachment 1, Ventilation Controls, an Assistant Unit Operator (AUO) will be directed to **(1)**.

Performing the above action supports **(2)**.

A. (1) trip the appropriate Air Handling Unit breaker
(2) termination of ventilation air flow

B. (1) trip the appropriate Air Handling Unit breaker
(2) Carbon Dioxide (CO_2) usage

C. (1) manually close the affected ventilation damper
(2) termination of ventilation air flow

D. (1) manually close the affected ventilation damper
(2) Carbon Dioxide (CO_2) usage

20. Unit 1 was operating at 100% RTP when a PCIS Group 1 Isolation occurs causing an automatic SCRAM and resulting in the following conditions:

- Reactor Pressure is 980 psig and stable
- RCIC Flow Controller is in AUTO, set at 620 gpm
- RCIC speed is 4500 rpm
- RCIC is maintaining Reactor Water Level at (+) 5 inches

Subsequently, an SRV is opened resulting in Reactor Pressure lowering to 800 psig.

- **NO** other Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below describing how RCIC parameters respond?

After conditions have stabilized, RCIC flow **(1)** and turbine speed **(2)**.

A. (1) changes
(2) lowers

B. (1) changes
(2) rises

C. (1) remains unchanged
(2) lowers

D. (1) remains unchanged
(2) rises

21. In accordance with 2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High / Low, which **ONE** of the following identifies a consequence of allowing Reactor Water Level to rise to the point that water enters the Main Steam Lines?

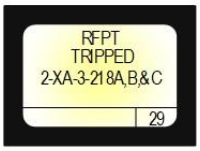
A. The Safety Relief Valves (SRVs) could fail to OPEN.

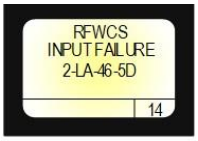
B. The Safety Relief Valves (SRVs) could fail to CLOSE.

C. The Drywell Equipment Drain Sump could OVERFILL.

D. High Pressure Coolant Injection (HPCI) system could be DAMAGED.

22. Unit 2 in operating at 100% RTP with Reactor Feedwater Control System (RFWCS) aligned normally in accordance with 2-OI-3, RFW System, when the following occurs:





- RFPT TRIPPED (2-9-6C, Window 29) alarms
- RFWCS INPUT FAILURE (2-9-6C, Window 14) alarms
- 2-FI-46-3, Main Steam Line 'C' Flow, indicates UPSCALE

Given the conditions above, which **ONE** of the following completes the statement below?

RFWCS will _____ control.

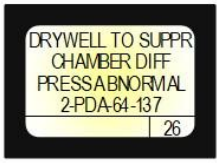
A. remain in Single Element

B. remain in Three Element

C. automatically swap to Single Element

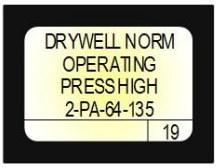
D. automatically swap to Three Element

23. Unit 2 is operating at 100% RTP when the following occurs:



- DRYWELL TO SUPPRESSION CHAMBER DIFFERENTIAL PRESSURE ABNORMAL (2-9-3B, Window 26) alarms

Subsequently,



- DRYWELL NORMAL OPERATING PRESSURE HIGH (2-9-3B, Window 19) alarms

Given the conditions above, which **ONE** of the following completes the statements below?

The Drywell DP Compressor **(1)** receive an automatic **STOP** signal.

The above 2-9-3B, Window 19, alarm setpoint is **(2)**.

A. (1) did
   (2) 1.60 psig

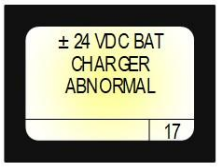
B. (1) did
   (2) 1.96 psig

C. (1) did NOT
   (2) 1.60 psig

D. (1) did NOT
   (2) 1.96 psig

24. Unit 2 is in **MODE 2** with a startup in progress when the following occurs:

At 0700 a loss of I&C Bus 'A' occurs with the following:



- +/- 24 VDC BATTERY CHARGER ABNORMAL (2-9-5B, Window 17) alarms
- Control Bay AUO reports:
  - 2-EI-283-0000A1-2, 24V Battery Charger A1-2 Voltmeter, indicates 22 VDC
  - 2-EI-283-0000A2-2, 24V Battery Charger A2-2 Voltmeter, indicates 22 VDC
- **NO** other Operator actions have been taken

Given that the conditions above persist until time 1100, which **ONE** of the following completes the statement below in accordance with the appropriate ARP?

A loss of associated IRMs **(1)** occurred and a HALF SCRAM **(2)** automatically occurred.

A. (1) has
   (2) has NOT

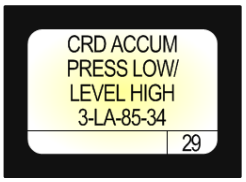
B. (1) has
   (2) has

C. (1) has NOT
   (2) has NOT

D. (1) has NOT
   (2) has

25. Unit 3 is operating at 100% RTP at the End of Core Life with **ALL** Control Rods fully withdrawn.

CRD Pump 3A has been tagged out for repairs when the following plant conditions occur:



- At 05:15 – 4KV Shutdown Board 3EA de-energizes and locks out due to a fault
- At 05:16 - Charging Water Header Pressure is 930 psig and slowly lowering
- At 05:19 - CRD ACCUMULATOR PRESS LOW/LEVEL HIGH (3-9-5A, Window 29) alarms
- At 05:23 - AUO reports Control Rod 30-31 Accumulator Pressure is 900 psig
- At 05:24 - AUO reports Control Rod 22-19 Accumulator Pressure is 920 psig

Given the conditions above, which **ONE** of the following completes the statements below?

At 0524, in accordance with 3-AOI-85-3, CRD System Failure, a manual SCRAM is required within a **MAXIMUM** of **(1)** due to the risk of **(2)**.

A. (1) 60 minutes
(2) drifting Control Rods

B. (1) 60 minutes
(2) loss of SCRAM capability

C. (1) 20 minutes
(2) drifting Control Rods

D. (1) 20 minutes
(2) loss of SCRAM capability

26. After a Unit 2 Reactor SCRAM, the following conditions exist:

- Reactor Pressure is 958 psig, rising
- Reactor Water Level lowered to (-) 25 inches, currently (-) 5 inches
- Main Condenser Vacuum is 20 inches Hg, stable
- SUPPRESSION POOL LEVEL HIGH (2-9-3F, Window 12) in alarm
- **NO** other Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statement below?

In accordance with 2-EOI-1, RPV Control MODES 1-3, _____ is(are) currently available to augment Reactor Pressure Control?

A. RCIC

B. RWCU

C. HPCI

D. RFPTs

27. Unit 1 was operating at 100% RTP when the following conditions occurred:

- Reactor Pressure is 400 psig
- Reactor Water Level is (-) 140 inches and slowly lowering

Given the conditions above, which **ONE** of the following completes the statement below?

1-FCV-74-52, RHR SYSTEM I LPCI OUTBOARD INJECTION VALVE, is **(1)**, and 1-FCV-74-7, RHR SYSTEM I MINIMUM FLOW VALVE, is **(2)**.

A. (1) open
(2) open

B. (1) open
(2) closed

C. (1) closed
(2) open

D. (1) closed
(2) closed

28. Unit 1 is in MODE 4, with the following conditions:

- 1A RHR Pump is aligned to Shutdown Cooling (SDC) Mode
- EECW/RHRSW is in a normal lineup
- A2 RHRSW Pump tripped and **CANNOT** be restarted
- **NO** Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below?

1-FCV-23-34, 1A RHR HEAT EXCHANGER OUTLET VALVE, **(1)** automatically close.

In accordance with 1-AOI-74-1, Loss of Shutdown Cooling, Operators are required to start **(2)** RHRSW Pump.

A. (1) will
   (2) A1

B. (1) will
   (2) C2

C. (1) will NOT
   (2) A1

D. (1) will NOT
   (2) C2

29. Which **ONE** of the following completes the statements below in accordance with 2-EOI Appendix-11C, Alternate RPV Pressure Control Systems HPCI Test Mode?

When operating HPCI for Reactor Pressure Control, 2-FCV-73-36, HPCI/RCIC CST TEST VALVE, **(1)** required to be OPEN.

Upon re-alignment of HPCI for Reactor injection, 2-FCV-73-35, HPCI PUMP CST TEST VALVE, **(2)** required to be CLOSED.

A. (1) is
(2) is

B. (1) is
(2) is NOT

C. (1) is NOT
(2) is

D. (1) is NOT
(2) is NOT

30. With Unit 2 in MODE 1, which **ONE** of the following completes the statements below in accordance with 2-OI-75, Core Spray?

Core Spray System normal suction supply is from the **(1)**.

Core Spray System is currently being charged by the **(2)**.

A. (1) CST
(2) PSC Head Tank

B. (1) CST
(2) CST System

C. (1) Suppression Pool
(2) PSC Head Tank

D. (1) Suppression Pool
(2) CST System

31. Unit 2 is operating in **MODE 4** when a spurious High Reactor Pressure Isolation signal causes a Loss of RHR Shutdown Cooling.

Which **ONE** of the following completes the statement below in accordance with 2-AOI-74-1, Loss of Shutdown Cooling?

Given the conditions above, _____ will be the **FIRST** alternate decay heat removal system used by the operating crew.

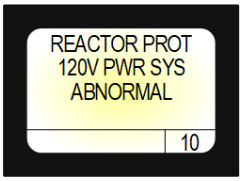
A. ADHR

B. RWCU

C. FPC

D. CRD

32. Unit 2 is operating at 100% RTP when the following occurs:



- 2B Reactor Protection System (RPS) Motor Generator (MG) trips
- REACTOR PROTECTION 120V POWER SYSTEM ABNORMAL (2-9-5B, Window 10) alarms
- 2B RPS is then transferred to its alternate power supply
- **NO** other Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below?

CURRENTLY, 2B RPS **(1)** powered by 480V RMOV 2B.

With 2B RPS on its alternate power supply, 2-9-5B, Window 10, **(2)** reset.

A. (1) is NOT
(2) will

B. (1) is NOT
(2) will NOT

C. (1) is
(2) will

D. (1) is
(2) will NOT

33. In accordance with 2-AOI-100-2, Control Room Abandonment, which **ONE** of the following completes the statements below regarding Reactor Pressure Control?

From Backup Control Panel 2-25-32, Reactor Pressure **(1)** be controlled **AUTOMATICALLY**.

RCIC **(2)** be used for Reactor **PRESSURE** Control from Panel 2-25-32.

A. (1) can
(2) can

B. (1) can
(2) can NOT

C. (1) can NOT
(2) can

D. (1) can NOT
(2) can NOT

34. The Unit 2 NUSO directs venting the Drywell in accordance with 2-OI-64, Primary Containment Systems.

Given the conditions above, which **ONE** of the following completes the statement below?

Standby Gas Train **___(1)___** will be started and stopped from Panel 9-25 on **___(2)___**.

A. (1) 'A'
(2) Unit 2

B. (1) 'B'
(2) Unit 3

C. (1) 'C'
(2) Unit 2

D. (1) 'C'
(2) Unit 1

35. Which **ONE** of the following completes the statements below in accordance with 2-GOI-100-1A, Unit Startup and Power Operation, and Technical Specification 3.3.1.2, Source Range Monitor (SRM) Instrumentation?

To demonstrate OPERABILITY, an SRM must indicate a count rate above a **MINIMUM** of **(1)**.

SRM count rate indication is compensated to **(2)** the contribution of gamma fission interactions.

NOTE: cps (Counts Per Second)

A. (1) $3x10^0$ cps
(2) maximize

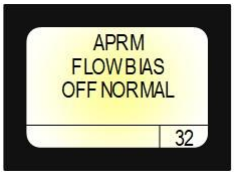
B. (1) $3x10^0$ cps
(2) minimize

C. (1) $3x10^2$ cps
(2) maximize

D. (1) $3x10^2$ cps
(2) minimize

36. Unit 2 is operating at 100% RTP with the following conditions:

- APRM FLOW BIAS OFF NORMAL, (2-9-5A, Window 32) alarms



Given the conditions above, which **ONE** of the following completes the statements below?

In accordance with the appropriate ARP, a Control Rod Block **(1)** automatically occur.

Receipt of the 2-9-5A, Window 32, annnunciator is due to exceeding the sensor setpoint of **(2)**.

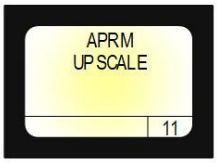
A. (1) will NOT
(2) a single APRM channel

B. (1) will NOT
(2) two APRM channels

C. (1) will
(2) a single APRM channel

D. (1) will
(2) two APRM channels

37. Unit 1 is operating at 100% RTP when the following occurs:



- APRM UPSCALE (1-9-5A, Window 11) alarms
- NUSO directs a manual bypass of APRM 1 using 1-HS-92-7B/ S3A, APRM BYPASS

Given the conditions above, which **ONE** of the following completes the statements below in accordance with 1-OI-92B, Average Power Range Monitoring?

With APRM 1 bypassed, OPRM 1 **(1)** bypassed.

Subsequently, if an additional APRM fails UPSCALE, an automatic SCRAM signal **(2)** be generated by the APRM voters.

A. (1) is NOT
(2) will NOT

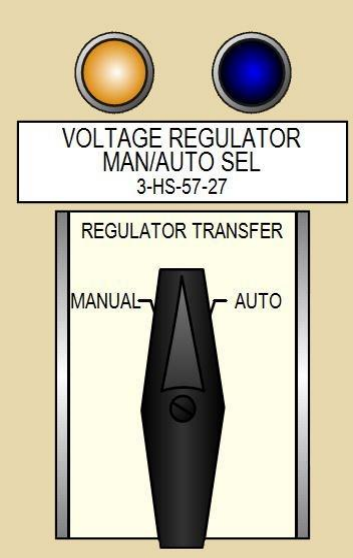
B. (1) is NOT
(2) will

C. (1) is also
(2) will NOT

D. (1) is also
(2) will

38. Unit 2 is operating at 100% RTP when the following occurs:

- 2-HS-57-27, VOLTAGE REGULATOR MANUAL/AUTO SELECT, handswitch has the following indications
  - Amber light is LIT
  - Blue light is EXTINGUISHED



Given the conditions above, which **ONE** of the following completes the statements below in accordance with the appropriate ARP?

Receipt of annunciator, EXCITATION SYSTEM TRANSFER TO MANUAL (2-9-8A, Window 3), **(1)** expected.

The current light indications for 2-HS-57-27 **(2)** expected.

A. (1) is
   (2) are

B. (1) is
   (2) are NOT

C. (1) is NOT
   (2) are

D. (1) is NOT
   (2) are NOT

39. A Unit 2 startup is in progress with the following conditions:

- Reactor Pressure is 135 psig
- 250 VDC RMOV Board 2A is lost
- ADS BLOWDOWN POWER FAILURE (2-9-3C, Window 32) alarms

Given the conditions above, which **ONE** of the following completes the statements below in accordance with Tech Spec 3.5.1, EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM?

Automatic Depressurization System (ADS) currently **(1)** required to be OPERABLE.

In accordance with the appropriate ARP, **ONLY** **(2)** ADS Valves have lost their **NORMAL** power supply.

A. (1) is
(2) 2

B. (1) is
(2) 4

C. (1) is NOT
(2) 2

D. (1) is NOT
(2) 4

40. Unit 2 is operating at 100% RTP when the following occurs:

- 2-LI-3-203D, REACTOR WATER LEVEL NORMAL RANGE, fails **DOWNSCALE**
- 2-LI-3-148AA, REACTOR WATER LEVEL WIDE RANGE, fails **DOWNSCALE**
- **NO** Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below?

Failure of the **(1)** Level Instrument will provide a PCIS Group 2 input signal.

Failure of the **(2)** Level Instrument will provide a Reactor SCRAM input signal.

A. (1) 2-LI-3-203D
   (2) 2-LI-3-203D

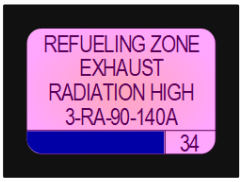
B. (1) 2-LI-3-203D
   (2) 2-LI-3-148AA

C. (1) 2-LI-3-148AA
   (2) 2-LI-3-203D

D. (1) 2-LI-3-148AA
   (2) 2-LI-3-148AA

41. Unit 3 is in a Refueling Outage when the following conditions occur:

- An irradiated fuel bundle is dropped onto the Reactor Core
- REFUELING ZONE EXHAUST RADIATION HIGH (3-9-3A, Window 34) alarms



Given the conditions above, which **ONE** of the following completes the statements below?

An automatic isolation of the **(1)** occurs.

The 3-9-3A, Window 34 annunciator is valid above a **MINIMUM** value of **(2)**.

A. (1) Refuel Zone Ventilation **ONLY**
(2) 50 mr/hr

B. (1) Refuel Zone Ventilation **ONLY**
(2) 75 mr/hr

C. (1) Refuel Zone **AND** Unit 3 Reactor Building Ventilation
(2) 50 mr/hr

D. (1) Refuel Zone **AND** Unit 3 Reactor Building Ventilation
(2) 75 mr/hr

42. Unit 1 is operating at 100% RTP with the following conditions:

Component:	**Status:**
• 4KV Unit Board **2A**	Energized
• 2-HS-57-3, 4KV UNIT BD **2A** NORM FDR BKR 1212, Control Switch	Normal-After-Close
• 2-HS-57-5, 4KV UNIT BD **2A** ALT FDR BKR 1428, Control Switch	Normal-After-Open
• 2-XS-57-4, 4KV UNIT BD **2A** MAN/AUTO SELECT Switch	AUTO

Given the conditions above, which **ONE** of the following completes the statement below?

When 2-HS-57-3, 4KV UNIT BD **2A** NORM FDR BKR 1212, Control Switch is **MANUALLY** taken to TRIP**,** the Normal Feeder Breaker 1212 **(1)** and the Alternate Feeder Breaker 1428 **(2)**.

A. (1) OPENS
(2) CLOSES

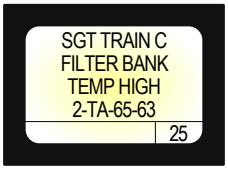
B. (1) OPENS
(2) remains OPEN

C. (1) remains CLOSED
(2) CLOSES

D. (1) remains CLOSED
(2) remains OPEN

43. An event has occurred on Unit 2, requiring the use of the Standby Gas Treatment (SGT) System, with the following conditions:

- SGT TRAIN C FILTER BANK TEMP HIGH (2-9-3B, Window 25) alarms



Given the conditions above, which **ONE** of the following completes the statements below?

The SGT decay heat removal mode **(1)** initiated.

0-DMP-065-0052, Train C Decay Heat Damper, is powered from **(2)**.

A. (1) is automatically
(2) 'A' Diesel Aux Board

B. (1) is automatically
(2) 'A' 480V Common Board

C. (1) must be manually
(2) 'A' Diesel Aux Board

D. (1) must be manually
(2) 'A' 480V Common Board

44. All Units are operating at 100% RTP when the following occurs:

- Battery Board 2 de-energized
- **NO** Operator Actions have been taken

Given the conditions above, which **ONE** of the following completes the statement below?

4KV Shutdown Board _____ has lost **NORMAL** breaker control power.

A. B

B. C

C. 3EA

D. 3ED

45. Unit 3 is operating at 100% RTP when the following conditions occur:

- Reactor Water Level is (+) 33 inches
- OATC reports REACTOR WATER LEVEL NARROW RANGE instruments 3-LI-3-53 (LEVEL **A**) and 3-LI-3-253 (LEVEL **D**) failed **DOWNSCALE**
- **NO** Operator Actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below?

3-LIC-46-5, REACTOR WATER LEVEL MASTER CONTROLLER PANEL DISPLAY STATION (PDS), is in **(1)** mode.

Once bypassed, the Operator will verify the bypass status of failed instruments by checking for an illuminated **(2)** status light.

A. (1) AUTOMATIC
(2) amber

B. (1) AUTOMATIC
(2) blue

C. (1) MANUAL
(2) amber

D. (1) MANUAL
(2) blue

46. Unit 1 is operating at 100% RTP with the following conditions:

- Unit Preferred power to Battery Board 1 Panel 11 is lost due to the 1001 breaker tripping
- Panel 1-9-9 Cabinet 5, Non-Preferred, and Cabinet 6, Unit Preferred, are on their respective **ALTERNATE** power supplies in accordance with 1-AOI-57-4, Loss of Unit Preferred

The Unit Operator is now ready to re-energize Battery Board 1, Panel 11 using 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 **(1)** automatically transfer to normal power, and Panel 1-9-9 Cabinet 6 **(2)** automatically transfer to normal power.

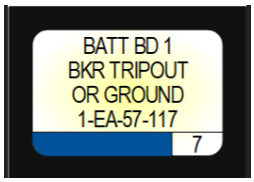
A. (1) will
(2) will

B. (1) will NOT
(2) will

C. (1) will
(2) will NOT

D. (1) will NOT
(2) will NOT

47. Unit 1 is operating at 100% RTP when the following alarm is received:



- BATTERY BOARD 1 BREAKER TRIPOUT OR GROUND (1-9-8C, Window 7)

Given the condition above, which **ONE** of the following completes the statements below?

In accordance with 1-ARP-9-8C, Window 7, to investigate for 250V DC ground indication, associated volts/amps **(1)** available on Panel 1-9-8.

After a loss of normal battery charger, 0-OI-57D, DC Electrical System, procedurally requires placing a new charger in service within a **MAXIMUM** of **(2)**.

A. (1) are
(2) 30 minutes

B. (1) are
(2) 4 hours

C. (1) are NOT
(2) 30 minutes

D. (1) are NOT
(2) 4 hours

48. Which **ONE** of the following completes the statement below?

The power supply for ‘3A’ EDG electric fuel oil priming pump is _____**.**

A. 480V DSL AUX BOARD ‘A’

B. 480V DSL AUX BOARD ‘3EA’

C. 125V DC DSL SYSTEM BATTERY BOARD ‘A’

D. 125V DC DSL SYSTEM BATTERY BOARD ‘B’

49. Unit 2 Operators are responding in accordance with 2-EOI-1A, ATWS, with the following conditions:

- ATWS actions are complete
- Reactor Pressure is currently stable at 1000 psig using SRVs
- Reactor Power currently indicates 12%

Given the conditions above, which **ONE** of the following completes the statements below?

In accordance with BFN-ODM-4.20, Strategies for Successful Transient Mitigation, to lower Reactor Pressure, the designated Operator will OPEN a **MINIMUM** of **(1)** additional SRV(s).

The Reactor Pressure SCRAM initiation signal setpoint **(2)** be bypassed in accordance with 2-EOI-1A.

A. (1) two
(2) can

B. (1) two
(2) can NOT

C. (1) one
(2) can

D. (1) one
(2) can NOT

50. Which **ONE** of the following completes the statements below?

The RBCCW Pumps operate where _____.

A. Pump Volumetric Flow Rate/capacity ($\dot{V}$ in gpm) is directly proportional to the Pump Speed (n).

B. Pump Head/discharge head (H_P in psid or feet) is directly proportional to the cube (n^3) of Pump Speed (n).

C. Power required by the pump motor (P in kW) is directly proportional to square (n^2) of Pump Speed (n).

D. Current draw of the pump (I in amps) is directly proportional to Pump Speed (n).

51. Unit 1 is operating at 100% RTP when a Loss of Control Air occurs.

Given the condition above, which **ONE** of the following completes the statements below?

The Raw Cooling Water (RCW) six (6) inch temperature control valves, 1-TCV-24-80A, 85A, 90A, RBCCW HEAT EXCHANGER, will fail **(1)**.

If RCW Pressure lowers to 15 psig supporting RBCCW Heat Exchangers, RHRSW/EECW Pump C3 **(2)** receive an automatic start signal.

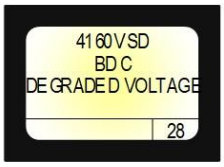
A. (1) OPEN
(2) will

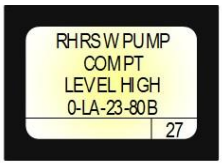
B. (1) OPEN
(2) will NOT

C. (1) CLOSED
(2) will

D. (1) CLOSED
(2) will NOT

52. Unit 1 is operating at 100% RTP when the following occurs:





- 4160V SHUTDOWN BOARD 'C' DEGRADED VOLTAGE (1/2-9-23C, Window 28) alarms
- The supporting EDG fails to start
- RHRSW PUMP COMPARTMENT LEVEL HIGH (1-9-22A, Window 27) alarms
- AUO reports 'A' and 'B' sump pumps in RHRSW Pump Room 'C' will **NOT** operate
- **NO** Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below?

(1) RHRSW/EECW Pumps are now INOPERABLE.

(2) RHRSW/EECW Pumps have lost their associated power supply.

A. (1) **ONLY** C1, C2
(2) B2 and B3

B. (1) **ONLY** C1, C2
(2) C1 and C2

C. (1) C1, C2, **AND** C3
(2) B2 and B3

D. (1) C1, C2, **AND** C3
(2) C1 and C2

53. Unit 3 is operating at 100% RTP when an event results in the following conditions:

- A manual SCRAM is inserted
- Reactor Water Level lowers to (-) 60 inches
- All 4 SCRAM solenoid group 'A' lights are **ILLUMINATED**
- All 4 SCRAM solenoid group 'B' lights are **EXTINGUISHED**
- **ALL** Control Rods inserted to '00'

Given the conditions above, which **ONE** of the following completes the statements below?

The Control Rods inserted from the operation of **(1)** which are energized from **(2)**.

A. (1) Alternate Rod Insertion (ARI) valves
(2) 120 VAC

B. (1) Alternate Rod Insertion (ARI) valves
(2) 250 VDC

C. (1) Backup SCRAM valves
(2) 120 VAC

D. (1) Backup SCRAM valves
(2) 250 VDC

54. Unit 3 was operating at 100% RTP when the following plant conditions occur:

- Control Rod 46-27 was at position 10 when its **ONES** digit position indication was lost
- 3-AOI-85-4, Loss of RPIS, is entered

Given the conditions above, which **ONE** of the following completes the statements below in accordance with 3-AOI-85-4?

Control Rod 46-27 **(1)** be moved to an Operable Position Indication as a means of position verification.

If it is determined that Operators must SCRAM Control Rod 46-27, this will be conducted from **(2)** .

A. (1) can
(2) the Aux Instrument Room

B. (1) can
(2) Battery Board Room 3

C. (1) can NOT
(2) the Aux Instrument Room

D. (1) can NOT
(2) Battery Board Room 3

55. Unit 2 is operating at 100% RTP when an event results in the following:

- At 0900, Drywell Pressure is 2.5 psig and rising slowly
- At 0905, Reactor Water Level reaches (-) 122 inches and lowering slowly
- At 0906, Balance of Plant Operator depresses 2-XS-1-159, HI DW/PRESS/RX LO LVL LOGIC 'A' RESET, and 2-XS-1-161, HI DW/PRESS/RX LO LVL LOGIC 'B' RESET
- All Low Pressure ECCS Pumps failed to automatically start

Given the conditions above, which **ONE** of the following completes the statement below?

AFTER 0906, ADS SRVs will automatically open **(1)** later, if **(2)** is manually started.

A. (1) 35 seconds
(2) 2A Core Spray Pump

B. (1) 35 seconds
(2) 2A RHR Pump

C. (1) 95 seconds
(2) 2A Core Pray Pump

D. (1) 95 seconds
(2) 2A RHR Pump

56. Unit 3 is operating at 100% RTP with the following conditions:

- A HPCI SR is in progress
- RHR Loop I Suppression Pool Cooling is in service

Subsequently, the following conditions occur:

- Drywell Pressure 3 psig
- Reactor Pressure 400 psig
- Reactor Water Level (-) 80 inches

Given the conditions above, which **ONE** of the following completes the statements below?

3-FCV-74-59, RHR SYSTEM I SUPPRESSION POOL COOLING / TEST VALVE, **(1)** receive an automatic closure signal.

3-FCV-74-57, RHR SYSTEM I SUPPRESSION CHAMBER/POOL ISOLATION VALVE, **(2)** receive an automatic closure signal.

A. (1) will
(2) will NOT

B. (1) will
(2) will

C. (1) will NOT
(2) will NOT

D. (1) will NOT
(2) will

57. Unit 2 is operating at 100% RTP with the following initial conditions:

- 2B Fuel Pool Cooling (FPC) Pump is tagged
- Fuel Pool Temperature is 115 °F

Subsequently, the following occurs:

- The in service 2A FPC Pump tripped
- **NO** Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statements below?

In accordance with 2-AOI-78-1, Fuel Pool Cleanup System Failure, 2-TR-74-80, RHR/FUEL POOL COOLING TEMPERATURE, indications ___**(1)**___ currently valid.

Based on initial Fuel Pool Temperature, 2-EOI-3, SECONDARY CONTAINMENT CONTROL, entry ___**(2)**___ required.

A. (1) are
(2) is

B. (1) are
(2) is NOT

C. (1) are NOT
(2) is

D. (1) are NOT
(2) is NOT

58. Unit 3 has experienced a LOCA resulting in the following conditions:

- Suppression Pool Temperature is stable at 200 ºF
- Suppression Chamber Pressure is stable at 5 psig
- Suppression Pool Level is (-) 5.5 inches and lowering
- Drywell Pressure is stable at 10 psig
- 3A RHR Pump flow is 11,500 gpm
- 3B/3D Core Spray Pump combined flow is 4,000 gpm
- **NO** other ECCS Pumps are running

Given the current conditions above, which **ONE** of the following identifies the ECCS Pump(s), if any, that has/have sufficient NPSH for continued operation?

[REFERENCE PROVIDED]

A. **NONE**

B. 3A RHR Pump **ONLY**

C. 3B/3D Core Spray Pumps **ONLY**

D. 3B/3D Core Spray Pumps **AND** 3A RHR Pump

59. Unit 2 is operating at 100% RTP when the following occurs:

- CONDENSATE DEMIN ABNORMAL (2-9-6B, WINDOW 6) alarms
- Operator reports that 2-FCV-2-130, CONDENSATE DEMINERALIZER BYPASS VALVE, is OPEN
- **NO** Operator actions have been taken

Given the conditions above, which **ONE** of the following completes the statement below?

In accordance with 2-OI-2, Condensate System, 2-FCV-2-130 automatically opens on high **(1)**.

Given that 2-FCV-2-130 is OPEN, Condensate effluent conductivity will **(2)**.

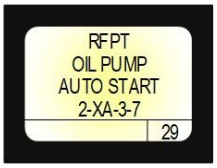
A. (1) differential pressure **ONLY**
(2) rise

B. (1) differential pressure **ONLY**
(2) lower

C. (1) differential pressure **AND** conductivity
(2) rise

D. (1) differential pressure **AND** conductivity
(2) lower

60. Unit 2 is operating at 100% RTP with a normal RFPT alignment, when the following occurs:



- RFPT OIL PUMP AUTO START (2-9-6B, Window 29) alarms
- **NO** Operator actions have been taken

Which **ONE** of the following completes the statements below?

In accordance with 2-OI-3, Reactor Feedwater System, 2A RFPT Emergency Bearing Oil Pump (EBOP) **(1)** currently running.

2-9-6B, Window 29 **(2)** reset **AFTER** taking the appropriate oil pump handswitch to AUTO after START.

A. (1) is
(2) will

B. (1) is
(2) will NOT

C. (1) is NOT
(2) will

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

61. Radwaste processing is in progress with the following conditions:

- 0-PMP-77-66B, Waste Surge Pump, is tagged out of service for maintenance
- Radwaste Operator reports that 0-PMP-77-66A, Waste Collector Pump, has failed

Which **ONE** of the following completes the statements below?

Given the conditions above, the ability to process water from the Reactor Building **(1)** Drain Sumps is affected, which is considered **(2)** Radwaste.

A. (1) Floor
(2) Clean

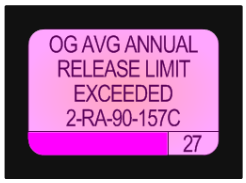
B. (1) Floor
(2) Dirty

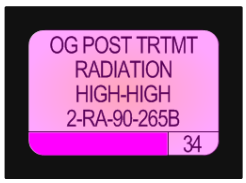
C. (1) Equipment
(2) Clean

D. (1) Equipment
(2) Dirty

62. Unit 2 is operating at 100% RTP when a transient results in the following conditions:

- OG AVERAGE ANNUAL RELEASE LIMIT EXCEEDED (2-9-4C, WINDOW 27)
- OG POST TREATMENT RADIATION HIGH-HIGH (2-9-4C, WINDOW 34)





Given the conditions above, which **ONE** of the following completes the statements below in accordance with the appropriate ARPs?

0-SI-4.8.B.1.a.1, Airborne Effluent Release Rate, **(1)** required to be performed.

Operator insertion of a manual SCRAM **(2)** currently required.

A. (1) is
(2) is

B. (1) is
(2) is NOT

C. (1) is NOT
(2) is

D. (1) is NOT
(2) is NOT

63. Unit 1 and 2 are operating at 100% RTP and 'A' EDG has the following conditions:

- The right bank air compressor motor is currently tagged out for maintenance
- The left bank air compressor is crosstied to the right bank receivers in accordance with 0-OI-82, Standby Diesel Generator System

Which **ONE** of the following completes the statement below in accordance with Technical Specification 3.8.3, Diesel Fuel Oil, Lube Oil, and Starting Air?

If 'A' EDG starting air receiver unit pressure is reported to be **(1)**, then declare 'A' EDG INOPERABLE **(2)**.

A. (1) 160 psig
(2) immediately

B. (1) 160 psig
(2) within one (1) hour

C. (1) 200 psig
(2) immediately

D. (1) 200 psig
(2) within one (1) hour

64. Which **ONE** of the following completes the statements below pertaining to Reactivity Management in accordance with OPDP-1, Conduct of Operations?

The **(1)** Core Thermal Power Average for a shift shall **NOT** exceed the licensed limit.

Actions are allowed that would intentionally raise Core Thermal Power above the licensed thermal power for **(2)**.

A. (1) one-hour
(2) **ONLY** short periods of time

B. (1) one-hour
(2) **NO** period of time

C. (1) eight-hour
(2) **ONLY** short periods of time

D. (1) eight-hour
(2) **NO** period of time

65. Which **ONE** of the following completes the statements below in accordance with 0-GOI-100-3C, Fuel Movement Operation During Refueling?

The delegated Unit Operator that is monitoring core reactivity from the Main Control Room is allowed to use **(1)**.

At least **(2)** independent communication links between the Main Control Room and the Refueling Platform Bridge are required.

Note: Integrated Computer System (ICS)

A. (1) Control Room instrumentation **ONLY**
(2) two

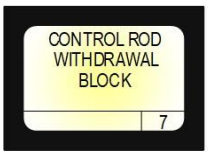
B. (1) Control Room instrumentation **ONLY**
(2) three

C. (1) Control Room instrumentation **AND** ICS
(2) two

D. (1) Control Room instrumentation **AND** ICS
(2) three

66. Unit 1 is in MODE 2 performing a startup, Control Rod 22-27 is being withdrawn from position 24 to 48 when the following occurs:

- RWM is **NOT** bypassed
- CONTROL ROD WITHDRAWAL BLOCK (9-5A, Window 7) alarms
- LPRM HI status lights illuminate around Control Rod 22-27 on Full Core Display
- IRM channels are rising
- **NO** Operator Actions have been taken



Given the conditions above, which **ONE** of the following completes the statements below?

The component credited with mitigating current plant conditions is the **(1)**.

In accordance with the associated AOI, the Operators are required to **(2)** Control Rod 22-27.

A. (1) ball check valve
(2) individually SCRAM

B. (1) ball check valve
(2) continuously insert

C. (1) velocity limiter
(2) individually SCRAM

D. (1) velocity limiter
(2) continuously insert

67. Which **ONE** of the following completes the statements below in accordance with OPDP-4, Annunciator Disablement?

Disabled annunciators are identified by a **(1)** border placed on the disabled annunciator window.

Each unit **(2)** required to carry over the list of disabled annunciators each shift in the eSOMS Narrative Log.

A. (1) blue
(2) is

B. (1) blue
(2) is NOT

C. (1) white
(2) is

D. (1) white
(2) is NOT

68. Determine which **ONE** of the following indications would be observed for an Area Radiation Monitor (ARM) when the detector is **SATURATED** in a radiation field.

A. The indicator remains upscale **AND** the saturation trip remains in.

B. The indicator drops downscale **AND** the downscale trip remains in.

C. The indicator remains upscale **AND** the upscale trip remains in.

D. The indicator drops downscale **AND** the upscale trip remains in.

69. **Unit 1** was operating at 100% RTP when the following occurs:

- 1B Reactor Recirc Pump trips
- It is desired to operate in Single Loop for greater than 24 hours

Which **ONE** of the following completes the statements below?

In accordance with the Reactor Core Safety Limits, the Minimum Critical Power Ratio (MCPR) for **SINGLE** loop operation on **Unit 1** is **≥ (1)** .

The **SINGLE** Loop limit(s) for **(2)** must be applied in accordance with Technical Specification 3.4.1, Reactor Coolant System (RCS).

A. (1) 1.08
(2) MCPR **ONLY**

B. (1) 1.08
(2) Average Planar Linear Heat Generation Rate (APLHGR) **AND** MCPR

C. (1) 1.06
(2) MCPR **ONLY**

D. (1) 1.06
(2) Average Planar Linear Heat Generation Rate (APLHGR) **AND** MCPR

70. Unit 2 is operating at 80% RTP with the following conditions:

- OATC **RAISES** Recirc Flow using 2-HS-96-32, RECIRC MASTER CONTROL RAISE MEDIUM, pushbutton in accordance with the Reactivity Control Plan

Given the above conditions, which **ONE** of the following completes the statements below?

The amount of neutron moderation ___**(1)**___ due to the void fraction ___**(2)**___.

A. (1) rises
(2) rising

B. (1) rises
(2) lowering

C. (1) lowers
(2) rising

D. (1) lowers
(2) lowering

71. Unit 3 was operating at 75% RTP for the last 5 days when Reactor Power is returned to 100% RTP.

Which **ONE** of the following completes the statements below pertaining to the change in Xenon-135 concentration **IMMEDIATELY** following the return to 100% RTP over the course of the next 4 hours?

Xe-135 concentration initially lowers due to the _____.

A. **HIGHER** rate of Xe-135 production from fission

B. **LOWER** rate of Xe-135 burnout

C. **LOWER** rate of Xe-135 production from fission

D. **HIGHER** rate of Xe-135 burnout

72. Which **ONE** of the following completes the statement below with regard to Thermal Limits?

Unit 1 was operating at 100% RTP when a SCRAM occurred. Prior to the SCRAM, the average fuel pin power in a given power node (in KW/foot) was measured by _____.

A. Critical Power Ratio

B. Linear Heat Generation Rate (LHGR)

C. Maximum Average Planar Ratio (MAPRAT)

D. Average Planar Linear Heat Generation Rate (APLHGR)

73. Unit 2 is performing a shutdown in accordance with 2-GOI-100-12A, Unit Shutdown from Power Operation to Cold Shutdown and Reductions in Power During Power Operations, with the following conditions:

- NUSO has directed the Operator to commence a cooldown using EHC
- Reactor Pressure is 965 psig

Which **ONE** of the following completes the statement below?

Given the conditions above, the corresponding Moderator Temperature is _____.

[REFERENCE PROVIDED]

A. 537.197 °F

B. 538.449 °F

C. 540.328 °F

D. 542.206 °F

74. Unit 1 is operating at 100% RTP when the 1A1 High Pressure Feedwater Heater is required to be removed from service due to possible tube leakage.

Which **ONE** of the following completes the statements below regarding Feedwater Heaters and moisture separators?

Given the above conditions, after 1A1 High Pressure Feedwater Heater is removed from service, Unit 1's Main Generator output will be **(1)**.

By design, the moisture separator protects the Main Turbine's **(2)** pressure turbine from impingement damage.

A. (1) lower
(2) low

B. (1) lower
(2) high

C. (1) higher
(2) low

D. (1) higher
(2) high

75. Unit 1 was operating at 100% RTP for 10 months, when a Reactor SCRAM occurred.

IMMEDIATELY following the Reactor SCRAM, decay heat is approximately **(1)**, due to **(2)** .

A. (1) 1%
(2) delayed neutrons

B. (1) 1%
(2) fission products

C. (1) 7%
(2) delayed neutrons

D. (1) 7%
(2) fission products

BFN ILT 2404 RO References 05082024

REFERENCE PROVIDED to candidate, others are part of stem indications.

Generic Fundamental Equations and Conversion Sheet

Steam Tables

6. Intermediate Range Monitor (IRM) analog indication

7. RBCCW PUMP DISCHARGE HEADER PRESSURE LOW (1-9-4C, Window 12)

8. REACTOR LEVEL ABNORMAL (2-9-5A, Window 8)

10. MAIN STEAM RELIEF VALVE OPEN, (2-9-3C Window 25)

13. GENERATOR STATOR COOLANT SYSTEM ABNORMAL (2-9-7A, WINDOW 22)

- TURBINE TRIP TIMER INITIATED (2-9-8A, WINDOW 1)

18. OFFGAS AVERAGE ANNUAL RELEASE RATE EXCEEDED (2-9-4C, Window 27)

STACK GAS RADIATION HIGH (2-9-3A, WINDOW 13)
OFFGAS POST TREATMENT RADIATION HIGH (2-9-4C, Window 33)

22. RFPT TRIPPED (2-9-6C, Window 29)

- RFWCS INPUT FAILURE (2-9-6C, Window 14)

23. DRYWELL TO SUPPESSSION CHAMBER DIFFERENTIAL PRESSURE ABNORMAL (2-9-3B, Window 26)

- DRYWELL NORMAL OPERATING PRESSURE HIGH (2-9-3B, Window 19)

24. +/- 24 VDC BATTERY CHARGER ABNORMAL (2-9-5B, Window 17)

25. CRD ACCUMULATOR PRESS LOW/LEVEL HIGH (3-9-5A, Window 29)

26. SUPPRESSION POOL LEVEL HIGH (3-9-3F, Window 12)

BFN ILT 2404 RO References 05082024

32. REACTOR PROTECTION 120V POWER SYSTEM ABNORMAL (2-9-5B, Window 10)

36. APRM FLOW BIAS OFF NORMAL, (2-9-5A, Window 32)

37. APRM UPSCALE (1-9-5A, Window 11)

38. 2-HS-57-27, VOLTAGE REGULATOR MANUAL/AUTO SELECT, handswitch
    - Amber light is LIT
    - Blue light is EXTINGUISHED

39. ADS BLOWDOWN POWER FAILURE (2-9-3C, Window 32)

41. REFUELING ZONE EXHAUST RADIATION HIGH (3-9-3A, Window 34)

43. SGT TRAIN 'C' FILTER BANK TEMP HIGH (2-9-3B, Window 25)

47. BATTERY BOARD 1 BREAKER TRIPOUT OR GROUND (1-9-8C, Window 7)

52. 4160V SHUTDOWN BOARD 'C' DEGRADED VOLTAGE (1/2-9-23C, Window 28)
- RHRSW PUMP COMPARTMENT LEVEL HIGH (1-9-22A, Window 27)

58. 2-EOI-5, CURVE 1 (CS NPSH Limits) and CURVE 2 (RHR NPSH Limits) – picture only

59. CONDENSATE DEMIN ABNORMAL (2-9-6B, WINDOW 6)

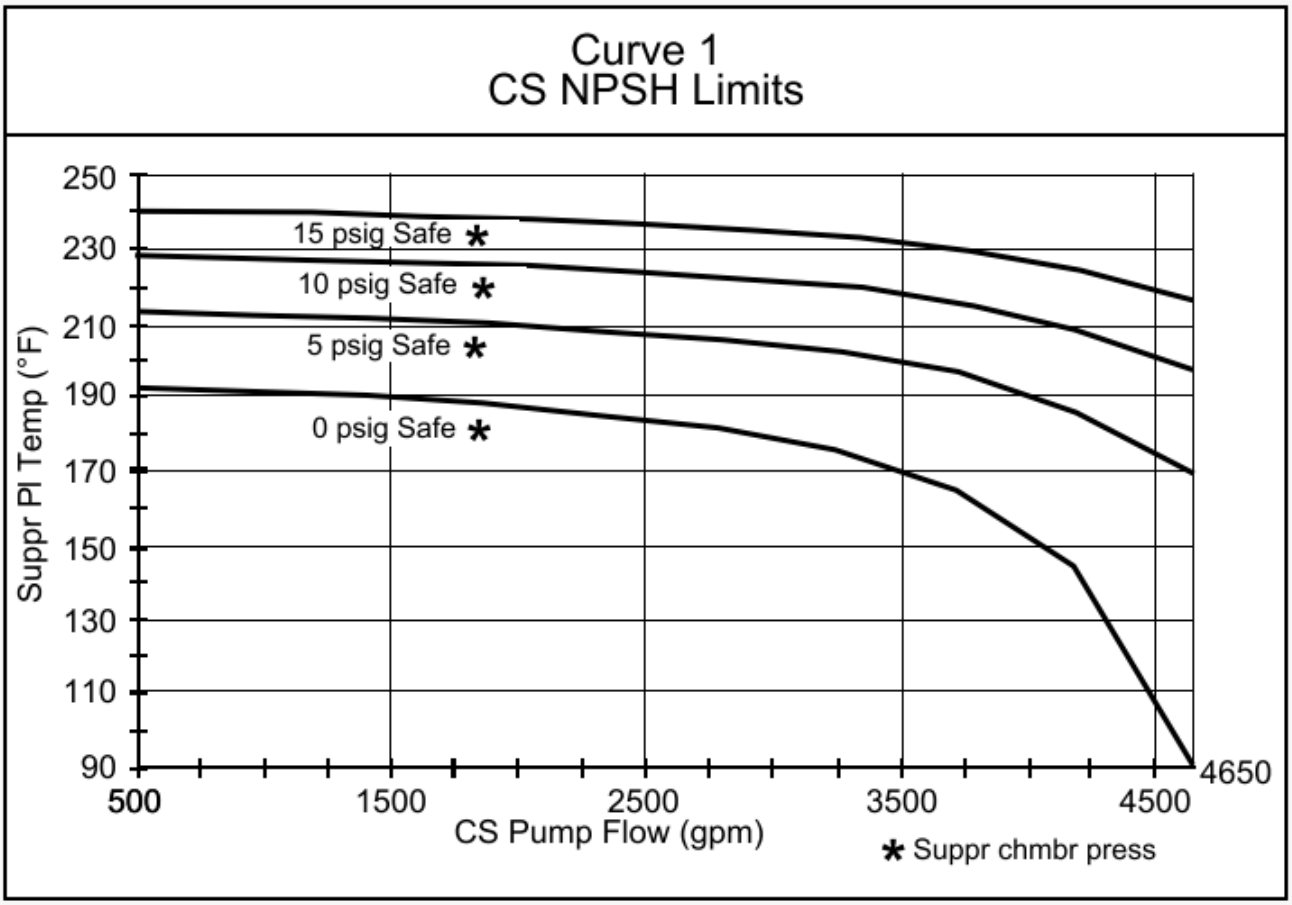
60. RFPT OIL PUMP AUTO START (2-9-6B, Window 29)

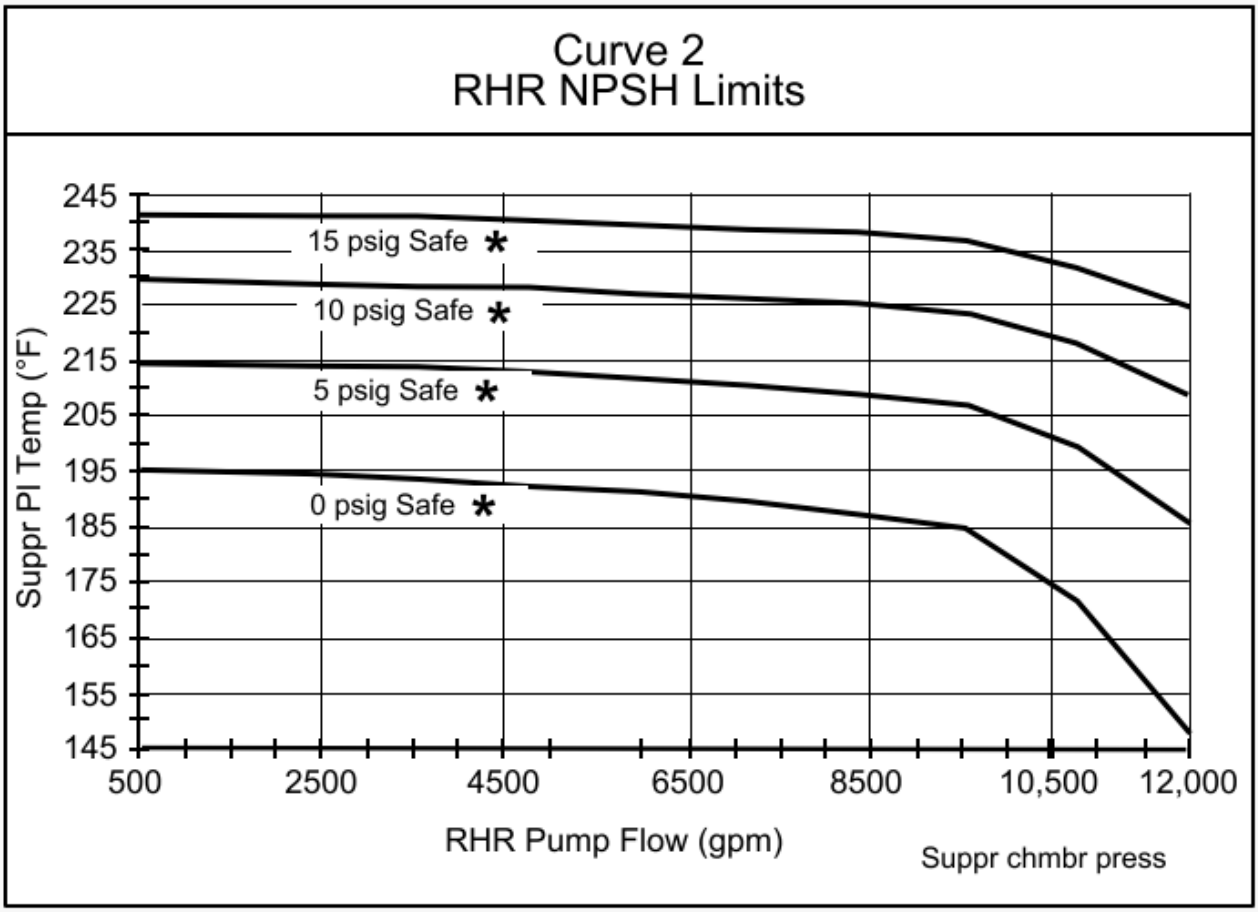
BFN ILT 2404 RO References 05082024

62. OG AVERAGE ANNUAL RELEASE LIMIT EXCEEDED (2-9-4C, WINDOW 27)

- OG POST TREATMENT RADIATION HIGH-HIGH (2-9-4C, WINDOW 34)

66. CONTROL ROD WITHDRAWAL BLOCK (1-XA-55-5A, Window 7)


Curve 1
CS NPSH Limits
Suppr Pl Temp (°F)
250
230
210
190
170
150
130
110
90
15 psig Safe *
10 psig Safe *
5 psig Safe *
0 psig Safe *
500
1500
2500
3500
4500
4650
CS Pump Flow (gpm)
* Suppr chmbr press


Curve 2
RHR NPSH Limits
245
235
225
215
205
195
185
175
165
155
145
Suppr Pl Temp (°F)
15 psig Safe *
10 psig Safe *
5 psig Safe *
0 psig Safe *
500
2500
4500
6500
8500
10,500
12,000
RHR Pump Flow (gpm)
Suppr chmbr press