Final Submittal
(Blue Paper)

1. Reactor Operator Written Examination

OCONEE EXAM

50-269, 270, 287/2002-301
FEBRUARY 11 - 15, 2002

OCONEE NRC RO EXAM
02-18-2002

1 POINT

32. Which one of the following contains completely correct statements with respect to RBCU operation following an ES actuation?

A. RB Aux fans receive a start signal, upon an ES signal, RBCUs are in low speed, LPSW-565 (RB AUX FANS COOLERS INLET) opens and LPSW-566 ("B" RBCU ISOLATION) closes restoring full LPSW flow to the "B" RBCU.

B. RBCUs receive a signal from ES 1 & 2, all RBCUs go to low speed, LPSW-565 (RB AUX FANS COOLERS INLET) opens and LPSW-566 ("B" RBCU ISOLATION) closes restoring full LPSW flow to the "B" RBCU.

C. Fusible dropout plates will drop if the RB air temperature heats up to a temperature between 150°F and 165°F, One second after the fusible dropout plates drop, the RBCU fans swap to high speed.

D. RBCUs receive a signal from ES 5 & 6, all RBCUs go to low speed, and the RBCU LPSW outlet valves go full open.

A) D
EO: 4 and 5.2
K/A: 022A301 (4.1/4.3)
Reference: Vol IV, OP-OC-PNS-RBC Pages 16 and 18 of 23.
Author: RFA

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1 POINT

33. The following conditions exist on Unit #1:

- Rx Power = 100%
- PZR level = 220"
- LDST level = 70"
- LDST Pressure = 35 psig

Which ONE of the following MIMIMUM actions should be taken?

SEE ATTACHMENT: (LDST Pressure vs. Level & TS's)

A. Declare both trains of HPI inoperable and be in mode 3 within 12 hours.

B. Declare both trains of HPI inoperable and restore at least 1 train within 72 hours.

C. Declare both trains of HPI inoperable and be in mode 3 within 12 hours AND decrease RCS pressure to < 800 psig.

D. No actions required.

A) A

A. Correct - P/T is above and to left of curve in 1108/01. Per same encl. in 1108/01, both trains of HPI should be declared inoperable and TS 3.5.2 (BB3.5.2-6 applies)

K/A: 022AA101(3.4/3.3)
T1G2, T1G2
Bank/Modified
Reference: Facility updated question bank 4 PNS113501 PNS113501
TS 3.5.1, 3.5.2 (B3.5.2-6).

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1 POINT

1. Shutdown margin has been reduced with the intent of going critical and reactor startup has been temporarily suspended.

   In accordance with the Controlling procedure for Unit Startup (OP/1,2,3/A1102/01), which one of the following describes the **MINIMUM** required operator actions?

   A. Insert CRDs to group 1 at 50% and calculate a shutdown margin per PT/1103/015, Reactivity balance Calculation.

   B. Limit SG levels to < 40 inches on Startup Range and maintain >1%delta K/K Shutdown Margin for 200 F RCS temperature with a Xenon free core.

   C. Insert CRDs to group 1 at 50% and limit SG levels to < 40 inches on Startup Range.

   D. Calculate a shutdown margin per PT/1103/015, Reactivity balance Calculation and maintain >1%delta K/K Shutdown Margin for 200 F RCS temperature with a Xenon free core.

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A) A

Distractor Analysis:

When in mode 3 or higher, maintain the following:

Limit SG levels to < 40 inches on Stertup Range OR maintain >1%delta K/K Shutdown Margin for 200 F RCS temperature with a Xenon free core.

This prevents accidental criticality caused by a MS line break overcooling.

If shutdown margin has been reduced with intent of going critical and reactor Startup is suspended (this does not apply during ZPPT) then:

Insert CRDs to group 1 at 50% and calculate a shutdown margin per PT/1103/015, Reactivity balance Calculation.

Inserting rods to group 1 at 50% will place the reactor in a condition of being shutdown by the worth of the safety rods, while having further shutdown capability with the remaining worth of Group 1.

Reference: Lesson Plans Vol 2, OP-OC-CP-011, page 11 of 43.
EO - 23
K/A: 001A411 (3.5/4.1)
RO/SRO: Both
Level: C
Author: rfa

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2. The unit is operating at 80% power when it is determined that the Control Rods (CRs) are in the restricted area due to a momentary continuous rod withdrawal . A calculation has been completed that indicates RCS boron concentration will have to be increased from 435 ppm to 460 ppm to return CRs to an acceptable position. The following conditions exist for CBAST:

   - CBAST concentration = 11,240 ppm
   - CBASTvolume = 13,200 gal.
   - RCS Hot Volume = 59,860 gals
   - RCS Cold Volume = 88,000 gals

   Which ONE of the following is the volume of CBAST that will have to be added to the RCS to accomplish this concentration change?

   A. 117 gallons

   B. 139 gallons

   C. 173 gallons

   D. 204 gallons

   Answer B

   A. calculated using 13,200 ppm and hot volume (59860)
   B. correct - 11240(X)+435(59860)=460(59860+X)
   C. calculated using 13,200 ppm and cold volume (88,000)
   D. calculated using 11,240 ppm and cold volume

   K/A: 001AK103 (3.9/4.0)
   T1G2, T1G1
   Bank
   Reference: Facility updated question bank 26 CP050102 CP050102

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1 POINT

3. The following conditions exist:

   - A reactor startup is in progress.
   - Control rod groups 1 through 3 are fully withdrawn.
   - Group 4 rod withdrawal is stopped at 48%
   - Source range NI counts are 540 cps and slowly increasing on NI-1 and NI-2
   - Start-up rate is 0.2 DPM and constant on NI-1 and NI-2
   - All rod motion has been stopped for 20 seconds

   Which of the following states the appropriate actions for the conditions stated above?

   A. Monitor the increasing count rate and verify power stabilizes below the point of adding heat before continuing rod withdrawal.

   B. Insert group 4 control rods, verify a Shutdown Margin of more than 1% exists and inform the Reactor Engineer of plant conditions.

   C. Insert groups 1 through 4 to group 1 at 50% withdrawn, request Chemistry to resample the RCS for boron concentration, and calculate a SDM.

   D. Trip the reactor and enter the EOP's, perform the Immediate Manual Actions tab, and transfer to Unanticipated Nuclear Power tab.

   A) C

   Reasons

   A. The indications in the stem of this question show that the reactor has achieved criticality on Safety Rods. Continued power increase should not be permitted.

   B. Insertion of all safety rods is required for these conditions. Insertion of only group 4 rods is not adequate.

   C. Correct Answer: In accordance with PT/1103/15, Reactivity Balance Calculation.

   D. Immediate tripping of reactor is not required. If reactor was tripped transfer to UNPP would not be performed.

   Reference: EP/1/A/1800/001, EOP Immediate manual Actions tab.
   OP/1/A/1102/001, Controlling Procedure for Unit SU.
   PT/1103/15, Reactivity Balance Calculation

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4. Which one of the following set of conditions will cause a regulating control rod group asymmetric runback?

   Assume in all cases a 9" asymmetric fault also occurred.

   A. If a group 5 rod drops, causing a group 5 in limit, and NI power is >60% or if a group 7 rod drops causing a group 7 in limit and group 6 rods are > 80% an asymmetric runback will occur.

   B. If a group 6 rod drops, causing a group 6 in limit and the remainder of group 6 rods are > 80% withdrawn, an asymmetric runback will occur. The runback will continue to 55% even if the 9" asymmetric fault clears before reaching 55%.

   C. If a group 5 rod drops, causing a group 5 in limit, and NI power is >80% or if a group 6 rod drops, causing a group 6 in limit and group 5 rods are > 60% withdrawn, an asymmetric runback will occur.

   D. If a group 7 rod drops causing a group 7 in limit and the remainder of group 7 rods are > 80% withdrawn, an asymmetric runback will occur. The runback will continue to 55% even if the 9" asymmetric fault clears before reaching 55%.

   A) A

   Reference: Lesson Plans Vol VIII, OP-OC-IC-CRI , page 26 of 62.
   EO - 9
   K/A: 001K507 (3.3/4.0)
   RO/SRO: BOTH
   Level: C
   Author: rfa

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1 POINT

5. The initial power escalation following a refueling outage is being performed. The reactor power level is stabilized to perform testing. The following indications are available to the operator at the control board:

NI-5	26.0%
NI-6	29.0%
NI-7	26.0%
NI-8	29.0%

T-hot Loop A	588.5° F
T-hot Loop B	588.0° F
T-cold Loop A	570.0° F
T-cold Loop B	569.5° F
Tave	579.0° F

Generator output 320 MWe

Which of the following is an accurate estimate of the thermal power level of the reactor at this point?

SEE ATTACHMENT: Encl.13.12 (Loop deltaT vs. Rx Power)
Encl.13.13 (Gross Load vs. Rx Power)

A. 668 MWt

B. 745 MWt

C. 899 MWt

D. 1078 MWt

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A) D

Reasons:

A, B, C. Due to the change in Tcold on a power increase, the NIs will need calibrating at approximately 25% power increments. Using alternate indications, such as core delta-T is a more accurate indication of power level. A core delta-T of 18.5° F indicates a power level of approximately 42% with a corresponding thermal power level of approximately 1070 MWt.

A. If the student uses the value of power displayed on NI 5 and NI 7, this answer will be obtained.
(.26 X 2568 MWt = 668 MWt)

B. If the student uses the highest value of power displayed on NI 6 and NI 8, this answer will be obtained.
(.29 X 2568 MWt = 745 MWt)

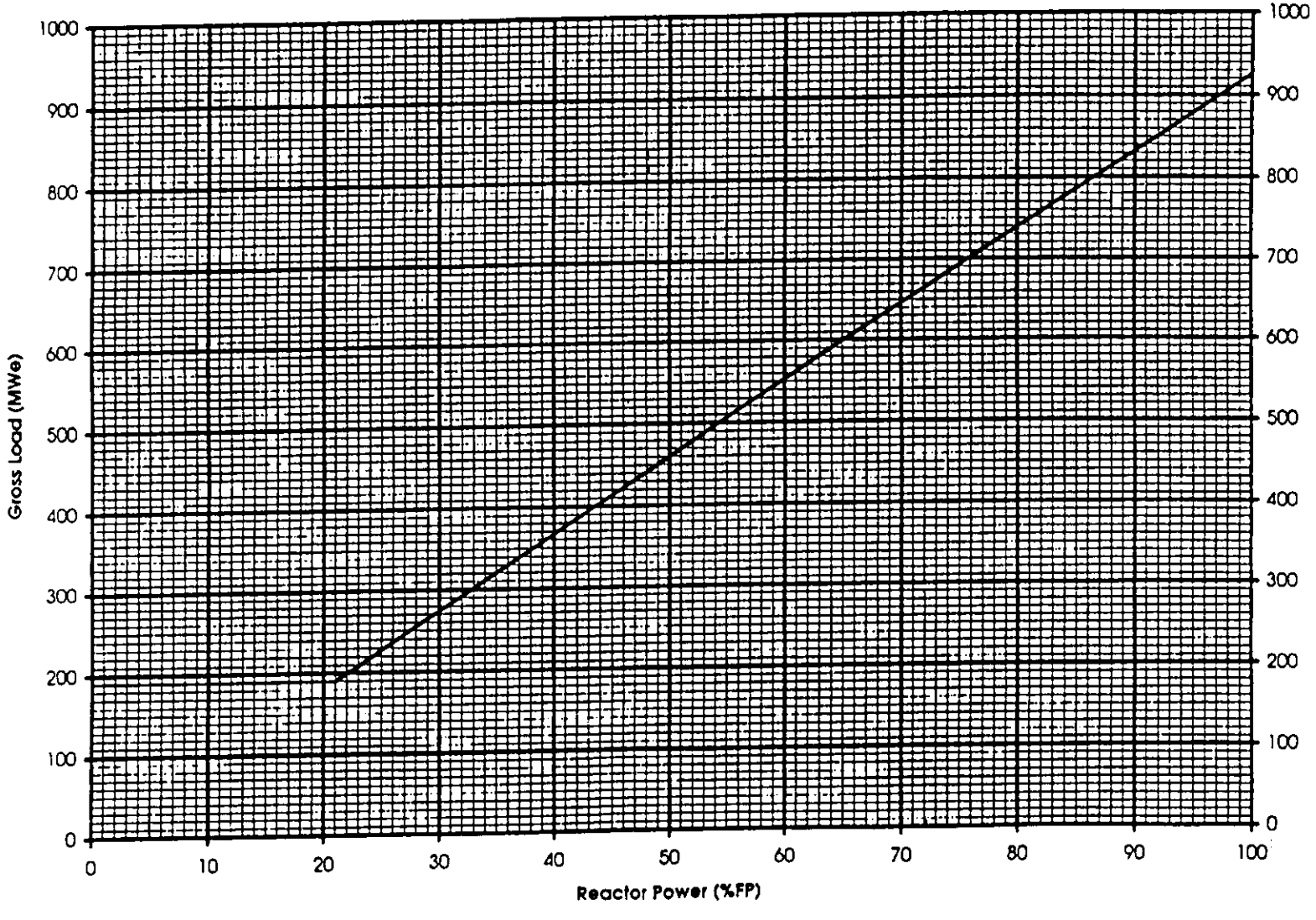
C. If the student uses use enclouse 12.13, Gross Load vs Reator Power, 320 MWe = 35% reactor power.
Thermal, this answer will be obtained.
(35% power X 2568 MWt = 898.8 = 899 MWe)

D. 18.5° on 4 RCP curve - 42% power 42% x 2568 = 1078.56 = 1079 MWt

OC reference: OP/1/A/1102/001, Controlling procedure for unit SU.
OP/1/A/1102/004, Operation at power
PT/600/01, Periodic Instrument Surveillance

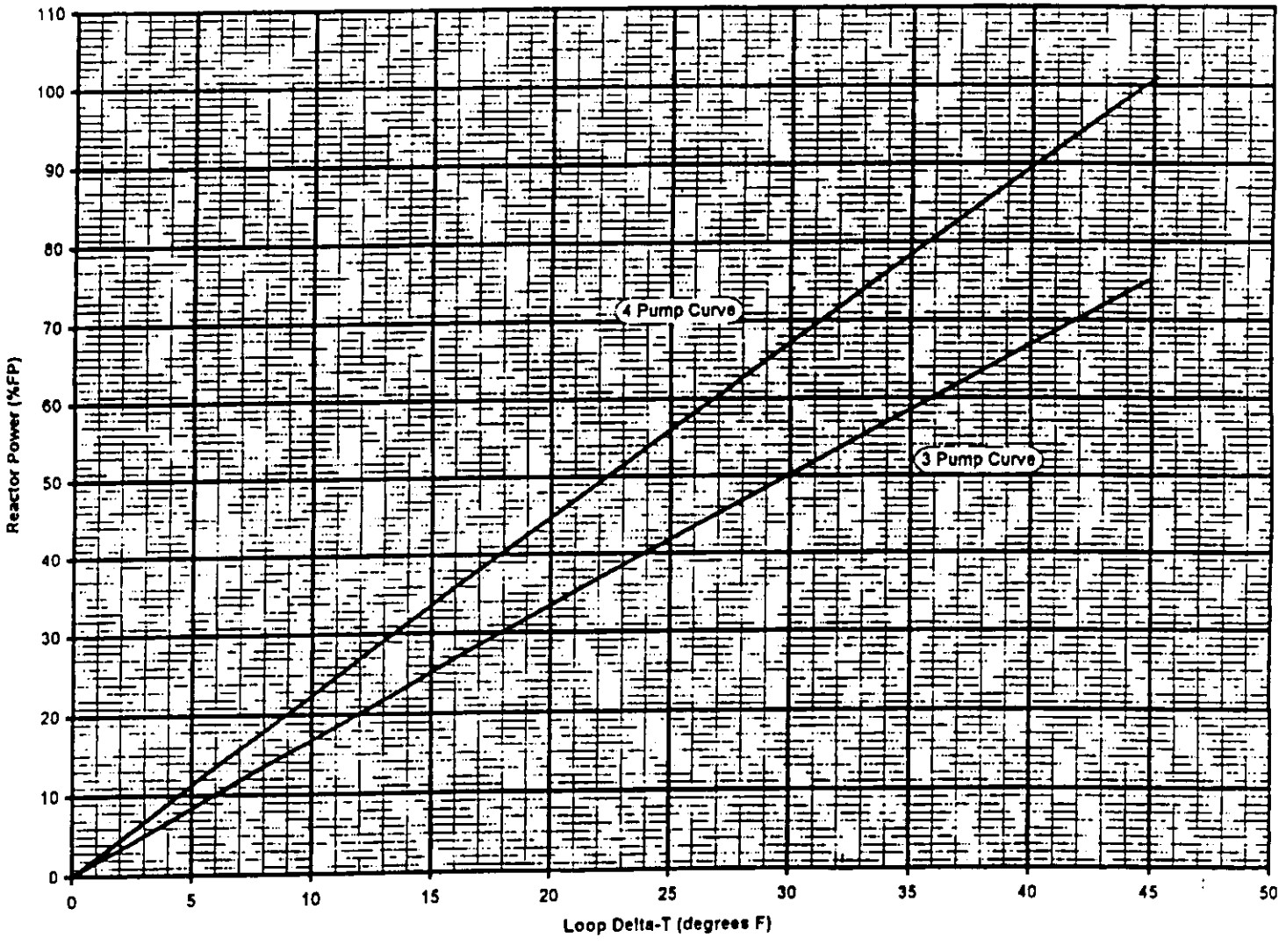
Enclosure 13.13

Gross Load Vs. Reactor Power



Enclosure 13.12

Unit 1 Cycle 20
Loop ΔT Vs. Reactor Power



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6. Given the following plant conditions:

   - Reactor is at 70% power.
   - ICS Reactor Bailey and Diamond stations are in MANUAL.
   - All other ICS stations are in AUTOMATIC.
   - Group 5 rod 6 is dropped fully into the core.

   Which of the following indicates the core power distribution **CONCERN**, and the Tave parameter response?

   ASSUME NO OPERATOR ACTIONS

   A. Negative Quadrant Power Tilt; Tave decreases and remains low.

   B. Negative Quadrant Power Tilt; Tave decreases and returns to setpoint.

   C. Positive Quadrant Power Tilt; Tave decreases and remains low.

   D. Positive Quadrant Power Tilt; Tave decreases and returns to setpoint.

   A) D

   A/B/C. QPT will become more negative in the quadrant the rod is dropped into but the main operator limit concern is the flux shift and the positive QPT for the other 3 quadrants. Tave will return to setpoint as MFW has Tave control with the reactor in manual.

   D. CORRECT; As the rod is fully dropped into the core, power distribution is changed between the quadrants. The quadrant that the rod is dropped into is poisoned and the flux decreases and shifts the flux to the other quadrants. The quadrant that contains the dropped rod will indicate a negative QPT value and the other quadrants will indicate positive. These positive quadrants are producing most of the power and is the operators main power distribution limit concern. Tave will return to setpoint as MFW has Tave control with the reactor in manual.

   Reference: AOP Vol 1 of 2, AP/1/A/1700/015

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7. Unit 2 plant conditions:

   - Reactor power = 55%
   - RCS Tave = 579°F
   - 2B2 RCP AC Oil Lift Pump operating:
     - Pressure = 700 psig
   - 2A CC Pump operating:
     - CRD Outlet Hdr flow = 150 gpm
     - Total CC flow = 890 gpm

   Which ONE of the following describes why the 2B2 Reactor Coolant Pump will **NOT** start at this time?

   _____ is too _____.

   A. RCS temperature / high

   B. Reactor power / high

   C. Oil lift pressure / low

   D. CC flow / low

A) B

A. Incorrect - RCS temperature is > 325°F which is required to start the 4th RCP. If RCS temperatutre was < 325°F this would be a correct answer.
B. Correct – Reactor power should be < 50% to start any RCP. Rx Power must be below 50% to satisfy the start interlock circuitry.
C. Incorrect – Oil lift press is > 600 psig which meets the requirement of the start interlock. If Oil Lift Pressure was < 600 psig this would be a correct answer.
D. Incorrect – CC flow is > 575 gpm If Total CC flow was < 575 gpm this would be a correct answer. To answer correctly the student must know that the interlock is fed from TOTAL flow and not CRD RETURN flow.

K/A: 003K402 (2.5/2.7)
T2G1, T2G1
Bank
Reference: Facility updated question bank 5 PNS061403 PNS061403

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1 POINT

8. Which one of the following DW solutions is correct assuming the operator wants to lower the RCS from 1500 ppm B to 1300 ppm B. The RCS is hot and has a volume of 59860 gallons?

   The operator has just added 500 gallons of "A" BHUT at 1700 ppmB

   Assume DW added is at 0 ppmB

   A. 8566 gallons of DW

   B. 9209 gallons of DW

   C. 9363 gallons of DW

   D. 9863 gallons of DW

A) C

Distractor Analysis:

a. 8566 gal. (uses feed and bleed formula without consideration for „A" BHUT addition) - incorrect
b. 9209 gal. (uses wrong ppmB, 1300, for calculating „A" BHUT addition) - incorrect
c. 9363 gal. [(1500)(59860)+(1700)(500)+(0)(V3)=(1300)(59860+500+V3)] – correct answer
d. 9863 gal. (uses total make-up volume...without subtracting „A" BHUT volume) – incorrect

Reference: Lesson Plans Vol 2, OP-OC-CP-016, page 14 of 43.
EO - 5.1
K/A: 004A404 (3.2/3.6)
RO/SRO: Both
Level: C
Author: rfa

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1 POINT

9. Given the following plant conditions:

   - 100% power.
   - "1B" HPI pump is in operation.
   - LDST Level "2" is selected.

   Which of the following describes the response of the HPI system if the LDST level "1" transmitter fails low?

   A. Only 1HP-24, "1A" HPI BWST suction, will receive an open signal.

   B. Only 1HP-25, "1B" HPI BWST suction, will receive an open signal.

   C. Both 1HP-24 and 1HP-25, "1A" **AND** "1B" HPI BWST suction, will receive an open signal.

   D. Neither 1HP-24, "1A" HPI BWST suction **NOR** 1HP-25, "1B" HPI BWST suction, will receive an open signal.

A) D
Reference: Vol IV, HPI System
C/A

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1 POINT

10. Given the following:

- Reactor power = 100%
- All ICS stations in AUTOMATIC
- RCS boron concentration = 1050 ppm
- "1A" BHUT = 1245 ppmB
- "1B" BHUT = <10 ppmB
- Group 7 CRs @ 88% withdrawn
- Group 7 CRs rod worth = -.0068$\%\Delta k/k/\%$
- Differential Boron worth = -.0078$\%\Delta k/k/ppm$

(ASSUME: RCS hot volume of 59860 gallons)

Which ONE of the following will be the Group 7 (% withdrawn) rod position that resulted from an addition of 1900 gallons from "1A" BHUT to the RCS?

A. 91%

B. 93%

C. 95%

D. 100%

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1 POINT

A) C

A. Incorrect: See calculation below
B. Incorrect: Reverses coefficient values for rods and boron.
C. Correct: (59860)(1050) + (1245)(1900) = (Cf)(61760)
RCS + A BHUT = (Cf) (RCS final volume)

Cf = 1056 ppmB
RCS boron increase from 1050 to 1056 = 6 ppmB increase

6 ppmB x .0078 = .0468%deltaK/K
.0468 / .0068 = 6.88 % rod motion (outward)

88% + 6.88% = 95%

D. Incorrect: Uses RCS final volume of 59860 in calculation.

K/A: 004K105 (2.7/3.2)
SRO - T2G1
Bank
Reference: Facility updated question bank 7 CP050105 CP050105
C/A

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1 POINT

11. Which one of the following group of action(s) is/are correct given the following plant conditions?

    - Control rod 3 in group 7 has dropped to the bottom and stuck.
    - Control rod 4 in group 4 has misaligned 8 inches and stuck.
    - ICS is in AUTO.
    - An ASYMM. FAULT caused the reactor to run back to 60% then it stopped.

    A. Verify greater than or equal to one dropped rod and trip the reactor.

    B. Verify the reactor is critical and if so then ensure all control rods are inserted to at least group 1 at 50% WD.

    C. Initiate a power reduction to 55% FP.

    D. Ensure ICS re-ratios feedwater to establish approximately 0 Delta Tc.

    A) C

    Distractor Analysis:

    Distractor d is for abnormal RCP operation.
    Distractors a and b are for a misaligned rod > 9 inches.

    Reference: AP/1/A/1700/015, Unit 1, Vol 1 electronic ref - OX002RG , page 1 of 5.
    EO - 8 and 9, LP Vol VIII, OP-OC-IC-CRI, page 8 of 62
    EO - 8, LP Vol I, OP-OC-CP-018, page 3 of 22
    K/A: 005AA203 (3.5.4.4)
    RO/SRO: Both
    Level: C
    Author: rfa

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1 POINT

12. Unit 1 is experiencing a loss of component cooling (CC). Which one of the following **AUTOMATIC** action(s) should have occurred given that:

    - Letdown Temperature is 138°F.
    - CRD stator temperatures are 190°F.
    - CC flow = 500 gpm
    - CC Surge Tank Level = 30 inches decreasing.

    A. The standby CC pump should have started **AND** 1HP-5 should have closed.

    B. The standby CC pump should have started **AND** the reactor should have tripped.

    C. ALL RCP seal return valves should have closed **AND** the reactor should have tripped.

    D. ALL RCP seal return valves should have closed **AND** 1HP-5 should have closed.

    A) A

    Distractor Analysis:

    The standby CC pump should starts at 575 gpm CC total flow decreasing.
    1HP-5 closes at letdown temperature > 135 degrees F.
    All RCP seal return valves close upon loss of both RCP seal injection and CC with RCS pressure > 400 psig.
    If IAAT >/= two CRD stator temperatures > 180 degrees F then MANUALLY trip the reactor.

    Reference: AP/1/A/1700/020, Unit 1, Vol 1 electronic ref - OX002GX , page 1 of 11.
    EO - 17 and 18, LP Vol IV, OP-OC-PNS-CC, page 7 of 23
    K/A: 008K303 (4.1/4.2)
    RO/SRO: Both
    Level: C
    Author: rfa

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1 POINT

13. Unit 1 conditions:

Time = 0812:
- RCS pressure = 1700 psig, decreasing
- All SCMs indicate 0°F.

.

Time = 0815:
- CETCs = 584°F
- RCS pressure = 1370 psig, decreasing
- ALL SCMs = 0°F
- Reactor Power level = 0%
- All RCPs running; pump amps are cycling

.

Which ONE of the following is the correct operator action?

A. Leave all RCPs running

B. Trip all RCPs immediately

C. Trip all RCPs after two minutes

D. Reduce the number of running RCPs to one RCP/loop operation

A) A

A. Correct: RCPs would be left running because amps not normal
B. Incorrect: Per OMP 1-18, Rule 2 and EOP LOSCM - trip all RCPs if reactor power Is < 1% and amps are normal and stable.
C. Incorrect: Trip all RCPs. Two minutes would be allowed if saturated following RCP restart.
D. Incorrect: Trip all RCPs. no guidance on securing selectd RCPs

Reference: EOPs, Immediate manual Actions tab
AP/1/A/1700/16, RCP Abnormal Procedure (Units 2 and 3 only)

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1 POINT

14. Which one of the following correctly list some of the 7 (seven) events which Oconee has made provisions to prevent a reactor vessel overpressurizarion at low temperatures?

    A. HP-120 fails open, Temporary loss of DHR, All pressurizer heaters erroneously energized or failed on.

    B. Inadvertent HPI initiation, Erroneous opening of a CFT discharge valve, Failure of the PORV.

    C. HP-120 fails open, Temporary loss of DHR, Failure of the PORV.

    D. Inadvertent HPI initiation, Erroneous opening of a CFT discharge valve, Both trains of LTOP are out of service.

    A) A

    Reference: Lesson Plans Vol 2, OP-OC-CP-017, page 8 of 28.
    EO - 2
    K/A: 010K403 (3.8/4.1)
    RO/SRO: Both
    Level: M
    Author: rfa

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1 POINT

15. The following Core Flood Tank parameters exist:

"A" CFT
- Pressure = 629 psig
- Level = 13.04 ft.

"B" CFT
- Pressure = 619 psig
- Level = 12.06 ft.

Which ONE of the following describes the adverse effect of the CFT(s) during a large LOCA?

CFT "A" _____ / CFT "B" _____.

A. may inject nitrogen into the RCS / will dump an inadequate borated water volume.

B. will dump an inadequate volume of borated water / will dump at too low of an RCS pressure.

C. may inject nitrogen into the RCS / will dump borated water at too high of an RCS pressure

D. will dump borated water at too low of an RCS pressure / will dump an inadequate amount of borated water.

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A) A

A. Correct - "A" CFT pressure is too high >625 psig and will cause the tank to dump too early and at a higher RCS pressure this will cause nitrogen intrusion into the RCS. "B" CFT level is too low which will cause inadequate borated volume to refill the hot spot of the core.

B. Incorrect - "A" CFT has adequate water volume at 13.04 ft. "B" CFT pressure is OK.

C. Incorrect - First part is true, Second part incorrect because pressure is within procedural limit.

D. Incorrect - "A" CFT will dump too soon and at too high of an RCS pressure not too low. "B" CFT will dump an inadequate amount because level is to low.

K/A: 011EA109 (4.3/4.3)
T1G2, T1G1
Bank
Reference: Facility updated question bank question 45 PNS051702 PNS051702

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1 POINT

16. Immediately following actuation of ES channels 7 and 8, each RBS header should be throttled to approximately:

    A. 800

    B. 1000

    C. 1200

    D. 1500

    A) D

    A. Incorrect,
    B. Incorrect, Throttle to this number after swap to RBES.
    C. Incorrect,
    D. Correct, per EOP

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17. Which one of the following combinations will result in ALL CRD motors being de-energized?

SEE ATTACHMENT: CRD Power Supplies One Line Diagram

A. Primary breaker "A", DC breaker D, and F contactors open. The "A" breaker de-energizes the "C" DC hold bus, and one set of SCR's to the regulating groups. The "D" breaker trip de-energizes the other set of regulating group SCRs by removing their gating POWER.

B. DC breaker, "D", and the "F" contactors open. This scheme de-energizes both DC hold buses, and both sets of regulation group SCRs by removing their gating POWER.

C. Primary breaker "B", DC breaker D, and F contactors open. The "B" breaker de-energizes the "C" DC hold bus, and one set of SCR's to the regulating groups. The "D" breaker trip de-energizes the other set of regulating group SCRs by removing their gating SUPPLIES.

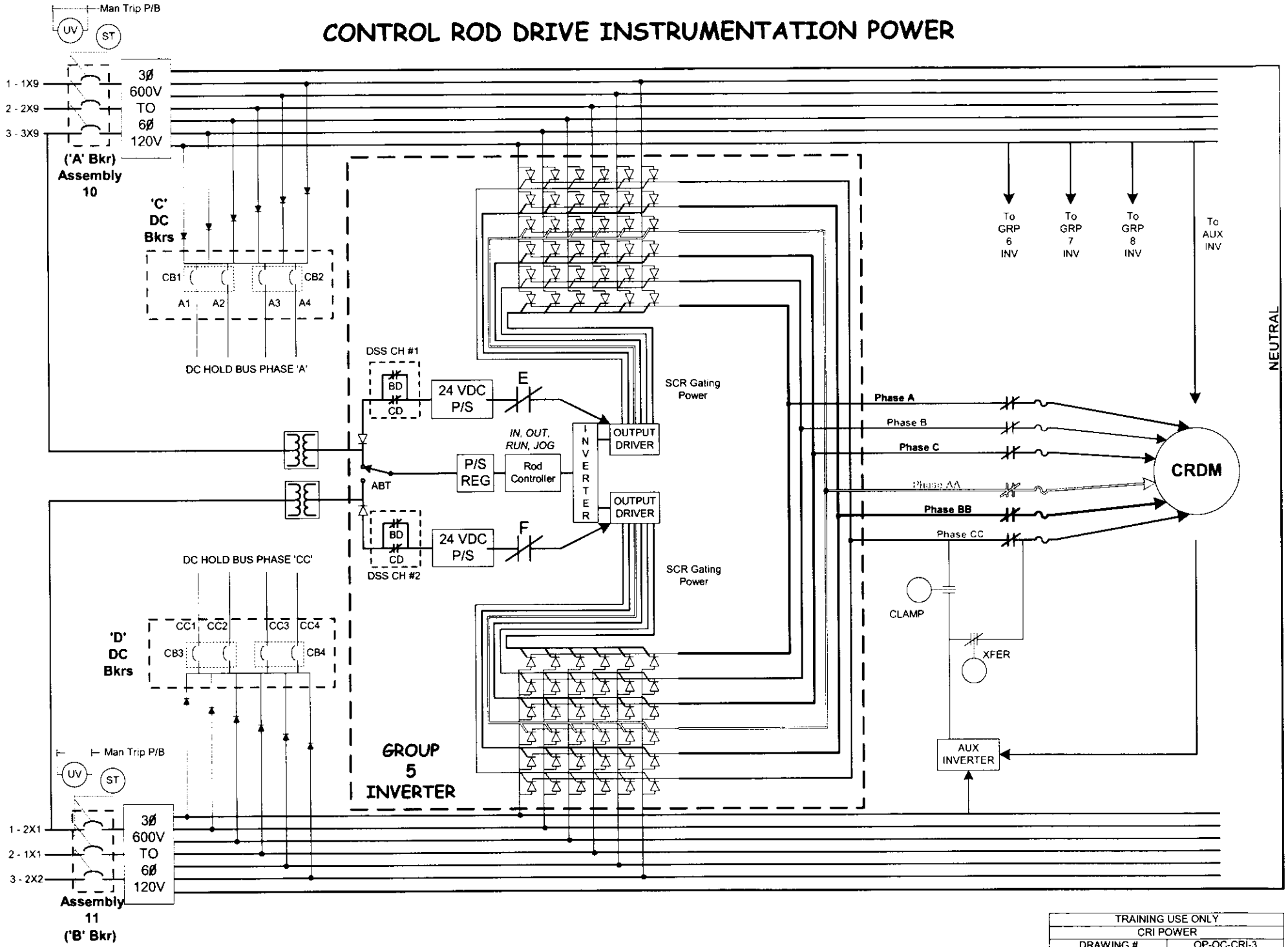
D. DC breaker, "D", and the "F" contactors open. This scheme de-energizes both DC hold buses, and both sets of regulation group SCRs by removing their gating SUPPLIES.

A) A

REFERENCE REQUIRED: A one line diagram of the CRD groups power supplies.

Reference: Lesson Plans Vol VIII, OP-OC-IC-RPS , page 45 of 56.
EO - 20.2
K/A: 012K201 (3.3/3.7)
RO/SRO: BOTH
Level: C
Author: rfa

CONTROL ROD DRIVE INSTRUMENTATION POWER



TRAINING USE ONLY	
CRI POWER	
DRAWING #	OP-OC-CRI-3
DRAWN BY: RJL	DATE: 7/22/99
REFERENCE:	B&W Training Manual
APPROVED BY:	Signature on File

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18. Which one of the following is correct concerning the RPS "MANUAL BYPASS"?

A. Takes both channels out of "MANUAL BYPASS" when the second RPS channel is placed in "MANUAL BYPASS".

B. The first RPS channel in "MANUAL BYPASS" will trip the second RPS channels Reactor Trip Module, if that channel is placed in "MANUAL BYPASS".

C. The first RPS channel placed in "MANUAL BYPASS" administratively prevents placing any additional channels in "MANUAL BYPASS".

D. The reactor trips if a second RPS channel is placed in "MANUAL BYPASS".

A) C

A. Admin and electrical interlock prevent two channels in bypass at same time see (C.)
B. Admin and electrical interlock prevent two channels in bypass at same time see (C.)
C. CORRECT: this interlock will actuate a relay that will prevent any of the remaining three channels to be placed in bypass.
D. Admin and electrical interlock prevent two channels in bypass at same time see (C.)

Reference: Vol VIII, RPS

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1 POINT

19. Which one of the following correctly describes the operation of the **LPI Trip Bistable**?

A. It allows for manual bypassing when RC pressure is < 900 psig. Once tripped, it must be manually reset. Its output is fed through an "OR" gate to digitial channels 3 & 4.

B. Once tripped, it must be manually reset. The bypass is automatically removed when RC pressure increases above 550 psig. Its output is fed through an "OR" gate to digitial channels 3 & 4.

C. It allows for manual bypassing when RC pressure is < 550 psig. The bypass is automatically removed when RC pressure increases above 900 psig.

D. It will trip if RC pressure decreases below 550 psig unless bypassed. Once tripped, it must be manually reset.

A) D

Reference: Lesson Plans Vol VIII, OP-OC-IC-ES , page 15 of 33.
EO - 3.1
K/A: 013A301 (3.7/3.9)
RO/SRO: BOTH
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

20. Given the following plant conditions:

- The reactor is shutdown.
- The "HPI BYPASS PERMIT" Stat Alarm is in.
- At 1700 psig, the operator bypasses all three channels for both trains of HPI.
- An RCP seal leak then develops, causing the operator to trip the affected RCP and increase the plant cooldown rate.
- RCS pressure decreases to 900 psig.
- Reactor Building pressure increases to 3.4 psig

Select the appropriate ES response:

A. HPI initiates on low RCS pressure due to the RCS leak.

B. HPI initiates on high reactor building pressure.

C. LPI initiates on low RCS pressure due to the RCS leak.

D. RBS initiates on high reactor building pressure.

A) B

A. HPI was bypassed and will not actuate on RCS pressure.
B. CORRECT: HPI will actuate on high RB pressure even if bypassed.
C. LPI will actuate on high RB pressure. The low RCS pressure LPI setpoint is not actuated at this pressure
D. RBS will not trip at this pressure.

Reference: Lesson Plan, IC-ES: Page 14 and 15

OCONEE NRC RO EXAM
02-18-2002

1 POINT

21. From the group below, which ONE of the following lists of signals would **NOT** provide an initiating logic path to generate a Load Shed signal?

    1. ES 1 actuation
    2. MFB #1 undervoltage for 23 seconds
    3. MFB #2 undervoltage for 22 seconds
    4. Breakers N1 and E1 open
    5. Startup and normal source undervoltage
    6. STAR relay

    A. 5 and 6

    B. 2 and 3

    C. 1, 2, and 4

    D. 1, 3, and 6

    A) D

    A. Incorrect - This path would satisfy the logic for load shed
    B. Incorrect - This path would satisfy the logic for load shed via a MFBMP signal
    C. Incorrect - This path would satisfy the logic for load shed
    D. Correct - MFB #1 would be energized and the logic would not be completed.

    Note:
    #1 logic path - A, E
    #2 logic path - A, B and D
    #3 logic path - B and C

    K/A: 013K101 (4.2/4.2)
    T2G1, T2G1
    Bank
    Reference: Facility updated question bank 65 EL050501 EL050501

OCONEE NRC RO EXAM
02-18-2002

1 POINT

22. Which ONE of the following identifies the rod position indicating (RPI) system selected on the Control Rod Position Indication Panel for normal monitoring and describe why this one is selected?

    A. ABSOLUTE - allows immediate verification that all control rods are fully inserted on a reactor trip.

    B. ABSOLUTE - allows continuous monitoring of sequence fault conditions during control rod motion.

    C. RELATIVE - allows immediate verification that all control rods are fully inserted on a reactor trip.

    D. RELATIVE-- allows continuous monitoring of sequence fault conditions during control rod motion.

    A) A

    A. Correct – API reed switch array provides physical position of rods.
    B. Incorrect – Sequence fault monitoring is provided and by RPI.
    C. Incorrect – RPI will not respond to rod insertion on reactor trip due to CRD de-energizing…step motor of RPI will not respond because CRD phases are not energized.
    D. Incorrect – RPI will not respond as indicated in "C" above.

    K/A: 014A102 (3.2/3.6)
    RO - T2G2
    Bank
    Reference: Facility updated question bank question 36 IC020601 IC020601

OCONEE NRC RO EXAM
02-18-2002

1 POINT

23. Following a loss of off site power, what are the indications, if any, that Control Rod groups 1 through 7 are fully inserted?

    A. The CRD panel is de-energized, there are no indications that CRD groups 1 through 7 are fully inserted.

    B. All in-limit lights on the position indication panel and the diamond control panel are on.

    C. Only the in-limit lights on the position indication panel are on.

    D. Only the in-limit lights on the diamond control panel are on.

    A) B

    Reasons:

    B. Correct, All lights would be operable.

    Reference: Vol V, OP/0/A/1105/009, Control Rod Drive System

OCONEE NRC RO EXAM
02-18-2002

1 POINT

24.

Given the following plant conditions:

- A power increase is in progress.
- Group 7 rods are at 50% withdrawn
- Rod 7-4 is stuck at 47% withdrawn.
- PI panel indication is selected to RPI.

Which one of the following would indicate that rod 7-4 is **NOT** moving?

A. Individual control rod position indication on PI panel.

B. Individual control rod position indication on the plant computer.

C. Control rod group average indication on the plant computer.

D. Individual control rod position on zone reference indication.

A) D

Reason:

A. & B. With RPI selected neither the PI panel or plant computer will indicate actual rod position, only rod position as a function of field rotation.

C. The group average cannot determine which particular rod is not moving.

D. CORRECT: the zone reference would show all the other rods at the 50% zone reference point and rod 7-4 would not have reached the 50 % level.

Reference: Vol VIII, Control Rod Indication
AOP Vol 1, AP/1/A/1700/015
MEM

OCONEE NRC RO EXAM
02-18-2002

1 POINT

25. Which one of the following is correct following a power supply failure to the NIs?

A. It causes a complete loss of output signal and computer alarms fail high.

B. It causes a complete loss of output signal and statalarms fail in the NO alarm state.

C. It causes a complete loss of output signal and statalarms actuate.

D. Statalarms fail in the NO alarm state and computer alarms fail high.

A) C

Reference: Lesson Plans Vol VIII, OP-OC-IC-NI , page 39 of 41.
EO - 27.1
K/A: 015A201 (3.5/3.9)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

26. Which one of the following is the correct response for a reactor at 100% RTP with a +25% axial power imbalance?

Power at the top of the core is approximately ___% and at the bottom it is ___%

A. 25/75

B. 75/25

C. 63/37

D. 37/63

A) C

Distractor Analysis:

Improved TS defines Axial Power Imbalance as follows. The power at the top half of the core, expressed as a percentage of RTP minus the power in the bottom half of the core, expressed as a percentage of RTP.

Top half minus bottom half = imbalance.

Solution: a - b = 25%
a + b = 100%

a = 62.5, b = 37.5

Reference: Lesson Plans Vol 2, OP-OC-CP-018, page 6 of 22.
EO - 1
K/A: 015A304 (3.3/3.5)
RO/SRO: Common
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

27. Unit 2 conditions:

INITIAL CONDITIONS:
- Reactor power = 45%

CURRENT CONDITIONS:
- Reactor power = 45%
- All RCPs operating
- 2B2 RCP experiences a 9% impeller degradation (instantaneously)

Which ONE of the following is the correct signal the ICS will receive for Tave input?

A. Loop A Tave

B. Loop B Tave

C. Tave is blocked to the ICS

D. An average of Loop A and B Tave

A) D

K/A: 015AK105 (2.7/3.3)
T1G1, T1G1
Bank
Reference: Facility updated question bank question 53 IC083202 IC083202 ASYMMETRIC ROD RUNBACK LOGIC OP-OC-CRI-5.

OCONEE NRC RO EXAM
02-18-2002

1 POINT

28. Which one of the following groups of power reduction rates is correct when an automatic load limit is received?

A. Loss of RC flow - 20%/min, Loss of RCPs - 25%/min, Maximum Runback 20%/min.

B. Loss of FWP - 20%/min, Loss of RC flow - 25%/min, Loss of RCPs - 20%/min.

C. Loss of RC flow - 20%/min, Loss of RCPs - 25%/min, Maximum Runback 25%/min.

D. Loss of FWP - 25%/min, Loss of RC flow - 25%/min, Loss of RCPs - 20%/min.

A) A

Reference: Lesson Plans Book II of II, Vol III, OP-OC-STG-ICS , page 27-28.
EO - 3.2
K/A: 015K105 (3.9/3.9)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

29. Which one of the following statements is correct concerning the Smart Automatic Signal Selector (SASS)?

A. If PZR level #1 is selected then the SASS input will be from that selected level channel and the second SASS input will be from level #3. If level #2 is selected then the second SASS input defaults to level #1. If level #3 is selected and #3 fails, SASS will automatically select PZR level 2, and the operator will have the ability to manually select PZR level #1.

B. If PZR level #3 is selected then the SASS input will be from that selected level channel and the second SASS input will be from level #1. If level #2 is selected then the second SASS input defaults to level #1. If level #1 is selected and #1 fails, SASS will automatically select PZR level 3, and the operator will have the ability to manually select PZR level #2.

C. If PZR level #1 or 2 is selected then the SASS input will be from that selected level channel and the second SASS input will be from level #3. If level #2 is selected then the second SASS input defaults to level #1. If level #1 is selected and #1 fails, SASS will automatically select PZR level 2.

D. If PZR level #1 or 2 is selected then the SASS input will be from that selected level channel and the second SASS input will be from level #3. If level #3 is selected then the second SASS input defaults to level #1. If level #3 is selected and #3 fails, SASS will automatically select PZR level 1.

A) D

Reference: Lesson Plans Vol VIII, OP-OC-IC-RCI , page 20 of 62.
EO - 3
K/A: 016A301 (2.9/2.9)
RO/SRO: BOTH
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

30. Given the following RCS instruments, during full power operation:

INSTRUMENT	**INITIAL**	**FINAL (rapid change)**
PZR Level Ch 1	220	208
RCS Tcold (NR)	555	557
PZR Temp	648	665
RCS Press (NR)	2155	2135

Which instrument would the Smart Auto Signal Selector (SASS) module perform an automatic TRANSFER?

A. PZR Level

B. RCS Tcold

C. PZR Temp

D. RCS Press

A) A

A. CORRECT, Pressurizer Level is only one SASS controlled.
B. Non SASS controlled.
C. Non SASS controlled.
D. Non SASS controlled.

Reference: Vol. VIII, Instrumentation & Controls, Reactor Coolant Instrumentation

OCONEE NRC RO EXAM
02-18-2002

1 POINT

31. Which one of the following is a correct list of RCS pressure indications and a portion of what they feed?

    A. RCS WR Pressure "A" feeds: WR Recorder, pressurizer spray and heaters.

    B. RCS WR Pressure "A" feeds: WR Recorder, LPI interlock, and pressurizer heaters.

    C. RCS NR Pressure "A" feeds: NR Recorder, pressurizer spray, heaters and PORV.

    D. RCS NR Pressure "A" feeds: NR Recorder, pressurizer spray, LPI interlock, and PORV.

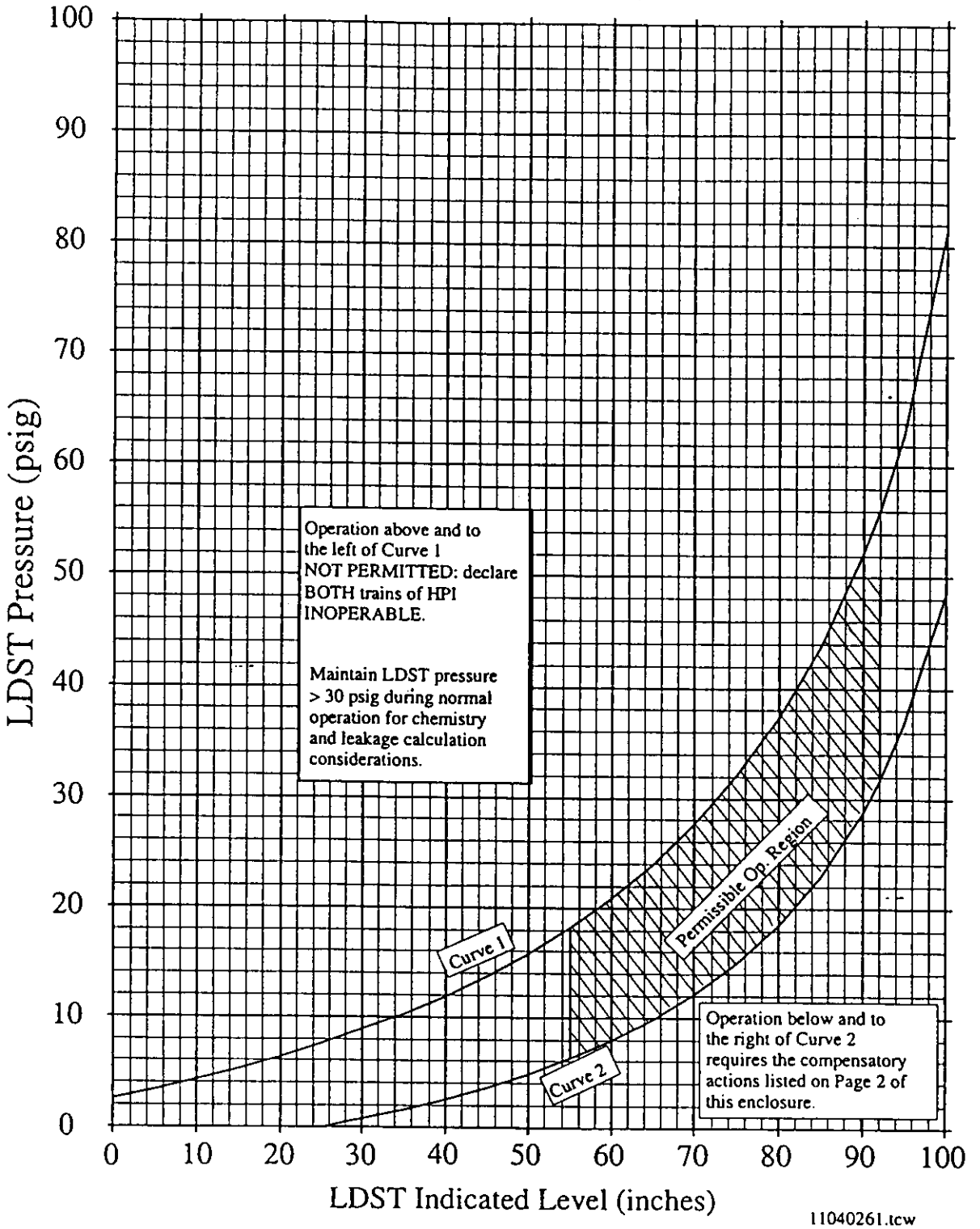
    A) C

    Reference: Lesson Plans Vol 2, OP-OC-CP-012, page 24 of 32.
    EO - 22 (OP-OC-IC-RCI, Vol VIII, Page 9 of 62)
    K/A: 016K403 (2.8/2.9) (NNIS Pressure Input to control systems)
    RO/SRO: Both
    Level: M
    Author: rfa

Enclosure 3.39

LDST Pressure Vs. Level (All Units)

(Instrument Error Included)



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1. Minimum LDST level when a HPI Pump is operating is 55" OR actions should be take to increase LDST level ≥ 55". {3}

2. When HPI Pumps are operating: {3}

   2.1 LDST pressure and level should be within limits of "LDST Pressure Vs. Level" curves to prevent gas from entering HPI Pumps in event of HPI Emergency Injection.

   - Normal LDST operation pressure should NOT exceed 50 psig.
   - "LDST Pressure Vs. Level" curves are also located on OAC.

   2.2 IF LDST pressure CANNOT be maintained ≥ 0 psig, a LDST vent path must be established.

   - (1)(2)(3)GWD-19 (LDST VENT) AND (1)(2)(3)GWD-20 (LDST Vent Blk) must be open.

3. If LDST Pressure Vs. Level is above and to the left of Curve 1, then declare BOTH trains of HPI INOPERABLE.

   3.1 Immediately depressurize LDST below Curve 1.

   3.2 Refer to TS 3.0.3 for shutdown requirements.

   3.3 Make notifications as required by OMP 1-14 (Notifications).

4. If LDST Pressure Vs. Level is below and the right of Curve 2, then perform the following:

   4.1 Pressurize LDST back into normal operating region of the "LDST Pressure Vs. Level" curve unless LDST is being depressurized intentionally by an approved procedure.

CAUTION: If LDST Pressure Vs. Level is below and to the right of curve 2, it may be possible to draw a vacuum in LDST resulting in HPI Pump damage due to inadequate NPSH. This could occur even though sufficient LDST level exists.

   4.2 Carry a note on the Turnover Sheet to the effect that if a transient occurs which requires additional HPI flow, immediately open (1)(2)(3)HP-24 and (1)(2)(3)HP-25 to provide an adequate suction source to HPI Pumps.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1

LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2

Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

LCO 3.0.3

When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

a. MODE 3 within 12 hours;

b. MODE 4 within 18 hours; and

c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

LCO 3.0.4

When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

3.0 LCO APPLICABILITY

LCO 3.0.4 (continued)	Exceptions to this Specification are stated in the individual Specifications. LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.
LCO 3.0.5	Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
LCO 3.0.6	When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.16, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.
LCO 3.0.7	Test Exception LCO 3.1.8 allows specified Technical Specification (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 High Pressure Injection (HPI)

LCO 3.5.2 The HPI System shall be OPERABLE with:

a. Two HPI trains OPERABLE;

b. An additional HPI pump OPERABLE;

c. Two LPI-HPI flow paths OPERABLE;

d. Two HPI discharge crossover valves OPERABLE;

e. HPI suction headers cross-connected; and

f. HPI discharge headers separated.

APPLICABILITY: MODES 1 and 2,
MODE 3 with Reactor Coolant System (RCS) temperature > 350°F.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One HPI pump inoperable.	A.1	Restore HPI pump to OPERABLE status.	72 hours
	OR	AND		
	One or more HPI discharge crossover valve(s) inoperable.	A.2	Restore HPI discharge crossover valve(s) to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1 Reduce THERMAL POWER to ≤ 75% RTP.	12 hours
	AND	
	B.2 Verify by administrative means that the ADV flow path for each steam generator is OPERABLE.	12 hours
	AND	
	B.3 Restore HPI pump to OPERABLE status.	30 days from initial entry into Condition A
	AND	
	B.4 Restore HPI discharge crossover valve(s) to OPERABLE status.	30 days from initial entry into Condition A

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One HPI train inoperable.	C.1	----------NOTE---------- Only required when inoperable HPI train is incapable of automatic actuation and incapable of actuation through remote manual alignment. --- Reduce THERMAL POWER to ≤ 75% RTP.	3 hours
	AND		
	C.2	----------NOTE---------- Only required when THERMAL POWER ≤ 75% RTP. --- Verify by administrative means that the ADV flow path for each steam generator is OPERABLE.	3 hours
	AND		
	C.3	Restore HPI train to OPERABLE status.	72 hours
D. HPI suction headers not cross-connected.	D.1	Cross-connect HPI suction headers.	72 hours
E. HPI discharge headers cross-connected.	E.1	Hydraulically separate HPI discharge headers.	72 hours

(continued)

ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
F.	One LPI-HPI flow path inoperable.	F.1	Restore LPI-HPI flow path to OPERABLE status.	72 hours
G.	Required Action and associated Completion Time of Condition B, C, D, E, or F not met.	G.1 AND G.2	Be in MODE 3. Reduce RCS temperature to ≤ 350°F.	12 hours 60 hours
H.	Two HPI trains inoperable. OR Two LPI-HPI flow paths inoperable.	H.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify each HPI manual and non-automatic power operated valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.2.2	----------NOTE---------- Not applicable to operating HPI pump(s). ---------- Vent each HPI pump casing.	 31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.3	Verify each HPI pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.4	Verify each HPI automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.5.2.5	Verify each HPI pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.5.2.6	Verify, by visual inspection, each HPI train reactor building sump suction inlet is not restricted by debris and suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	18 months
SR 3.5.2.7	Cycle each HPI discharge crossover valve and LPI-HPI flow path discharge valve.	18 months

OCONEE NRC RO EXAM
02-18-2002

1 POINT

34. An electrical fault has resulted in 1TC 4160 switch gear being de-energized.

Which of the following components will be unavailable as a result of this malfunction?

A. Reactor Building Cooling Unit "1A"

B. CC Pumps 1A and 1B

C. Inverter 1KVID

D. The unit 1 Turning Gear Oil Pump

A) A

Reasons:

A. Correct Answer: Reactor Building Cooling Unit "A" is powered from TC 4160 SG and would be lost if this component is de-energized.

B. 1A1 RCP is not powered from containment cooling fan power suppies.

C. Inverter KVID is not dependent on a single power supply and does not receive power from TC.

D. The Turning Gear Oil Pump is not powered from TC.

OC Reference: LP Book I of II, Vol 2, OP-OC-STG-CCW

OCONEE NRC RO EXAM
02-18-2002

1 POINT

35. Which one of the following is the correct purpose/purposes for installing the LP-19 flange for RCS drain down on Unit 1?

    A. Must be done **ONLY** for a refueling outage; The flange is **NOT** required to be on prior to draining < 100 inches.

    B. Must be done for every drain down prior to draining < 100 inches; Provides for a backup decay heat drop line.

    C. Must be done **ONLY** for a refueling outage; Provides for a backup decay heat drop line.

    D. It is **ONLY** required for refueling outages since other outages are considered "short term."

    A) B

    Reference: Lesson Plans Vol 2, OP-OC-CP-RCD, page 20 of 39.
    EO - 12
    K/A: 025AK301 (3.1/3.4)
    G2.2.27 (2.6/3.5)
    RO/SRO: Both
    Level: M
    Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

36. Which one of the following statements, regarding the Unit 1 RBS system, is correct when RB pressure reaches 10 psig?

    A. ES channels 7 & 8 actuate causing **ALL** RBS pumps to start, 1BS-1 and 1BS-2 ("A" and "B" RBS HEADER RB ISOLATION) open, 1LP-21 AND 1LP-22 receive an open signal.

    B. ES channels 5 & 6 actuate causing **ALL** RBS pumps to start, 1BS-11 and 1BS-16 ("A" and "B" RBS DISCHARGE CHECK) open, 1LP-21 AND 1LP-22 ("A" and "B" LPI BWST SUCTION) receive an open signal.

    C. ES channels 7 & 8 actuate causing **ONLY ONE** RBS pump to start, 1BS-1 and 1BS-2 will open ("A" and "B" RBS HEADER RB ISOLATION), 1LP-21 AND 1LP-22 ("A" and "B" LPI BWST SUCTION) will receive an open signal.

    D. ES channels 5 & 6 actuate causing **ONLY ONE** RBS pump to start, 1BS-11 and 1BS-16 ("A" and "B" RBS DISCHARGE CHECK) will open, 1LP-21 and 1LP-22 ("A" and "B" LPI BWST SUCTION) will receive an open signal, but will NOT open.

    A) A

    K/A: 026A301 (4.3/4.5)
    EO: 10
    Reference: Vol IV, OP-OC-PNS-BS, Page 14 of 14.
    Author: RFA

    Distractor Analysis:

    At 10 psig RB pressure, ES channels 7 and 8 actuate, All RBS pumps start, BS-1 and BS-2 open, LP-21 and LP-22 receive an open signal.

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02-18-2002

1 POINT

37. Unit 1 conditions:

- Reactor power = 100%

– IA/AIA system pressure decreases to 85 psig and stabilizes

– RED OPEN light ON for 1CC-8 on ES RZ module

– Statalarms actuated:
1SA-9/B1 CC CRD RETURN FLOW LOW
1SA-9/C1 CC COMP COOLING RETURN FLOW LOW

– CC Pump status:
1A CC Pump switch ON - RED light OFF / GREEN light illuminated
1B CC Pump switch AUTO - RED light OFF / GREEN light illuminated

Which ONE of the following describes the correct operator action to restore operation of the CC system at this time, if possible?

A. Dispatch an NLO to manually open 1CC-8.

B. Reopen 1CC-8 from the ES Channel 6 RZ Module.

C. Manually start the 1B CC Pump by placing the switch to ON.

D. CC cannot be restored, manually trip the reactor and all RC Pumps.

A) C

A - Incorrect - CC-8 closes < 80 psig IA pressure. The valve is open pe rthe ES RZ module indication.
B. Incorrect - CC-8 is normally operated from the ES Channel 6 RZ Module but the valve should be open at IA pressure of 90 psig.
C. Correct - IA pressure is not low enough (>80 psig) to fail CC-8 closed so the automatic start circuitry has failed and requires the operator to manually start the standby CC pump.
D. Incorrect - This would be correct if CC-8 was failed shut and could not be manually reopened locally by an NLO and a loss of HPI seal injection occurred.

K/A: 026G2.1.7 (3.7/4.4)
T1G1, T1G1
Bank
Reference: Facility updated question bank 37 PNS021702 PNS021702

OCONEE NRC RO EXAM
02-18-2002

1 POINT

38. Unit 1 plant conditions:

INITIAL CONDITIONS:

- Reactor Power = 100%
- SASS is DEENERGIZED
- PZR LEVEL #2 selected on UB1

CURRENT CONDITIONS:

- PZR TEMPERATURE "A" indicates 120°F
- PZR TEMPERATURE "B" indicates 645°F

Which ONE of the following describes the effects on the RCS makeup system and RCS volume?

	MAKEUP FLOW	ACTUAL PZR LEVEL
A.	Increases	Increases
B.	Decreases	Increases
C.	Increases	Decreases
D.	Decreases	Decreases

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02-18-2002

1 POINT

A) A

A. Correct - PZR Level #2 fed by Temp compensation RTD "A" As PZR temperature compensation fails low this decreases indicated PZR level. As indicated PZR level decreases an error between indicated controlling level vs. setpoint on HP-120 controller is developed causing HP-120 to open and try
to raise level to setpoint. As HP-120 opens MAKEUP FLOW will increase causing actual PZR LEVEL RCS inventory to increase.
B. Incorrect
C. Incorrect
D. Incorrect

K/A: 027AA201 (3.4/3.8)
T1G1, T1G2
Bank
Reference: Facility updated question bank 10 IC051 IC051
NRC DB95 (IC-RCI p21-23) Objective 10,11, and 13

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1 POINT

39. Unit 3 Conditons:

- Reactor power = 100%
- Pressurizer (PZR) Level Instrument #1 selected for control.
- 3HP-120 (RC Volume Control) in AUTOMATIC.
- SASS in MANUAL

Which ONE of the following describes the Pressurizer level indication response and 3HP-120 (RC Volume Control) response following an internal failure of ICCM Train "3A"?

A. PZR level indication fails low, 3HP-120 fully opens and both PZR level High/Low statalarms actuate.

B. PZR level indication fails as is, 3HP-120 controls level as demanded by the failed instrument and the PZR level Emergency High/Low statalarm is inoperable.

C. PZR level indication swaps to Instrument #2, 3HP-120 controls level at setpoint and the PZR level Emergency High/Low statalarm remains operable.

D. PZR level indication swaps to Instrument #3, 3HP-120 controls level at setpoint and the PZR level Emergency High/Low statalarm remains operable.

A) B

A. Incorrect - would be correct for power failure to ICCM train with SASS in automatic.

B. Correct - SASS will not detect failure as output from ICCM train has not changed

C. Incorrect - SASS selects operable Pzr level signal in opposite ICCM train.

D. Incorrect - SASS will not detect failure and will not select PZR level #3 following a ICCM Train A internal failure.

K/A: 027AK203 (2.6/2.8)
T1G1, T1G2
Bank
Reference: Facility updated question bank 32 PNS143501 PNS143501

OCONEE NRC RO EXAM
02-18-2002

1 POINT

40. Which one of the following parameters is controlled to limit the amount of iodine in the RB atmosphere following a LOCA?

A. The volume of galvanized metal inside containment.

B. The volume of aluminum inside containment.

C. The pH of the RB sump.

D. The temperature of the RB atmosphere.

A) C

Reasons:

A. This parameter is limited to reduce the amount of post-LOCA hydrogen and does not affect iodine in the RB atmosphere.

B. This parameter is limited to reduce the amount of post-LOCA hydrogen and does not affect iodine in the RB atmosphere.

C. Correct Answer. TSP baskets inside containment adjust the pH of the RB sump to between 7.0 and 11.0. This range of pH creates non-volatile iodine and limits the amount of iodine in the RB atmosphere.

D. RB spray limits containment pressure by spraying liquid into the steam atmosphere but any reduction of RB temperature is a byproduct of this pressure reduction and not intended to limit iodine in the RB atmosphere.

Reference: Vol IV, RB Spray

OCONEE NRC RO EXAM
02-18-2002

1 POINT

41. Given the following plant conditions:

    - 100% power

    The following events occur:

    - Both MFW pumps trip

    The following alarms are actuated:

    - EFW actuated
    - DSS channel trip
    - Main turbine trip
    - AMSAC trip

    Control rod groups 5, 6, and 7 rods indicate fully inserted.

    NO OPERATOR ACTIONS HAVE OCCURRED

    Which of the following describes the status of the CRD Diamond panel trip confirm light, and the breaker trip lights on the RPS cabinets?

    A. Trip confirm : LIT
       Breaker trip lights : DIM

    B. Trip confirm : OFF
       Breaker trip lights : BRIGHT

    C. Trip confirm : LIT
       Breaker trip lights : BRIGHT

    D. Trip confirm : OFF
       Breaker trip lights : DIM

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1 POINT

A) D

A. RPS failed, no trip confirm because CRD breakers did not open, DSS tripped the groups 5,6,7 rods. NO operator actions means no manual trip

B. RPS failed, no trip confirm because CRD breakers did not open, DSS tripped the groups 5,6,7 rods. NO operator actions means no manual trip

C. RPS failed, no trip confirm because CRD breakers did not open, DSS tripped the groups 5,6,7 rods. NO operator actions means no manual trip

D. CORRECT: RPS failed therefore no breakers tripped and no trip confirm, DSS tripped the rods however, the reactor did not trip from RPS.

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1 POINT

42. Which one of the following is correct if SCMs equal 0°F during an ATWS event?

RCPs should not be tripped during an ATWS until power is less than or equal to:

A. 5% to provide flow through the core for heat removal.

B. 5% to provide pressure control through the spray valve.

C. 1% to provide flow through the core for heat removal.

D. 1% to provide pressure control through the spray valve.

A) C

Reference: Book II of II, Vol 6, OP-OC-EAP-UNPP, page 7 of 19.
EO-4
K/A: 029EK312 (4.4/4.7)
RO/SRO: Both
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

43. Refueling is in progress with eight (8) fuel assemblies in the core. As the ninth assembly is being placed in the core the following NI readings are observed:

    - NI-1 increases from a base count of 203 to 430 cps.
    - NI-4 increases from a base count of 250 to 480 cps.
    - NI-2 and NI-3 are out-of-service.

    Which one of the following actions, if any, should be taken?

    A. No action is required, this is an expected NI response.

    B. Continue inserting assembly, reactor engineering should be contacted to perform a subcritical multiplication.

    C. Cease insertion of the fuel assembly and notify the Refueling SRO to perform an evaluation.

    D. Withdraw the fuel assembly, reactor engineering should be contacted to perform a subcritical multiplication.

    A) C

    A. An action is required, count rate has increased by more than 1.5 times. This is an unexpected change of Netron Flus countrate. The correct response is to suspend refueling and perform an evaluation.

    B. The assembly should not be placed into the core. Refuel ing should stop.

    C. Correct, The fuel movement should stop and an evaluation performed.

    D. The fuel movement should stop and an evaluation performed.

    Reference: OP/1/A/1502/007, Step 2.13, page 4 of 6.

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02-18-2002

1 POINT

44. Which one of the following states when the potential reactivity effects of a steam line break, with the ICS in manual are most severe and why?

A. Beginning of core life because this results in the maximum negative reactivity addition.

B. Beginning of core life because this results in the maximum positive reactivity addition.

C. End of core life because this results in the maximum negative reactivity addition.

D. End of core life because this results in the maximum positive reactivity addition.

A) D

Reasons:

As the core ages MTC becomes increasingly more negative. A steam line break results in a cooldown of the RCS and MTC adds positive reactivity as this occurs. Because MTC has a larger negative value as the core ages, the effect of the steam line break gets greater also.

Reference: Vol VII, Plant Transient Response
Vol III, Bk 2 of 2, OTSG

OCONEE NRC RO EXAM
02-18-2002

1 POINT

45. Which one of the following set of consequences will happen if the Moore controllers for MS-112/173, Second Stage Reheater (SSRH) Control, lose power?

A. MS-112/173 will go to the closed position and upon regaining of power will re-open if power is ≥ 75%. MS-77, 78, 80, 81 (MS to MSRH) will receive an open signal but will not open until power is ≥ 75%. MS-77, 78, 80, 81 will close if in automatic and power is ≤ 1% when power is restored to MS-112/173.

B. MS-112/173 will go to the closed position. MS-77, 78, 80, 81 (MS to MSRH) will receive an open signal AND will open in automatic if turbine load is ≥ 1%. MS-77, 78, 80, 81 will remain open if power is ≥75% when power is restored to MS-112/173.

C. MS-112/173 will go to the closed position AND remain closed even if power is restored. MS-77, 78, 80, 81 (MS to MSRH) will receive an open signal AND will open in automatic if turbine load is ≥ 75%. MS-77, 78, 80, 81 will remain open if power is < 75% when power is restored to MS-112/173.

D. MS-112/173 will go to the closed position and upon regaining of power will re-open if power is ≥ 1%. MS-77, 78, 80, 81 (MS to MSRH) will receive an open signal AND will open in automatic if turbine load is ≥ 1%. MS-77, 78, 80, 81 will remain open if power is < 75% when power is restored to MS-112/173.

A) B

Reference: Lesson Plans Book II of II, Vol III, OP-OC-STG-MSR , page 17 of 33.
EO - 10
K/A: 039A302 (3.1/3.5)
RO/SRO: BOTH
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

46. Which of the following is available on the main control board (1UB1 bench board) for the main feedwater pump turbine?

A. Control valve position.

B. First stage pressure.

C. Steam pressure (chest).

D. Stop valve position.

A) D

A. Main Turbine indication in control room, NOT MFW turbine.
B. Main Turbine indication in control room, NOT MFW turbine.
C. Main Turbine indication in control room, NOT MFW turbine.
D. CORRECT:

Reference: Vol III, Bk 2 of 2, ICS

MEM

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02-18-2002

1 POINT

47. Unit 2 plant conditions:

- ONE train of MSLB isolation circuit is disabled
- 2A Main Steam line break occurs

Which one of the following is correct?

A. The TDEFDWP will start if in AUTO.

B. The FDW Control Valves will close if in MANUAL.

C. The FDW Control Valves will fail "as is".

D. MSLB circuitry will NOT trip the Main FDW Pumps.

A) B

Reference: Book II of II, Vol 6, OP-OC-EAP-HPICD, page 13 of 36.
EO-4
K/A: 040AK302 (4.4/4.4) [assuming AFW initiation is synonymous with ESFAS initiation]
RO/SRO: Both
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

48. Unit 3 plant conditions:

- Power level = 100%
- ICS is in AUTOMATIC
- "B" TBVs fail FULL OPEN

ASSUMING the unit does not trip and ICS remains in AUTO, which ONE of the following predicts the final stabilized response of Reactor power, Tave, and MWe?

Reactor power will ____, Tave will ____, and MWe will ____.

A. increase / decrease / decrease

B. increase / decrease / remain constant

C. remain constant / decrease / remain constant

D. remain constant / remain constant / decrease

A) D

A. Incorrect, Power and Tave will return to previous value, MW will decrease.
B. Incorrect, Power increase and Tave decrease would occur if ICS in manual.
C. Incorrect, Power remains constant, Tave will does not decrease.
D. Correct, Power remains constant due to CTP demand remaining at 100%. MSCVs close to maintain THP resulting in decrease of steam to turbine to compensate for TBV flow. Tave is maintained by reactor control in auto with MWe decreasing.

K/A: 041K302 (3.8/3.9)
RO - T2G3
Bank
Reference: Facility updated question bank STG120801

OCONEE NRC RO EXAM
02-18-2002

1 POINT

49. Which one of the following statements is correct regarding the turbine power/load unbalance (PLU) circuit?

The PLU circuit will **NOT** generate...

A. a reactor trip until the turbine is at approximately 110.00% of rated speed.

B. a reactor trip until the turbine is at approximately 111.25% of rated speed.

C. a reactor trip until turbine speed is above 100 RPM and BOTH speed signals are lost.

D. an automatic reactor trip signal.

A) D

Reference: Book I of II, Vol 2, OP-OC-STG-EHC, page 13 & 14 of 30.
EO - 8
K/A: 045K120 (3.4/3.6) Considering the PLU circuit as a protection system
RO/SRO: Both
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

50. Unit 3 plant conditions:

- 3A & 3B Main FDW pumps have tripped
- ALL EFWPs have started with 200 gpm EFW flow to each SG
- 3FDW-315 & 316 (3A and 3B OTSG EFW Flow Control Valves) in manual
- 3A and 3B SG levels = 33" XSUR and stable
- 3A Main Feedwater pump is reset
- 3A Main Feedwater pump hydraulic oil pressure = 115 psig
- 3A MFW Pump discharge pressure = 670 psig

Which ONE of the following is correct?

If 3FDW-315 & 316 are placed in Automatic, then 3FDW 315 & 316 will...

A. be controlled by the Manual Loader signal.

B. close and stay closed until SG level decreases below 25" on SU level.

C. close and stay closed until SG level decreases below 30".

D. close and stay closed until the SG Dryout Protection circuit places 3FDW-315 & 316 on Auto Level Control.

A) C

A- No automatic is controlling signal to valves
B - No 25" on SU is control level for MFDW
C - Correct
D- No - on automatic level control when automatic is selected

K/A: 054AA202 (4.1/4.4)
T1G2, T1G2
Bank
Reference: Facility updated question bank question 17 CF023203 CF023203

OCONEE NRC RO EXAM
02-18-2002

1 POINT

51. Which one of the following set of RCS parameters is correct if the operator is maintaining RCS P/T stable as MS pressure decreases during a Station Blackout?

    RCS Temperature will ____ as decay heat load decreases over time following the initiating event. To combat this, the operator would ____ on either the TBVs or ADVs.

    A. remain the same; throttle close

    B. remain the same; throttle open

    C. decrease; throttle open

    D. decrease; throttle close

    A) D

    Distractor analysis:

    If the operator is maintaining RCS P/T stable, as MS pressure decreases, RCS temperature would attempt to ***decrease***. This would begin to occur as decay heat load decreased over time following the initiating event. To combat this the operator would ***close down*** on either TBVs or ADVs (depending on which was being used). Once the Pressure Control Valves were fully closed, additional decreases in decay heat load would result in a decreasing MS pressure and decreasing RCS temperature and pressure. Once this condition is reached it becomes necessary to throttle EFDW flow to the SG's to control RCS temperature. This will likely result in a decrease in SG levels as well.

    Reference: Book II of II, Vol 6, OP-OC-EAP-BO, page 8 of 50.
    EO-4
    K/A: 055EA202 (4.4/4.6)
    RO/SRO: Both
    Level: C
    Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

52. Which one of the following is correct concerning CCW siphon flow during a loss of offsite power?

A. The first siphon takes a suction from the condenser inlet piping, supplies flow through the condenser, and discharges to the Keowee Hydro tailrace. The high point that this first siphon must overcome is the discharge of the CCW Pumps.

B. The second siphon takes a suction from the condenser inlet piping, supplies flow through the condenser and discharges to the Keowee Hydro tailrace. The high point that the second siphon must overcome is just down stream of the condenser.

C. The first siphon takes suction from the CCW intake canal and supplies flow to the CCW crossover header where the LPSW system takes its suction. The high point that the first siphon must overcome is just down stream of the condenser.

D. The second siphon takes suction from the CCW intake canal and supplies flow to the CCW crossover header where the LPSW system takes its suction. The high point that this second siphon must overcome is the discharge of the CCW Pumps.

A) B

Distractor Analysis:

The first siphon takes suction from the CCW intake canal and supplies flow to the CCW crossover header where the LPSW system takes its suction. The high point that this second siphon must overcome is the discharge of the CCW Pumps.

The second siphon takes a suction from the condenser inlet piping, supplies flow through the condenser and discharges to the Keowee Hydro tailrace. The high point that the second siphon must overcome is just down stream of the condenser.

Reference: Book I of II, Vol 2, OP-OC-STG-CCW, page 20 of 39.
EO - 11
K/A: A07AK21 (3.7/3.5)
RO/SRO: Both
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

53. Plant conditions:

INITIAL CONDITIONS:

- ONS Units 1 and 2 are operating at 100% power
- ONS Unit 3 MFB's are powered by Central Switchyard via CT-5
- Keowee Unit 1 is generating to the grid @ 40 MWe

CURRENT CONDITIONS:

- ONS Unit 2 has a LOCA/LOOP resulting in **PROPER** actuation of ES Channels 1-6

After power has been regained to ONS Unit 2 MFB's, which ONE of the following statements is correct?

Assume NO operator action

A. 2C LPIP may be started immediately.

B. 2C LPIP may be started after 30 seconds.

C. 2X5 will Load Shed, re-energizing in 30 seconds.

D. 2X5 will NOT Load Shed and will remain energized.

A) D

A & B incorrect - LPIP C cannot be started during a loadshed unless either "A" or "B" LPIP are not running.
C. Incorrect - See D explanation.
D. Correct - 2X5 wll not load shed upon ES even if at least 1 of the SL breakers is closed.

K/A: 056AA254 (2.9/3.0)
T1G3, T1G3
Bank
Reference: Facility updated question bank 26 EL050601 EL050601

OCONEE NRC RO EXAM
02-18-2002

1 POINT

54. Which one of the following trip the condensate booster pump?

A. FDWP suction pressure drops to ≤ 360 psig and the associated FDWP suction valve is open.

B. FDWPT bearing oil pressure < 4 psig AND the associated FDWP discharge valve is open.

C. A CBP suction or discharge valve is moved from full open position to 50%.

D. The discharge header pressure on both MFDWPs is < 770 psig.

A) C

Reference: Lesson Plans Vol X, OP-OC-CF-C , page 36 of 58.
EO - 24
K/A:056K419 (1.9/1.9)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

55. Which ONE of the following describes how the Reactor Operator is initially alerted to a trip of C-61 (COND COOLER BYPASS CONTROL) and the resulting plant response following the trip?

C-61 tripped...

A. statalarm / Generator field and stator winding temperatures decreasing

B. OAC Alarm / Generator field and stator winding temperatures decreasing.

C. statalarm / Generator field and stator winding temperatures increasing

D. OAC Alarm / Generator field and stator winding temperatures increasing

A) D

A. incorrect, No statalarm available and field and stator winding temperatures will increase.
B. incorrect, OAC alarm will actuate but field and stator winding temperatures will increase. as described in "A" above.
C. incorrect, field and stator winding temperatures will increase but there is no statalarm. increase as stated in "C" above.
D: correct, OAC alarm that C-61 has tripped open and field and stator temperatures will increase due to decreased cooling flow through the Hydrogen coolers.

ONSW Bank question: CF127

Reference: Book I of II, Vol 2, OP-OC-STG-FHS, page 14 & 20 of 27.
EO - 18, 19
K/A: 056K603 (1.4/1.5)
RO/SRO: Both
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

56. Unit 2 plant conditions:

- A loss of power to MCC 2XO has occurred
- Regulated Power panelboards (2KRA/2KRB) are being supplied by SOURCE 2 (Motor Control Center (MCC) 2XP)

Which ONE of the following will occur if Unit 2 experiences a loss of power to MCC 2XP?

A. 2KRA/2KRB will become de-energized.

B. Any Vital Bus Inverter on "AC Line" will swap to "Inverter".

C. The Isolating Diodes output will be supplied by their backup source.

D. 2KRA/2KRB will be supplied from the I&C Batteries until power is restored from MCC 2XO or 2XP.

A) A

A.Correct
B.Incorrect - Vital bus inverters do not have an auto swap feature.
C.Incorrect - The statement is false. A loss of 2XO/2XP has no affect on Battery Charger operation. Isolating Diode output would be from their normal source, the Battery Charger.
D.Incorrect - KRA/KRB do not have battery backup.

K/A: 057AA106 (3.5/3.5)
T1G1, T1G1
Bank
Reference: Facility updated question bank 18 EL070901 EL070901

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1 POINT

57. Unit 1's DCA Bus has been inadvertently de-energized. Which ONE of the following correctly describes the status of 1KI (ICS) Inverter?

    1KI (ICS) Inverter is automatically supplied from ....

    A. the AC Line.

    B. the 1CA battery.

    C. the 1DCB bus via isolating diodes.

    D. an alternate unit via isolating diodes.

    A) C

    K/A: 058AA101 (3.4/3.5)
    T1G2, T1G2
    Bank
    Reference: Facility updated question bank 27 EL262 EL2621

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1 POINT

58. Which one of the following is correct concerning this system and the closing of the FDW valves during an MSLB?

A. The FDW control valves can be in AUTO or MANUAL for the system to operate. If instrument air is lost, the FDW control valves will fail "as is."

B. The FDW control valves must be in AUTO for the system to operate. The auto-start feature of the TDEFW pump is inhibited.

C. The FDW block valves can be in AUTO or MANUAL for the system to operate. The auto-start feature of the TDEFW pump is inhibited.

D. The FDW block valves must be in AUTO for the system to operate. If instrument air is lost, the FDW block valves will fail closed.

A) A

Reference: Lesson Plans Vol X, OP-OC-CF-FDW , page 29 of 33.
EO - 16 and 17
K/A:059A306 (3.2/3.3)
RO/SRO: BOTH
Level: C (must understand new modification logic)
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

59. Plant conditions:

- Reactor power = 80%
- ICS SG Master in MANUAL
- ICS Turbine Master in MANUAL
- All other ICS stations are in AUTO
- A 50 psi INCREASE in Main Steam Pressure occurs

Which ONE of the following is correct?

ICS Main Feedwater Pump speed will **initially**...

A. increase due to the resulting Turbine Header Pressure error signal.

B. decrease due to the resulting Turbine Header Pressure error signal.

C. increase and FDW valves would initially throttle in the open direction.

D. decrease and FDW valves would initially throttle in the closed direction.

A) C

A. Incorrect: THP error is blocked by the SG master in Hand.
B. Incorrect: THP error is blocked by the SG master in Hand.
C. Correct: FDW valve DP would decrease causing FDWP demand to increase. FDW valves open due to increase in flow as SG pressure decreased.
D. Incorrect: FDW valve DP decreases causing the FDWPs demand to increase. Valves throttle open due to decreased flow with higher SG pressure

OC Reference: AP/1/A/1700/028, ICS Instrument Failures

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1 POINT

60. Unit 1 conditions:

- Mode 3
- RCS Average Temperature = 485°F
- Motor Driven Emergency Feedwater pump (MDEFDWP) "1A" and "1B" control switches selected to AUTO 1

Which ONE of the following conditions will initiate an automatic start of the MDEFDWPs?

A. BOTH channels of AMSAC actuate

B. BOTH "B" SG XSUR levels = 20" for 40 seconds

C. Hydraulic oil pressure = 0 psig on the operating MFDWP

D. Low MFDWP discharge pressure on the operating MFDWP

A) B

A. INCORRECT - AUTO 2 function
B. CORRECT - Dry-Out protection is signaled from the AUTO 1 position. BOTH XSUR level indications < 21" for > 30 seconds starts both MDEFWPs.
C. INCORRECT - AUTO 2 function, both Main FDW Pumps would not be operating at this temperature.
D. INCORRECT - AUTO 2 function, both Main FDW Pumps would not be operating at this temperature.

Reference: Lesson Plans Vol X, OP-OC-CF-EFW , page 23 of 46.
EO - 24
K/A:061K402 (4.5/4.6)
RO/SRO: BOTH
Level: C (must understand Auto 1/Auto2 logic)
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

61. Plant conditions:

- Keowee Unit #2 is supplying ONS Unit 1, 2, 3 via the CT-4
- CT-4 cooling fans and oil pumps operating as required

Which ONE of the following CT-4 parameters indicate that the 22.4 MVA transformer rating on CT-4 has been exceeded?

MEGAWATTS = _____ / MEGAVARS = _____.

SEE ATTACHMENT AP/11: Encl. 5.1A (CT-4 overload limits)

A. 18 / 11

B. 11 / 16

C. 14.5 / 16

D. 18 / 14.5

A) D

A. Incorrect - This combination does not exceed the 112% line on the curve. The combination exceeds the 100% curve (20.6 MVA)
B. Incorrect - This combination does not exceed the 112% line on the curve. The combination exceeds the 100% curve (20.6 MVA)
C. Incorrect - This combination does not exceed the 100% or 112% line on the curve
D. Correct - This combination exceeds the 112% line on the curve

Attachment required: AP/11, encl. 5.1a (CT-4 overload limits)

K/A: 062A101 (3.4/3.8)
T2G2, T2G2
Bank
Reference: Facility updated question bank 62 EL041201 EL041201

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

CT-4 is **NOT** designed for loads > 112%. Under extreme emergency conditions, 112% MVA limit may be exceeded. Maximum transformer oil and winding limits should **NEVER** be exceeded.

NOTE

The following statalarms may provide early warning that transformer limits are being approached:

- SA-18/B-4 (TRANSFORMER CT-4 OIL TEMPERATURE HIGH) (90°C)
- SA-18/C-4 (TRANSFORMER CT-4 WINDING TEMP HIGH) (117°C)

1. __ **IAAT** either of the following computer points exceed the maximum limit:

	Computer Pt.	Maximum
	O1A0835	130°C
	O1A0836	130°C

THEN take immediate action to reduce the load on CT-4.

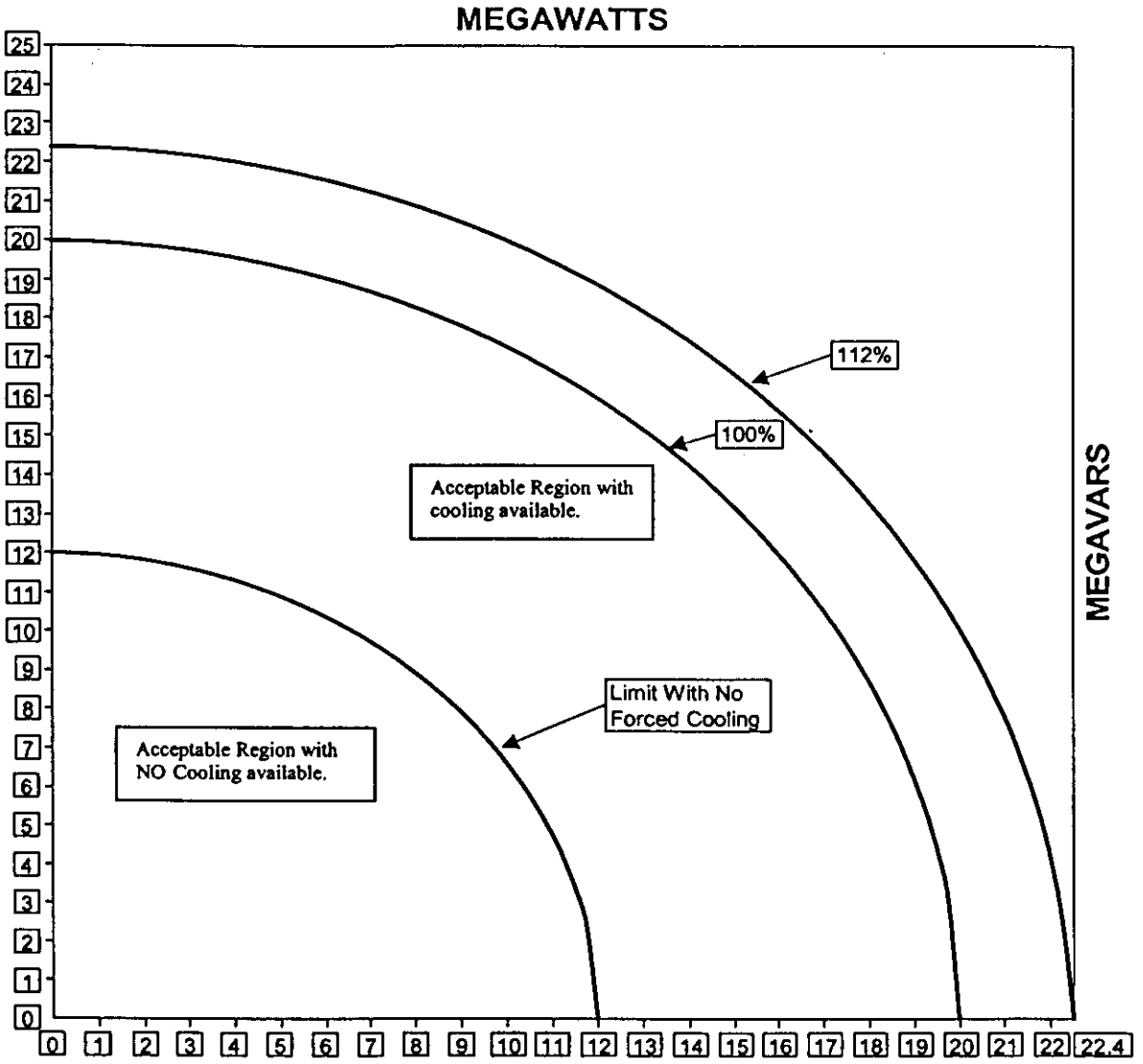
2. Verify both of the following available:
   __ CT-4 MEGA WATTS
   __ CT-4 MEGA VARS

__Use Unit 1 Switchyard Mimic board AC KILOAMPERES to determine transformer limits:

- 0.50 AC KILOAMPERES Incoming (100%)
- 0.60 AC KILOAMPERES Incoming (100%)
- 0.93 AC KILOAMPERES Incoming (112%)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3. __ Maintain CT-4 within the limits of Figure 1.	

FIGURE 1



4. __ WHEN directed by CR/SRO, THEN EXIT this enclosure.	

END

OCONEE NRC RO EXAM
02-18-2002

1 POINT

62. Which ONE of the following actions is **REQUIRED** per SLC 16.11-3, if 1RIA-35 (Low Pressure Service Water) fails low and is declared inoperable with Unit 1 operating at 100% power?

SEE ATTACHMENT: SLC 16.11-3 (Radioactive Effluent Monitoring)

A. Release may continue, provided that grab samples are taken every eight (8) hours and analyzed within twenty-four (24) hours.

B. Release may continue, provided that grab samples are taken and analyzed immediately and every twelve (12) hours thereafter.

C. Explain inoperability in next Semiannual Radioactive Effluent Release Report.

D. Submit a work request for repair using the normal scheduling process.

A) B

Required Attachment: SLC 16.11-3 (Radioactive Effluent Monitoring)

K/A: 062G2.1.20 (4.3/4.2)
T1G1, T1G1
Bank
Reference: Facility updated question bank 46 WE011301 WE011301

16.11 RADIOLOGICAL EFFLUENTS CONTROL

16.11.3 Radioactive Effluent Monitoring Instrumentation

COMMITMENT Radioactive Effluent Monitoring Instrumentation shall be OPERABLE as follows:

a. Liquid Effluents

The radioactive liquid effluent monitoring instrumentation channels shown in Table 16.11.3-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of SLC 16.11.1.a are not exceeded.

b. Gaseous Process and Effluents

The radioactive gaseous process and effluent monitoring instrumentation channels shown in Table 16.11.3-2 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of SLC 16.11.2.a are not exceeded.

c. The setpoints shall be determined in accordance with the methodology described in the ODCM and shall be recorded.

---NOTE---
Correction to setpoints determined in accordance with Commitment c may be permitted without declaring the channel inoperable.

APPLICABILITY: According to Table 16.11.3-1 and Table 16.11.3-2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Alarm/trip setpoint less conservative than required for one or more effluent monitoring instrument channels.	A.1	Declare channel inoperable.	Immediately
	OR		
	A.2	Suspend release of effluent monitored by the channel.	Immediately

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more required liquid effluent monitoring instrument channels inoperable.	B.1	Enter the Condition referenced in Table 16.11.3-1 for the function.	Immediately
	AND		
	B.2	Restore the instrument(s) to OPERABLE status.	30 days
C. One or more required gaseous effluent monitoring instrument channels inoperable.	C.1	Enter the Condition referenced in Table 16.11.3-2 for the function.	Immediately
	AND		
	C.2	Restore the instrument(s) to OPERABLE status.	30 days
D. Required Action and associated Completion Time of Required Action B.2 or C.2 not met.	D.1	Explain in next Annual Radiological Effluent Release Report why inoperability was not corrected in a timely manner.	April 30 of following calendar year

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action B.1 and referenced in Table 16.11.3-1. (RIA-33)	E.1.1 Analyze two independent samples in accordance with SLC 16.11.4.	Prior to initiating subsequent release
	AND	
	E.1.2 Conduct two independent data entry checks for release rate calculations	Prior to initiating subsequent release
	AND	
	E.1.3 Conduct two independent valve lineups of the effluent pathway.	Prior to initiating subsequent release
	OR	
	E.2 Suspend release of radioactive effluents by this pathway.	Immediately
F. As required by Required Action B.1 and referenced in Table 16.11.3-1. (RIA-54)	F.1 Suspend release of radioactive effluents by this pathway.	Immediately
	OR	
	F.2 Collect and analyze grab samples for gross radioactivity (beta and/or gamma) at a lower limit of detection of at least 10^{-7} μCi/ml.	Prior to each discrete release of the sump

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action B.1 and referenced in Table 16.11.3-1. (Liquid Radwaste Effluent Line Flow Rate Monitor)	----------NOTE---------- Not required during short, controlled outages of liquid effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. ---------- G.1 Suspend release of radioactive effluents by this pathway. OR G.2 Estimate flow rate during actual releases.	Immediately Immediately AND Once per 4 hours thereafter

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. As required by Required Action B.1 and referenced in Table 16.11.3-1. (RIA-35, #3 Chemical Treatment Pond Composite Sampler and Sampler Flow Monitor (Turbine Building Sumps Effluent))	----------NOTE---------- Not required during short, controlled outages of liquid effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. ----------	
	H.1 Suspend release of radioactive effluents by this pathway.	Immediately
	OR	
	H.2 Collect and analyze grab samples for gross radioactivity (beta and/or gamma) at a lower limit of detection of at least 10^{-7} µCi/ml.	Immediately AND Once per 12 hours thereafter

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. As required by Required Action C.1 and referenced in Table 16.11.3-2 for effluent releases from waste gas tanks (RIA-37, RIA-38) or containment purges (RIA-45).	----------NOTE---------- Not required during short, controlled outages of gaseous effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. ----------	
	I.1.1 Analyze two independent samples.	Prior to initiating subsequent release
	AND	
	I.1.2 Conduct two independent data entry checks for release rate calculations	Prior to initiating subsequent release
	AND	
	I.1.3 Conduct two independent valve lineups of the effluent pathway.	Prior to initiating subsequent release
	OR	
	I.2 Suspend release of radioactive effluents by this pathway.	Immediately

CONDITION	REQUIRED ACTION		COMPLETION TIME
J. As required by Required Action C.1 and referenced in Table 16.11.3-2. (Effluent Flow Rate Monitor (Unit Vent, Containment Purge, Interim Radwaste Exhaust, Hot Machine Shop Exhaust, Radwaste Facility Exhaust, Waste Gas Discharge))	----------NOTE---------- Not required during short, controlled outages of gaseous effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. ----------		
	J.1	Suspend release of radioactive effluents by this pathway.	Immediately
	OR		
	J.2	Estimate flow rate	Immediately AND Once per 4 hours thereafter

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. As required by Required Action C.1 and referenced in Table 16.11.3-2. (RIA-45, RIA-53, 4RIA-45)	----------NOTE---------- Not required during short, controlled outages of gaseous effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. ----------	
	K.1 Suspend release of radioactive effluents by this pathway.	Immediately
	OR	
	K.2.1 Collect grab sample.	Immediately AND Once per 8 hours
	AND	
	K.2.2 Analyze grab samples for gross activity (beta and/or gamma).	24 hours from collection of sample

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. As required by Required Action C.1 and referenced in Table 16.11.3-2. (Unit Vent Monitoring Iodine Sampler, Unit Vent Monitoring Particulate Sampler, Interim Radwate Building Ventilation Monitoring Iodine Sampler, Interim Radwaste Building Ventilation Monitoring Particulate Sampler, Hot Machine Shop Iodine Sampler, Hot Machine Shop Particulate Sampler, Radwaste Facility Iodine Sampler, Radwaste Facility Particulate Sampler)	----------NOTE---------- Not required during short, controlled outages of gaseous effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. --- L.1 Suspend release of radioactive effluents by this pathway. OR L.2.1 ----------NOTE---------- The collection time of each sample shall not exceed 7 days. --- Collect samples continuously using auxiliary sampling equipment. AND L.2.2 Analyze each sample.	Immediately Immediately 48 hours from end of each sample collection

CONDITION	REQUIRED ACTION	COMPLETION TIME
M. As required by Required Action C.1 and referenced in Table 16.11.3-2 for effluent releases from ventilation system or condenser air ejectors. (RIA-40)	----------NOTE---------- Not required during short, controlled outages of gaseous effluent monitoring instrumentation. Short controlled outages are defined as planned removals from service for durations not to exceed 1 hour, for purposes of sample filter changeouts, setpoint adjustments, service checks, and/or routine maintenance procedures. This guidance may be applied successively, provided that time between successive short, controlled outages is always at least equal to duration of immediately preceding outage. ----------	
	M.1 Continuously monitor release through the unit vent.	Immediately
	OR	
	M.2 Suspend release of radioactive effluents by this pathway.	Immediately
	OR	
	M.3.1 Collect grab sample.	Immediately AND Once per 8 hours
	AND	
	M.3.2 Analyze grab sample for gross activity (beta and/or gamma).	24 hours from collection of grab sample

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 16.11.3.1	----------NOTE---------- The Channel Response check shall consist of verifying indications during periods of release. Channel response checks shall be made at least once per calendar day on days in which continuous, periodic or batch releases are made. ---------- Perform Channel Response Check.	During each release via this pathway
SR 16.11.3.2	----------NOTE---------- The Channel Response check shall consist of verifying indications during periods of release. Channel response checks shall be made at least once per calendar day on days in which continuous, periodic or batch releases are made. ---------- Perform Channel Response Check.	24 hours
SR 16.11.3.3	Perform Source Check.	24 hours
SR 16.11.3.4	Perform Source Check.	31 days
SR 16.11.3.5	Perform Source Check.	92 days

SURVEILLANCE		FREQUENCY
SR 16.11.3.6	----------NOTE---------- The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room annunciation occurs if any of the following conditions exist: 1. Instrument indicates measured levels above the alarm/trip setpoint. 2. Circuit failure (downscale only). ---------- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 16.11.3.7	----------NOTE---------- The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room annunciation occurs if any of the following conditions exist: 1. Instrument indicates measured levels above the alarm/trip setpoint. 2. Circuit failure (downscale only). ---------- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 16.11.3.8	Perform CHANNEL FUNCTIONAL TEST.	92 days

SURVEILLANCE		FREQUENCY
SR 16.11.3.9	----------NOTE---------- The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with the National Institute of Standards and Technology (NIST). The standards shall permit calibrating the system over its intended range of energy and measurement. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. (Operating plants may substitute previously established calibration procedures for these requirements.) ---------- Perform CHANNEL CALIBRATION.	12 months
SR 16.11.3.10	Perform CHANNEL CALIBRATION.	12 months
SR 16.11.3.11	Perform leak test.	When cylinder gates or wicket gates are reworked
SR 16.11.3.12	Perform Source Check.	Within 24 hours prior to each release via associated pathway

Table 16.11.3-1
LIQUID EFFLUENT MONITORING INSTRUMENTATION
OPERATING CONDITIONS AND SURVEILLANCE REQUIREMENTS

	INSTRUMENT	MINIMUM OPERABLE CHANNELS	APPLICABILITY	SURVEILLANCE REQUIREMENTS	CONDITION REFERENCED FROM REQUIRED ACTION B.1
1.	Monitors Providing Automatic Termination of Release				
	a. Liquid Radwaste Effluent Line Monitor, RIA-33	1	At all times	SR 16.11.3.1 SR 16.11.3.3 SR 16.11.3.6 SR 16.11.3.9	E
	b. Turbine Building Sump, RIA-54	1	At all times	SR 16.11.3.2 SR 16.11.3.4 SR 16.11.3.7 SR 16.11.3.9	F
2.	Monitors not Providing Automatic Termination of Release				
	Low Pressure Service Water RIA-35	1	At all times	SR 16.11.3.2 SR 16.11.3.4 SR 16.11.3.7 SR 16.11.3.9	H
3.	Flow Rate Measuring Devices				
	a. Liquid Radwaste Effluent Line Flow Rate Monitor (0LW CR0725 or 0LW SS0920)	1	At all times	SR 16.11.3.1 SR 16.11.3.10	G
	b. Liquid Radwaste Effluent Line Minimum Flow Device	NA	NA	SR 16.11.3.1 SR 16.11.3.10	NA
	c. Turbine Building Sump Minimum Flow Device	NA	NA	SR 16.11.3.1 SR 16.11.3.10	NA
	d. Low Pressure Service Water Minimum Flow Device	NA	NA	SR 16.11.3.1 SR 16.11.3.10	NA

Table 16.11.3-1
LIQUID EFFLUENT MONITORING INSTRUMENTATION
OPERATING CONDITIONS AND SURVEILLANCE REQUIREMENTS

	INSTRUMENT	MINIMUM OPERABLE CHANNELS	APPLICABILITY	SURVEILLANCE REQUIREMENTS	CONDITION REFERENCED FROM REQUIRED ACTION B.1
e.	Keowee Hydroelectric Tailrace Discharge [a]	NA	NA	SR 16.11.3.11	NA
4.	Continuous Composite Sampler				
	#3 Chemical Treatment Pond Composite Sampler and Sampler Flow Monitor (Turbine Building Sumps Effluent)	1	At all times	SR 16.11.3.2 SR 16.11.3.10	H

(a) Flow is determined from the number of hydro units operating. If no hydro units are operating, leakage flow will be assumed to be 38 cfs based on historical data.

Table 16.11.3-2
GASEOUS EFFLUENT MONITORING INSTRUMENTATION
OPERATING CONDITIONS AND SURVEILLANCE REQUIREMENTS

	INSTRUMENT	MINIMUM OPERABLE CHANNELS (PER RELEASE PATH)	APPLICABILITY	SURVEILLANCE REQUIREMENTS	CONDITION REFERENCED FROM REQUIRED ACTION C.1
1.	Unit Vent Monitoring System				
a.	Noble Gas Activity Monitor Providing Alarm and Automatic Termination of Containment Purge Release (RIA-45 - Purge Isolation Function)	1	At All Times	SR 16.11.3.2 SR 16.11.3.4 SR 16.11.3.7 SR 16.11.3.9	I
b.	Noble Gas Activity Monitor Providing Alarm. (RIA-45 - Vent Stack Monitor Function)	1	At all times	SR 16.11.3.2 SR 16.11.3.4 SR 16.11.3.7 SR 16.11.3.9	K
c.	Iodine Sampler	1	At All Times	SR 16.11.3.2	L
d.	Particulate Sampler	1	At All Times	SR 16.11.3.2	L
e.	Effluent Flow Rate Monitor (Unit Vent Flow) (GWD CR0037)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	J
f.	Sampler Flow Rate Monitor [a] (Annunciator)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	NA
g.	Effluent Flow Rate Monitor (Containment Purge) (PR CR0082)	1	During Containment Purge Operation	SR 16.11.3.2 SR 16.11.3.10	J
h.	CSAE Off Gas Monitor (RIA-40)	1	During Operation of CSAE	SR 16.11.3.2 SR 16.11.3.5 SR 16.11.3.8 SR 16.11.3.9	M
2.	Interim Radwaste Building Ventilation Monitoring System				
a.	Noble Gas Activity Monitor (RIA - 53)	1	At All Times	SR 16.11.3.2 SR 16.11.3.4 SR 16.11.3.7 SR 16.11.3.9	K
b.	Iodine Sampler	1	At All Times	SR 16.11.3.2	L
c.	Particulate Sampler	1	At All Times	SR 16.11.3.2	L
d.	Effluent Flow Rate Monitor (Interim Radwaste Exhaust) (GWD FT0082)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	J
e.	Sampler Flow Rate Monitor[a] (Annunciator)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	NA

Table 16.11.3-2
GASEOUS EFFLUENT MONITORING INSTRUMENTATION
OPERATING CONDITIONS AND SURVEILLANCE REQUIREMENTS

	INSTRUMENT	MINIMUM OPERABLE CHANNELS (PER RELEASE PATH)	APPLICABILITY	SURVEILLANCE REQUIREMENTS	CONDITION REFERENCED FROM REQUIRED ACTION C.1
3.	Hot Machine Shop Ventilation Sampling System				
a.	Iodine Sampler	1	At All Times	SR 16.11.3.2	L
b.	Particulate Sampler	1	At All Times	SR 16.11.3.2	L
c.	Effluent Flow Rate Monitor (Hot Machine Shop Exhaust) (Totalizer)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	J
d.	Sampler Flow Rate Monitor [a] (Annunciator)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	NA
4.	Radwaste Facility Ventilation Monitoring System				
a.	Noble Gas Activity Monitor (4-RIA-45)	1	At All Times	SR 16.11.3.2 SR 16.11.3.4 SR 16.11.3.7 SR 16.11.3.9	K
b.	Iodine Sampler	1	At All Times	SR 16.11.3.2	L
c.	Particulate Sampler	1	At All Times	SR 16.11.3.2	L
d.	Effluent Flow Rate Monitor (Radwaste Facility Exhaust) (0VS CR2060)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	J
e.	Sampler Flow Rate Monitor [a] (Annunciator)	1	At All Times	SR 16.11.3.2 SR 16.11.3.10	NA
5.	Waste Gas Holdup Tanks				
a.	Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (RIA-37,-38)[b]	1	During Waste Gas Holdup Tank Releases	SR 16.11.3.1 SR 16.11.3.6 SR 16.11.3.9 SR 16.11.3.12	I
b.	Effluent Flow Rate Monitor (Waste Gas Discharge Flow) (GWD CR033)	1	During Waste Gas Holdup Tank Releases	SR 16.11.3.1 SR 16.11.3.10	J

(a)Alarms indicating low flow may be substituted for flow measuring devices.
(b)Either Normal or High Range monitor is required dependent upon activity in tank being released.

BASES

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approved methods in the ODCM to assure that the alarm/trip will occur prior to exceeding 10 times the limits of 10 CFR Part 20. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approved methods in the ODCM to assure that the alarm/trip will occur prior to exceeding applicable dose limits in SLC 16.11.2. The operability end use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

For certain applicable cases, grab samples or flow estimates are required at frequencies between every 4 hours end every 12 hours upon RIA removal from service. SLC 16.11.3 does not explicitly require Action (grab samples or flow estimates) to be initiated immediately upon RIA removal from service, when removal is for the purposes of sample filter changeouts, setpoint adjustments, service checks, or routine maintenance. Therefore, during the defined short, controlled outages, Action is not required.

For the cases in which Action is defined as continuous sampling by auxiliary equipment (Action L) initiation of continuous sampling by auxiliary sampling equipment requires approximately 1 hour. One hour is the accepted reasonable time to initiate collect and change samples. Therefore. for the defined short, controlled outages (not to exceed 1 hour), Action is not required.

Failures such as blown instrument fuses, defective indicators, and faulted amplifiers are, in many cases, revealed by alarm or annunciator action. Comparison of output and/or state of independent channels measuring the same variable supplements this type of built-in surveillance. Based on experience in operation of both conventional and nuclear systems, when the unit is in operation, the minimum checking frequency stated is deemed adequate.

REFERENCES:

1. 10 CFR Part 20.
2. 10 CFR Part 50, Appendix A.
3. Offsite Dose Calculation Manual.
4. UFSAR, Section 7.2.3.4.

OCONEE NRC RO EXAM
02-18-2002

1 POINT

63. Which ONE of the following statements describes the operation of the startup feeder breakers to TA and TB (6.9 kv) following a valid switchyard isolation and a subsequent resetting of the switchyard isolation logic?

The breakers will open upon actuation of...

A. both channels of Switchyard isolation and will reclose automatically if in AUTO.

B. either channel of Switchyard isolation and will reclose automatically if in AUTO.

C. both channels of Switchyard isolation and will only reclose MANUALLY.

D. either channel of Switchyard isolation and will only reclose MANUALLY.

A) A

A. Correct, it takes both trains of Switchyard isolation to actuate the tripping of the 7kV breakers and if the switchyard isolation signal is reset without taking the breakers to manual the breakers will reclose automatically.
B. Incorrect, it takes both trains.
C. Incorrect, the breaker will reclose in automatic.
D. Incorrect, it takes both trains of Switchyard isolation to trip the 7kV breakers.

Reference: Lesson Plans Vol IX, OP-OC-EL-EPD , page 34 of 76.
EO - 15.1
K/A: 062K402 (2.5/2.7)
RO/SRO: BOTH
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

64. Which ONE of the following statements correctly describes how to reset a 230 KV SWYD Yellow Bus Differential Lockout?

The 230 KV SWYD Yellow Bus Differential Lockout must be manually reset via ...

A. switches on the affected PCBs.

B. switches in the 230 KV relay house.

C. pushbuttons on cable room panels.

D. control room reset pushbuttons.

A) B

Reference: Lesson Plans Vol IX, OP-OC-EL-CB , page 35 of 57.
EO - 5.2
K/A: 062K404 (2.2/2.9)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

65. Plant conditions:

- Reactor power = 100%

Which ONE of the following will result from de-energizing the KU panelboard?

A. All ICS stations will transfer to HAND and NI-9 will fail LOW

B. EHC cabinets and FDWP turbine control will be de-energized

C. ICS feedwater control will be available ONLY in automatic mode

D. Non-nuclear instrumentation and fire protection system will lose power

A) C

Reference: Lesson Plans Vol IX, OP-OC-EL-DCD , page 36 of 55.
EO - 6.3
K/A: 063K201 (2.9/3.1)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

66. After a switchyard isolation is initiated, which one of the following is the purpose for the 8.5 sec timer on the Keowee Hydro Unit?

A. Prevent closing of the Keowee overhead breaker (ACB-1/2), until timer has timed out, to ensure separation of the unit from the 230 KV red bus.

B. Prevent closing of the Keowee overhead breaker (ACB-1/2), until timer has timed out, to ensure all RCPS have tripped.

C. It initiates a trip signal to the underground breaker (ACB 3/4), after it times out, if that unit was generating to the grid at the time the emergency start signal was generated.

D. It initiates a trip signal to the underground breaker (ACB 3/4), until timer has timed out, if that unit was generating to the grid at the time the emergency start signal was generated to ensure all RCPS have tripped.

A) B

After a SWYD isolation, the 8.5 sec timer ensures ACB 1/2 will not close to ensure that all RCPs will have tripped due to a loss of power longer than 3 seconds.

Reference: Lesson Plans Vol IX, OP-OC-EL-KHG , page 26 of 33.
EO - 5
K/A: 064A302 (3.4/3.7) (This K/A is for EDG, however, Oconee has hydro-electric)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

67. Plant conditions:

INITIAL CONDITIONS:

– Reactor power = 100%

CURRENT CONDITIONS:

- Instrument Air pressure is rapidly DECREASING
- NO ES actuation signals have been received

Assume NO operator actions are taken

The LDST level will decrease and the pressurizer level will increase.

Which one of the following has caused this?

A. HP-5 and HP-31 both failed open.

B. HP-5 and HP-31 both failed closed.

C. HP-5 failed closed and HP-31 failed open.

D. HP-5 failed open and HP-31 failed closed.

A) C

HP-5 will fail closed isolating all letdown, which stops input to the LDST. HP-31 fails open increasing input to the PZR.

K/A: 065AK303 (2.9/3.4)
T1G3, T1G2
Bank
Reference: Facility updated question bank 20 SSS044701 SSS044701

OCONEE NRC RO EXAM
02-18-2002

1 POINT

68. Which of the following areas contain material which would be limited to a Class "B" fire?

A. Document control storage vault.

B. "A" ES 4160V switch gear room.

C. TB lube oil purifier.

D. I&C calibration lab in maintenance facility.

A) C

A. Paper Class "A".
B. Electical equipment Class "C".
C. CORRECT: Oil Class "B"
D. No fire hazard for Class "B"

Reference: Nuclear System Directives 112 and 316
GET

OCONEE NRC RO EXAM
02-18-2002

1 POINT

69. Given the following plant conditions:

- Fire in the cable spreading room, the Control Room has been evacuated (no time to take actions prior to leaving control room) and transfer to the Aux Shutdown Panel is in progess.
- During the transfer, RCS pressure decreased to 1400 psig and initiated Engineering Safeguards.

Which one of the following identifies the starting status of the Keowee Hydro Generators for this scenario?

A. The Keowee Hydo Generators will **ONLY** auto start following a loss of power to the Main Feeder Buses.

B. Can **ONLY** be manually started from the Oconee Control Room.

C. Should have started when the local/remote switches transferred Keowee control to the Oconee Control Room.

D. Should have auto started as a result of the Engineering Safeguards actuation.

A) D

A. Local start is not required, auto start still functions.
B. Auto start still functions.
C. The transfer switch will not start the Keowee Emergency Generator.
D. CORRECT, ES actuates on low RCS pressure, AND this is the one circuit that ES will still actuate when control is transfered to the RSP.

Reference: Vol. IX, Keowee Hydro Generators.
(This K/A has to do with ED/G. However, Oconee use hydroelectric)

OCONEE NRC RO EXAM
02-18-2002

1 POINT

70. Unit 1 plant conditions:

INITIAL CONDITIONS:

- DATE / TIME = 3-14-99 / 0015
- "1B" GWD Tank release commenced
- Waste Gas Flow Monitor "OOS"
- "1B" GWD Tank pressure = 68 psig

CURRENT CONDITIONS:

- DATE / TIME = 3-14-99 / 0245
- Release completed
- "1B" GWD Tank pressure = 5 psig

Which ONE of the following indicates the estimated flow rate (scfm) for the 1B GWD Tank release?

SEE ATTACHED: (1108/01, Encl. 3.3, GWD Tank Volume vs Pressure Curve)

A. 42

B. 32

C. 26

D. 10

OCONEE NRC RO EXAM
02-18-2002

1 POINT

A) B

Flow estimate:
A. Incorrect, directly from the curve; 68 psig = 6300 scf 150 = 42 scfm
B. Correct, 68 to 5 psig ≈ 4800 scf 150 minutes = 32 scfm
C. Incorrect, mis-reading curve at 58 psig instead of 68 psig; 58 psig ≈ 5500 scf - 1500 scf 150 minutes = 26 scfm
D. Incorrect, directly from the curve; 5 psig = 1500 scf 150 = 10 scfm

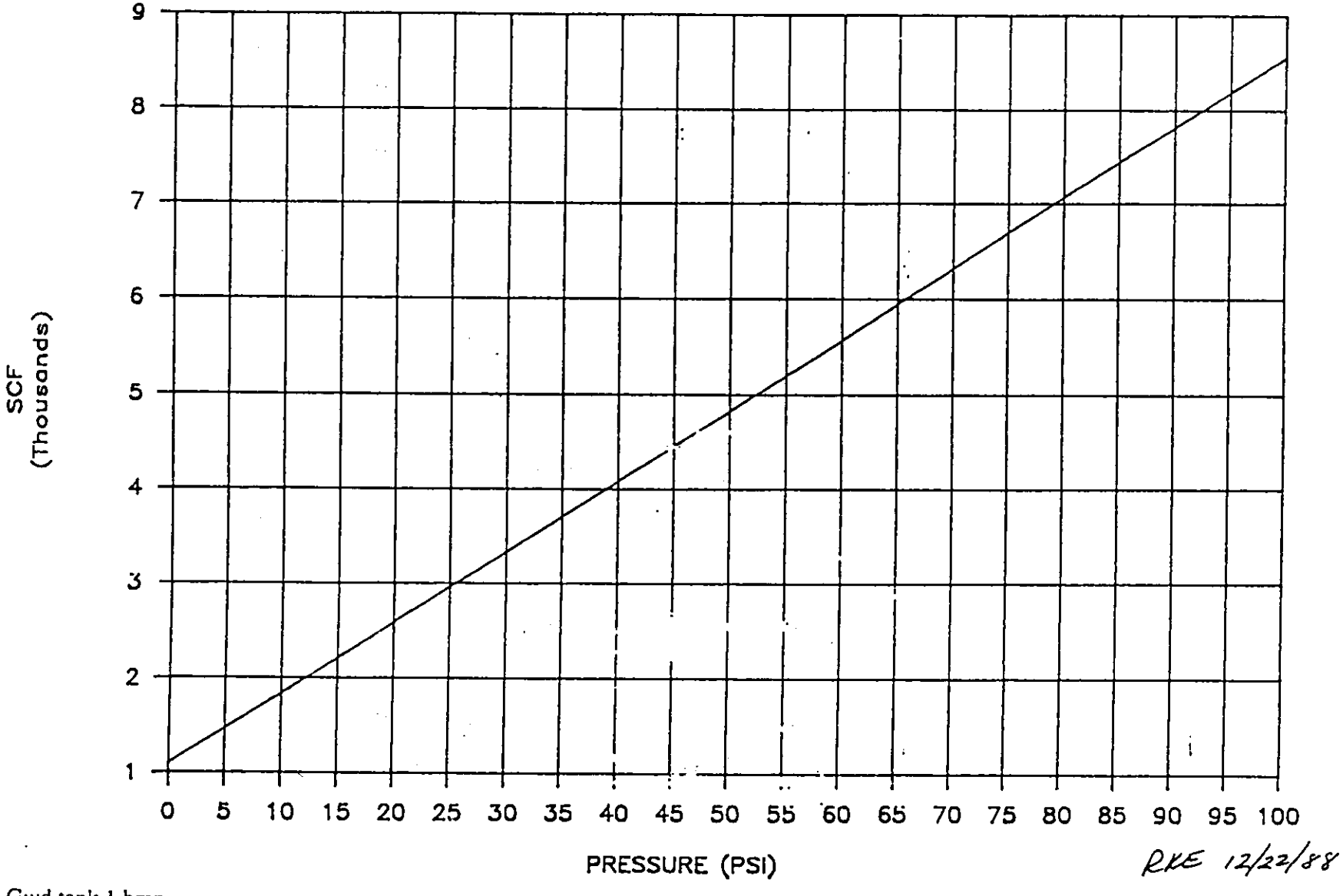
Required reference: 1108/01, Encl. 3.3, GWD Tank Volume vs Pressure Curve

K/A: 071A202 (3.3/3.6)
T2G1, T2G1
Bank
Reference: Facility updated question bank 57 WE011101 WE011101

SLC 16.11-3.5.b,(J) states effulent flow rate monitor can be OOS and releases continue provided the flow rate is estimated at least one every four hours.

Enclosure 3.3

GWD Tank Volume Vs. Pressure Curve (A, B, 3A, 3B)



RKE 12/22/88

Gwd tank 1.bmp

OCONEE NRC RO EXAM
02-18-2002

1 POINT

71. Which ONE of the following is the purpose for performing a check source of an Area Radiation Monitor?

A. To perform a calibration of the monitor's output circuitry.

B. To verify the monitor's power source voltage is at the proper level.

C. To ensure the detector and its circuits respond to radiation.

D. To provide an output indication for adjustment of the alarm setpoints.

A) C

Reference: Vol 1, Radiation Indicating Alarms

OCONEE NRC RO EXAM
02-18-2002

1 POINT

72. Concerning the Sorrento Radiation Monitoring System, which ONE of the following is correct?

The RM-80 ...

A. outputs directly to any associated interlock functions.

B. outputs directly to the control room view nodes.

C. will NOT function without the Transient Monitor System.

D. will NOT provide local indication of sample flow rate.

A) A

A. Correct. Interlocks will operate even if Transient Monitor system computer is OOS.

B. Incorrect. Outputs to Transient Monitor System and then to View Nodes.

C. Incorrect. RM-80 will function with the Transient Monitor System OOS.

D. Incorrect. Does provide local indication of sample flow rate.

K/A: 072K403 (3.2/3.6)
RO - T2G1
Bank
Reference:
Facility updated question bank 28 RAD010702 RAD010702

OCONEE NRC RO EXAM
02-18-2002

1 POINT

73. Plant conditions:

- Unit 1 = MODE 1
- Unit 2 = MODE 5
  - 2B CCW pump operating
- Unit 3 = MODE 1

Which ONE of the following is correct if 2B CCW pump is secured?

A. 2CCW-26/28 and 2V-87/88 will remain in their current position

B. The CCW inlet line high point vent valves, 2CCW-26/28, will open

C. The continuous priming tank normal inlet control valve, 2V-87, will closes

D. The continuous priming tank emergency inlet control valve, 2V-88, will opens

A) A

A. Correct: Valves remain "as is" due to CCWPs continuing to operate on Unit 3.
B. Incorrect: Open on first CCW pump start.
C. Incorrect: Correct if not CCW pump on Unit 2 or 3 operating or both CVP secured
D. Incorrect: Correct if not CCW pump on Unit 2 or 3 operating or both CVP secured

K/A: 075A202 (2.5/2.7)
RO - T2G2
Bank
Reference: Facility updated question bank question 33 STG040801 STG040801

OCONEE NRC RO EXAM
02-18-2002

1 POINT

74. Which one of the following is correct?

_____ will trip SSF OTS1 normal power supply breaker from B2T-4 which will _____.

A. Either an ES channel 2 on any unit **OR** a maximum motor bearing oil temperature of 160°F / trip OTS1-2 (SSF ASW PUMP) breaker.

B. Either a source undervoltage for > 30 seconds **OR** a maximum pump bearing oil temperature of 160°F / close OTS1-4 (SSF DIESEL GENERATOR) breaker.

C. Either an ES channel 1 on any unit **OR** a Unit 2 channel "A" loadshed / trip OTS1-2 (SSF ASW PUMP) breaker.

D. Either a source undervoltage for > 30 seconds **OR** the full load current for the SSF auxiliary service water pump is 240 amps / close OTS1-4 (SSF DIESEL GENERATOR) breaker.

A) C

Reference: Lesson Plans Book 1 of 2 Vol V, OP-OC-EAP-SSF , page 39 of 83.
EO - 21
K/A: 076K121 (2.7/2.9)
RO/SRO: Both
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

75. Which one of the following is correct, concerning HPSW pump operation with respect to a loss of power to a main feeder bus (MFB)?

A. HPSW pumps are powered from MCC 1XE which is fed from load center 1X3 normally and from 1X2 as an alternate source. Therefore, the HPSW pumps will be unaffected. However, if the HPSW pumps A and B are not running, they will BOTH get an auto start signal upon loss of power to 1X6 due to 1X6 feeding breaker #15, the power supply for EWST level control.

B. HPSW pumps are powered from the unit 1 MFBs. If one MFB is de-energized then the remaining HPSW pumps are vulnerable to single failure of the other unit 1 MFB. Backup power is NOT available.

C. HPSW pumps are powered from MCC 1XE which is fed from load center 1X3 normally and from 1X2 as an alternate source for units 1 and 2. Therefore, Unit 1 and 2s HPSW pumps will be unaffected. Unit 3s HPSW pumps are powered from the unit 3 MFBs. If one Unit 3 MFB is de-energized then the remaining Unit 3 HPSW pumps are vulnerable to single failure of the other unit 3 MFB. Backup power is NOT available.

D. HPSW pumps are powered from all three units MFBs. If one MFB is de-energized then the remaining HPSW pumps can be powered from the other units MFBs.

A) B

Reference: Lesson Plans Vol X, OP-OC-SSS-HPW , page 27 of 33.
EO - 17.3
K/A:076K201 (2.7/2.7)
RO/SRO: BOTH
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

76. Which one of the following sets of IA/AIA symptoms is correct for an IA line break?

A. **BOTH** the IA **AND** the AIA systems will begin losing pressure. The IA check valves will all close. The three AIA compressors will sequentially start, if in automatic, as pressure drops from 88 psig to 85 psig.

B. **ONLY** the IA system will begin losing pressure because it operates at a much higher pressure. The IA check valves will NOT close because the lower pressure will tend to be on the AIA system side.

C. **ONLY** the IA system will begin losing pressure because it operates at a much higher pressure. At 88 psig, AIA system pressure, the three AIA compressors will start if in Automatic.

D. **BOTH** the IA **AND** the AIA systems will begin losing pressure. At 88 psig, AIA system pressure, the three AIA compressors will start if in Automatic.

A) D

Reference: Lesson Plans Vol X, OP-OC-SSS-IA , page 37 of 49.
EO - 25 and 28
K/A:078K303 (3.0/3.4)
RO/SRO: BOTH
Level: C
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

77. Given the following plant conditions:

- Reactor trip from full power.
- A fire is in progress on the startup transformer.
- A Loss of Offsite Power.
- Fire header pressure has decreased to 100 psig.

Which one of the following will provide **IMMEDIATE** (within 5 seconds) fire fighting water pressure?

A. HPSW pump "A" only.

B. HPSW pump "A" AND "B".

C. Jockey fire pump.

D. Elevated Water Storage Tank.

A) D

A. Keowee Units are NOT on line yet. Keowee requires 15 seconds.
B. Keowee Units are NOT on line yet
C. Keowee Units are NOT on line yet
D. Correct answer - power independent

Reference: Vol I, Actions Following a Fire
Vol. IX, Keowee Hydro Generators.

OCONEE NRC RO EXAM
02-18-2002

1 POINT

78. Plant conditions:

- ICS is in full automatic (Integrated Mode)
- Control Rod Group 6 at 78% withdrawn

Which ONE of the following sets of plant conditions would cause the Asymmetric Rod Runback logic to initiate an ICS runback?

Core Thermal Power Demand (CTPD) and NI Power are...

A. 65%; the Group 4 Diamond "out limit" is lost.

B. 55%; the Group 5 Diamond "in limit" is received.

C. 61%; the Group 6 Diamond "in limit" is received.

D. 68%; the Group 7 Diamond "in limit" is received.

A) C

A. INCORRECT - The out-limits for the safety groups must be accompanied by an asymmetric fault.
B. INCORRECT - Power needs to be >60% to satisfy the AND gate.
C. CORRECT - If at gp 6 @ 78% and an in-limit received, this implies an asymmetric fault must exist and group 5 > 80%.
D. INCORRECT - Group 6 must be >80% for a group 7 in-limit to generate runback.

K/A: A01AA11 (3.7/3.7)
T1G2, T1G2
Bank
Reference: Facility updated question bank question 41 IC020901 IC020901
ASYMMETRIC ROD RUNBACK LOGIC OP-OC-CRI-5.

OCONEE NRC RO EXAM
02-18-2002

1 POINT

79. Unit 1 conditions:

INITIAL CONDITIONS:

- Reactor power = 100%

CURRENT CONDITIONS:

- Spurious Turbine/Generator Trip
- CT-1 Transformer lockout
- 1T Transformer lockout
- 1A and 1B OTSG S/U levels = 35" and increasing
- CETCs = 548°F and decreasing

Which ONE of the following describes the correct operator action?

A. Take manual control of 1FDW-315 and 316 (EFDW Control Valves), and reduce XSUR levels to 30" to prevent overcooling.

B. Throttle OTSG feedwater flow as required to minimize cooldown until a level of 240" XSUR is reached.

C. Take manual control of 1FDW-35 and 44 (Main FDW Control Valves), and reduce OTSG levels to 25" SUR to stop overfeed.

D. Throttle OTSG feedwater flow as required to minimize cooldown until a level of 50% Operating Range is reached.

OCONEE NRC RO EXAM
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1 POINT

A) B

A. Incorrect - Manual control of 315/316 is necessary but level should be established to 240" since RCPs were tripped on the loss of electrical.
B. Correct – Required to prevent overcooling / pump/header flow limits being exceeded.
C. Incorrect - This would be a correct statement if Main FDW was available and RCPs are operating.
D. Incorrect - The first part of the statement is true concerning throttle feedwater but level requirements are 240" XSUR not 50% OR.

K/A: A04AA11 (3.5/3.3)
T1G2, T1G2
Bank
Reference: Facility updated question bank 47 CF023402 CF023402
CF-EF OBJ# 34 (37)

OCONEE NRC RO EXAM
02-18-2002

1 POINT

80. Which ONE of the following describes the operation of the AMSAC and the DSS during an ATWS (Anticipated Transient Without Scram) with a complete loss of Main Feedwater?

AMSAC trips the....

A. regulating rods and starts the EFDWPs while DSS trips the main turbine.

B. regulating rods while DSS trips the main turbine and starts the EFDWPs.

C. main turbine and starts the EFDWPs while DSS trips the regulating rods.

D. main turbine while DSS trips the regulating rods and starts the EFDWPs.

A) C

A. INCORRECT: AMSAC does not trip the regulating rods / DSS does not trip the MT
B. INCORRECT: AMSAC does not trip the regulating rods / DSS does not trip the MT or start EFWPT.
C. CORRECT: AMSAC trips the turbine, starts all EFDWPS, DSS trips the control rods (also +125 added to setpoint/not part of this question).
D. INCORRECT: DSS does not start the EFDWPs.

Reference: Vol X, EFW System
E.O. 25

OCONEE NRC RO EXAM
02-18-2002

1 POINT

81. Unit 1 conditions:

INITIAL CONDITIONS:

- Reactor power = 20%
- Unit startup in progress
- All RCPs operating

CURRENT CONDITIONS:

- Reactor trip
- Reactor power = 1% and decreasing
- RCS pressure = 1950 psig and decreasing
- Condenser vacuum = 19 inches and decreasing
- 1A2 RCP tripped

Which ONE of the following is the cause of the reactor trip?

A. Low RCS pressure.

B. Power to flow to imbalance.

C. Main turbine anticipatory.

D. Loss of feedwater anticipatory trip.

A) D

A. Incorrect - RCS pressure > 1810 psig.
B. Incorrect - Rx power < min. flux/flow/imb trip setpoint.
C. Incorrect - Rx power < 29.75%, turb. anticipatory trip bypassed.
D. Correct - Operating MFDWP tripped on low vacuum.

K/A E02EK11 (3.6/3.6)
T1G2, T1G2
Bank
Reference: Facility updated question bank (Question 5 IC090301 IC090301)

OCONEE NRC RO EXAM
02-18-2002

1 POINT

82. Unit 3 plant conditions:

- Reactor Building Pressure = 3.5 psig
- RCS Pressure (ICCM) = 800 psig
- RCS Tc = 445°F
- RCS Th = 465°F
- An average of ALL CETCs = 489°F
- An average of 5 highest CETCs (ICCM Tr.B) = 518°F
- An average of the 5 highest of ALL qualified CETC's = 547°F

Which ONE of the following is the correct Train "B" ICCM Core subcooling margin indication the operator will observe on the SCM window LED on UB1?

SEE ATTACHMENT: EOP Encl. 5.18, P/T Curves

A. 0°F not flashing

B. (+) 9°F not flashing

C. 0°F flashing

D. (-) 9°F flashing

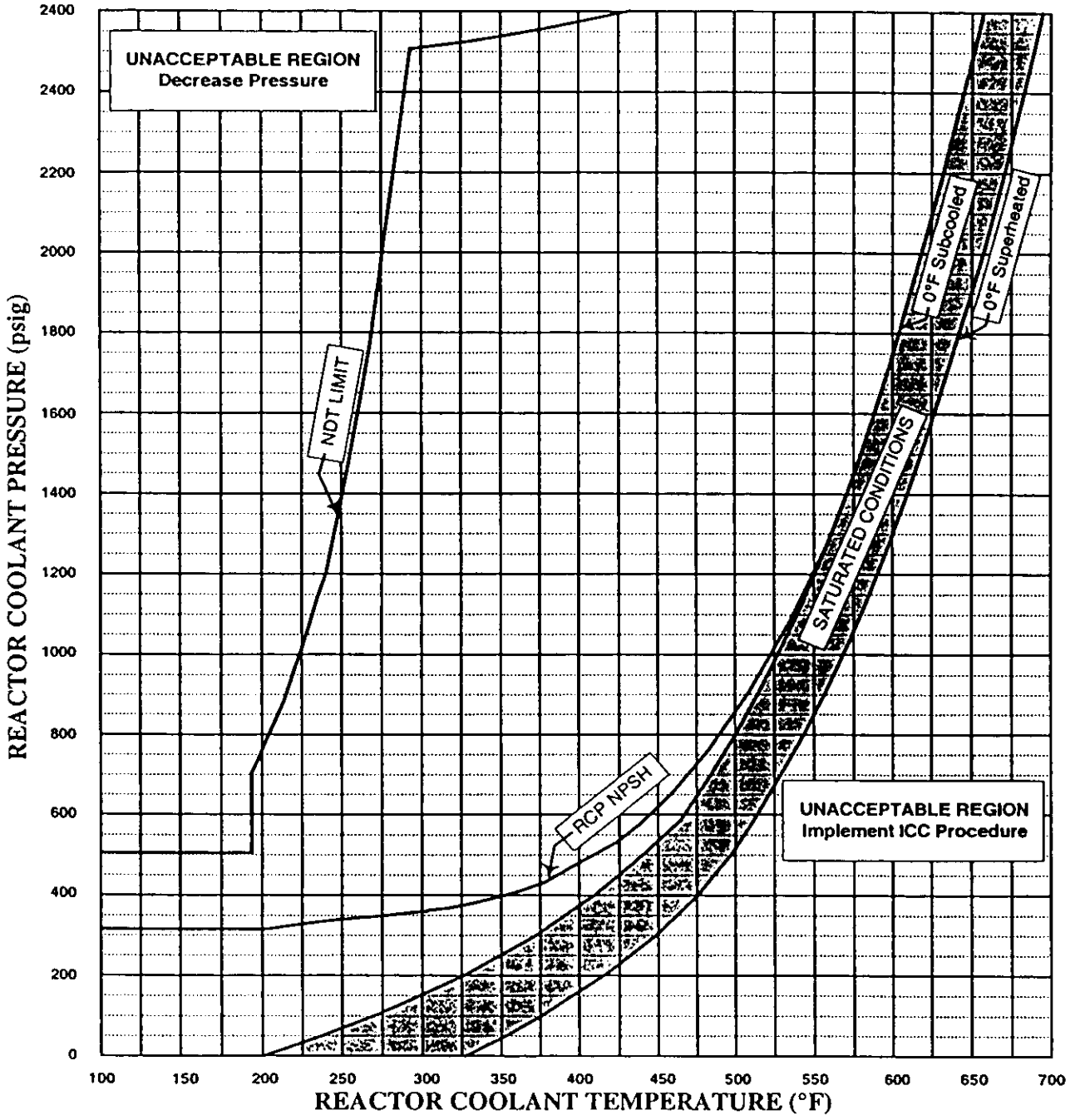
A) C

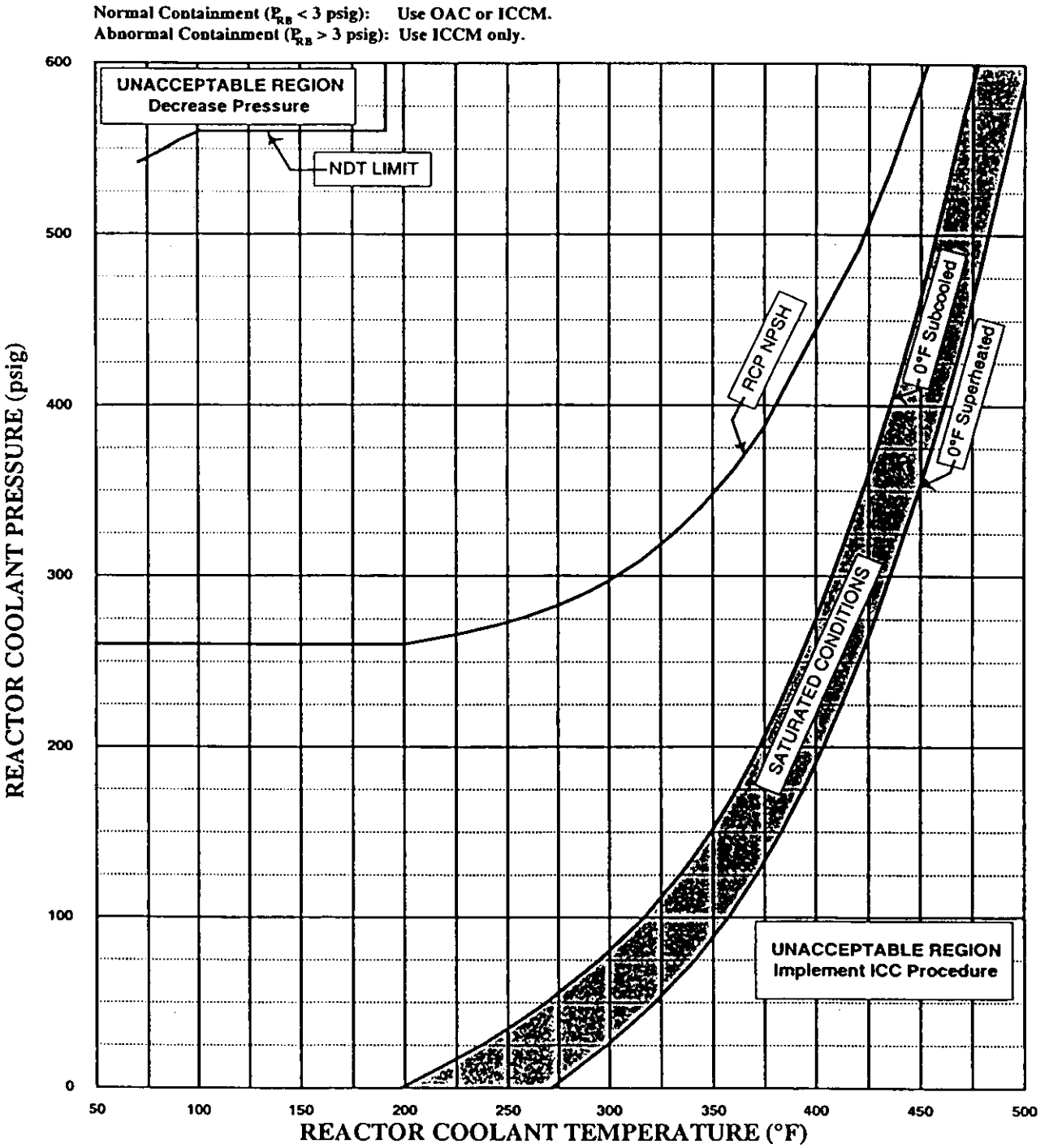
A. incorrect - number "0" flashes in the sat. band
B. incorrect - uses average of all CETC's
C. correct - Average of the 5 highest CETC from B Train w/ 800 psig => saturated condition
D. Incorrect - uses 5 highest of ALL CETC's

Required reference: EOP Encl. 5.18, P/T Curves

K/A: E03EK21 (3.4/3.8)
T1G1, T1G1
Bank
Reference: Facility updated question bank 21 IC084302 IC084302

Normal Containment (P_{RB} < 3 psig): Use OAC or ICCM.
Abnormal Containment (P_{RB} > 3 psig): Use ICCM only.




Normal Containment (P_{RB} < 3 psig): Use OAC or ICCM.
Abnormal Containment (P_{RB} > 3 psig): Use ICCM only.
UNACCEPTABLE REGION
Decrease Pressure
NDT LIMIT
RCP NPSH
0°F Subcooled
0°F Superheated
SATURATED CONDITIONS
UNACCEPTABLE REGION
Implement ICC Procedure
REACTOR COOLANT PRESSURE (psig)
REACTOR COOLANT TEMPERATURE (°F)
600
500
400
300
200
100
0
50
100
150
200
250
300
350
400
450
500

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02-18-2002

1 POINT

83. Given the following plant conditions:

- The reactor is tripped.
- RCS subcooled margin is zero.

Which of the following actions would result in increasing RCS subcooling margin?

A. Decrease RCS pressurizer level.

B. Decrease RCS hot leg flow.

C. Increase RCS loop pressure.

D. Increase RCS hot leg temperature.

A) C

A- This would further reduce RCS pressure, if a bubble still exists in the PZR, level may increase if voids are forming.
B- This would decrease the ability to transfer heat, and therefore would not increase SCM
C- CORRECT Raising pressure will increase the SCM by moving the RCS up and to the left on the SPDS trace moving away from the saturation and zero SCM line.
D- This would move the RCS to the right on the ICCM trace and therefore decrease RCS SCM.

Reference: Vol V, Bk 1 of 2, Loss of Subcooling

OCONEE NRC RO EXAM
02-18-2002

1 POINT

84. Given the following plant conditions:

- Time is 15 minutes after a reactor trip due to loss of both Main Feedwater Pumps.
- No Emergency Feedwater Pumps are operating.
- CETCs is 590°F and increasing.
- RCS pressure is 2325 psig and increasing.
- All 4 RCPs are running.
- "1A" OTSG level indicates 15 inches XSUR.
- "1A" OTSG pressure is 1010 psig and stable.
- "1B" OTSG level indicates 13 inches XSUR.
- "1B" OTSG pressure is 800 psig and decreasing.
- RCS heat up rate is +30°F / Hr.
- RCP "1A1" seal supply is 10 gpm.

Which of the following action(s) is required concerning operation of the RCPs?

A. Stop one RCP per loop.

B. Stop RCP 1A1.

C. Stop all 4 RCPs.

D. Stop all but one RCP.

A) D

A. RNO Step 3 of the EOP's Loss of Heat transfer tab, reduces the running RCPs to 1 per loop but this step does not apply because HPI F/C would have been initiated.
B. Misconception that leave 1 RCP for spray flow.
C. Do not place plant in NC with no other heat removal sources (OTSG), also have not increased T incore 50° since the trip.
D. Correct; RULE 4 (Initiation of HPI Forced Cooling) will have been perfromed because RCS pressure is > 2300 psig and no SG feed. RULE 4 reduces operating RCPs to one.

OCONEE NRC RO EXAM
02-18-2002

1 POINT

85. With Unit 1 operating at 100% power and the ICS in the fully integrated mode, a loss of KI (ICS AUTO) occurs. Which ONE of the following will occur IF the reactor trips one minute later?

ASSUME NO OPERATOR ACTION

A. Turbine Bypass Valves (TBVs) FAIL closed causing a RCS heatup.

B. Excessive Main FDW flow will cause RCS overcooling.

C. Turbine bypass valves fail open causing overcooling.

D. Reduced MFW flow will cause an RCS heatup.

A) B

A. Incorrect: TBVs are operable in manual on KU (hand) source.
B.Correct: Loss of KI reverts all stations to manual. FDW valves and pumps remain in manual and FDW does not runback upon unit trip.
C.Incorrect: TBVs are operable in manual on KU (hand) source.
D.Incorrect: TBVs are operable in manual on KU (hand) source.

K/A: E05EA11 (4.2/4.2
T1G1, T1G1
Bank
Reference: Facility updated question bank 31 STG123302 STG123302

OCONEE NRC RO EXAM
02-18-2002

1 POINT

86. Which one of the following is the reason why post LOCA boron dilution valves are opened following a LOCA?

A. To limit localized boric acid concentrations in the core.

B. To limit localized boric acid concentrations in the RB Emergency Sump.

C. To prevent the moderator temperature coefficient from going positive.

D. To allow for RCS cooldown where injection flow only is required for cooling.

A) A

Reference: Book II of II, Vol 6, OP-OC-EAP-E31, page 11 of 11.
EO-4
K/A: E08EK22 (4.0/4.0)
RO/SRO: Both
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

87. Given the following plant conditions:

- Reactor trip has occurred.
- Natural Circulation in progress with Emergency Feedwater.
- 30 minutes later, a transition is made from EFW to MFW.

Which of the following identifies the resulting core delta T (Thot minus Tcold) following this transition?

A. Decreases because OTSG saturation temperature decreases.

B. Decreases because natural circulation flow in the RCS decreases due to a higher thermal center with MFW.

C. Increases because natural circulation flow in the RCS decreases due to hotter water with MFW.

D. Remains the same because of the hotter water and lower thermal center with MFW.

A) C

A. This only affects the OTSG Tcold.
B. The thermal center is lower with MFW.
C. CORRECT: Lower thermal center less driving head lower flow therefore higher delta T
D. With lower flow and lower center delta T has to change.

Reference: Vol VII, Accident Mitigation Core Cooling mechanics

OCONEE NRC RO EXAM
02-18-2002

1 POINT

88. Unit 3 plant conditions:

- Reactor power = 100%
- Statalarm 3SA-8/D3 (FDWPT A Turning Gear Motor Overload) actuates
- The CRSRO is in the OSC

Which ONE of the following is correct per NSD-509 (Site Standards in Support of Operational Focus)?

After acknowledging the alarm the BOP must...

A. brief the OSM on the alarm OR call the WCC and communicate the alarm to the WCC SRO.

B. page the CRSRO to the Control Room using the Plant PA system AND call the WCC and communicate the alarm to the WCC SRO.

C. brief the CRSRO on the alarm upon return to the Control Room OR find the CRSRO and communicate the alarm face-to-face.

D. page the CRSRO to the Control Room using the Plant PA system AND communicate the alarm to the OSM.

A) C

Reference: NSD-509

OCONEE NRC RO EXAM
02-18-2002

1 POINT

89. Plant conditions:

INITIAL CONDITIONS:

- Reactor power = 75%

CURRENT CONDITIONS:

- A load rejection occurs
- Reactor power is decreasing
- Pressurizer subcooled

When looking at a Unit "Pressure vs. Temperature" or P/T screen, which ONE of the following correctly describes the indication you would observe?

The yellow point would...

A. turn cyan and move down and left on the P/T screen.

B. turn cyan and "SUBCOOLED PZR" would appear on the lower right hand corner of the screen.

C. stay yellow and "SUBCOOLED PZR" would appear on the lower right hand corner of the screen.

D. stay yellow and move to the left and up on the P/T screen.

A) D

K/A: G2.1.19 (3.0/3.0)
RO - T3
Bank
Reference:
Facility updated question bank 37 SF100701 SF100701

OCONEE NRC RO EXAM
02-18-2002

1 POINT

90. Which one of the following set of requirements is correct for "Out of Sequencing of Procedure Steps" as stated in OMP 1-9, "Use of Procedures?"

A. The performer AND the Operations Shift Manager shall initial the applicable step(s). An evaluation of the consequences of the change shall be performed by the Operations Shift Manager. An explanation for the sequence change shall be documented on the procedure.

B. The performer ONLY shall initial the applicable step(s). The re-sequencing of the step does not alter the acceptance criteria or overall intent of the procedure. An evaluation of the consequences of the change shall be performed by the Operations Shift Manager.

C. The performer AND the Operations Shift Manager shall initial the applicable step(s). An evaluation of the consequences of the change shall be performed by the Operations Shift Manager. The re-sequencing of the step MAY alter the acceptance criteria or overall intent of the procedure.

D. The performer ONLY shall initial the applicable step(s). An evaluation of the consequences of the change shall be performed by the Operations Shift Manager. An explanation for the sequence change should be documented on the procedure.

A) A

Reference: Lesson Plans Vol X, OP-OC-BPS-BP , page 27 of 47.
EO - 5.5C.2
K/A: G2.1.20 (4.3/4.2)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

91. Plant conditions:

- A fire in the SSF Diesel Room has been detected
- PBM Pushbutton is depressed for TWO seconds

.

Which ONE of the following is the response of the SSF Diesel Carbon Dioxide Fire Suppression System?

A. Carbon dioxide is IMMEDIATELY discharged into the Diesel Room and stops discharging after TWO seconds.

B. Carbon dioxide is IMMEDIATELY discharged into the Diesel Room and is automatically stopped by a pre-set timer.

C. After ~sixty (60) seconds, carbon dioxide is discharged into the Diesel Room and is automatically stopped by a pre-set timer.

D. After ~sixty (60) seconds, carbon dioxide is discharged into the Diesel Room for a TWO second period.

A) C
A. Incorrect. If PBM pushbutton is used CO2 does not actually discharge until about 60 sec. At the end of the first timer (60 sec.) another timer will actuate and a full CO2 system discharge will occur for about 60 sec.
B. Incorrect. See A
C. Correct. See A
D. Incorrect. See A

Reference: Lesson Plans Book 1 of 2 Vol V, OP-OC-EAP-SSF , page 46 of 83.
EO - 26.4
K/A: G2.1.28 (3.2/3.3)
RO/SRO: Both
Level: M
Author: rfa

OCONEE NRC RO EXAM
02-18-2002

1 POINT

92. Which ONE of the following is the MAXIMUM MVAR load when operating at 500 MW at a .9 Power Factor, and 30 psig H_2 in generator?

SEE ATTACHMENT: Generator Capability Curve

A. 675

B. 445

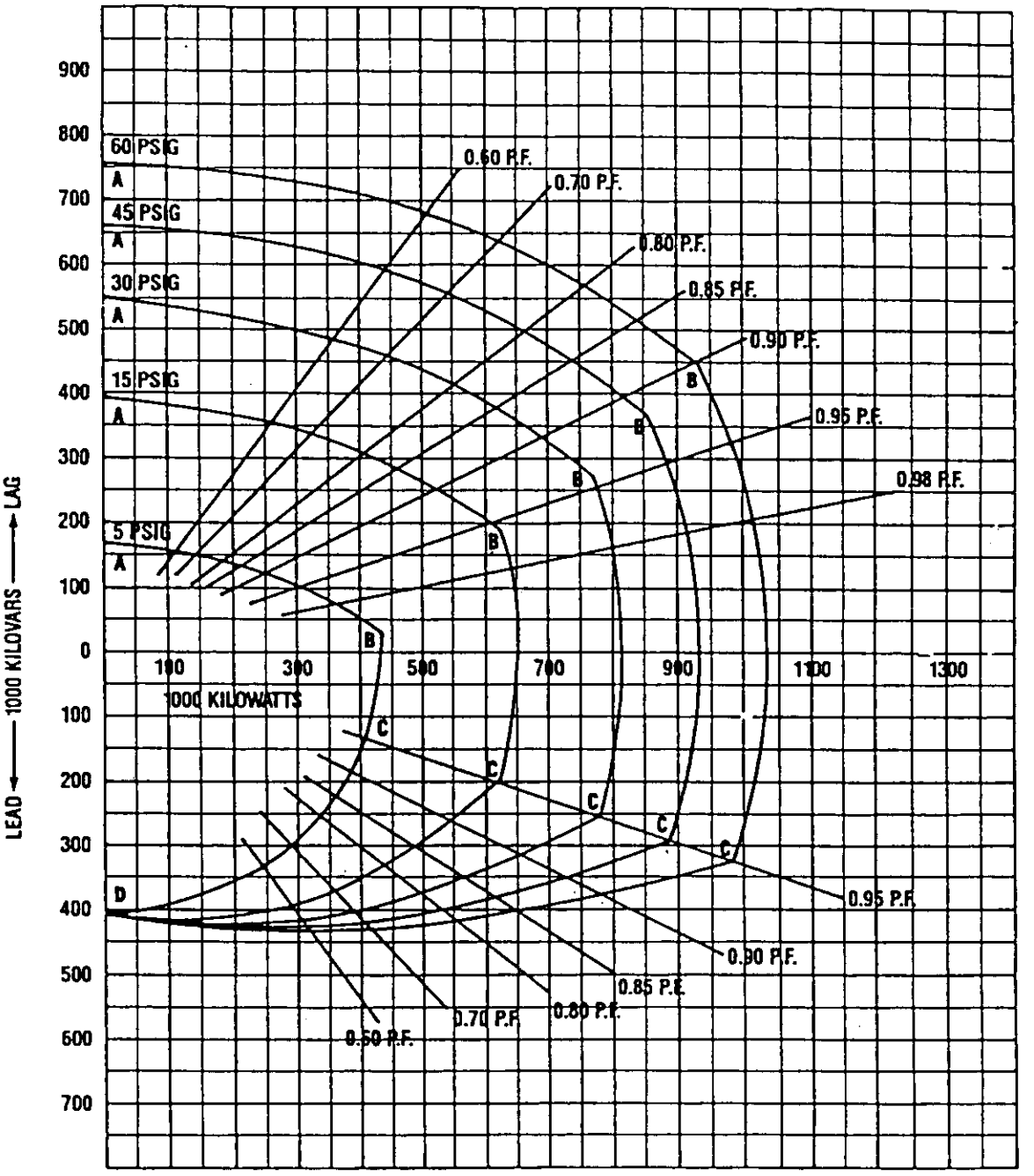
C. 321

D. 140

A) B

Reference: Book I of II, Vol 2, OP-OC-STG-015, page 40 of 45.
EO - 7
K/A: G2.1.7 (3.7/4.4)
RO/SRO: Both
Level: C
Author: rfa

Reference Use



CURVE AB LIMITED BY FIELD HEATING
CURVE BC LIMITED BY ARMATURE HEATING
CURVE CD LIMITED BY ARMATURE CORE END HEATING

3/9/92

OCONEE NRC RO EXAM
02-18-2002

1 POINT

93. Which of the following will **REQUIRE** INITIATION of a reactor shutdown per Technical Specifications?

SEE ATTACHMENT: TS 3.4.13 (RCS Operational Leakage)

A. Unidentified RCS leakage of 1 gpm for 1 hour.

B. Identified RCS leakage of 10 gpm for 1 hour.

C. 300 gpd total primary to secondary leakage through ALL OSTG's **OR** 150 gpd primary to secondary leakage through any one OTSG for 12 hours.

D. 300 gpd total primary to secondary leakage through ALL OSTG's **AND** 150 gpd primary to secondary leakage through any one OTSG for 5 hours.

A) D

Reference required: TS 3.4.13

K/A: 2.2.22 (3.4/4.1)
RO/SRO: Both
Level: M
Author: rfa

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE;

d. 300 gallon per day total primary to secondary LEAKAGE through all steam generators (SGs); and

e. 150 gallon per day primary to secondary LEAKAGE through any one SG.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met. OR Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.13.1	----------NOTE---------- Not required to be performed until 12 hours after establishment of steady state operation. ---------- Evaluate RCS Operational LEAKAGE.	72 hours
SR 3.4.13.2	Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program.	In accordance with the Steam Generator Tube Surveillance Program

OCONEE NRC RO EXAM
02-18-2002

1 POINT

94. Given the following plant conditions:

- PZR off scale low
- RCS pressure 1200 psig and decreasing slowly
- Core Exit Thermocouples (CETCs) reading 950°F and increasing slowly
- NI-1/2 reading 5000 cps and increasing
- Self Powered Neutron Detectors (SPNDs) current readings increasing

Which one of the following would explain the excore detectors increasing value?

A. Boron precipitation in the core.

B. Fuel coefficients effects.

C. Voiding in the downcomer.

D. Temperature effects on the excore detectors.

A) C

A. Boron would be decreasing the neutron population.
B. Fuel coefficients would have a negative affect on neutron population.
C. CORRECT: Given the conditions with the plant in region 3 of ICC would have downcomer voiding which will increase leakage for the excore detectors.
D. Temperature will not cause the indication to increase in the detectors.

Reference: Vol VIII, NI's,
Vol VII, Loss of DHR

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1 POINT

95. An individual has accumulated the following doses:

- Committed Dose Equivalent (CDE) is 2525 mr
- Deep Dose Equivalent (DDE) is 2355 mr
- Lens Dose Equivalent (LDE) is 744 mr
- Committed Effective Dose Equivalent (CEDE) is 605 mr
- Shallow Dose Equivalent (SDE) is 435 mr

Which ONE of the following is the individual's Total Effective Dose Equivalent (TEDE)?

A. 2790 mr

B. 2960 mr

C. 3534 mr

D. 4880 mr

A) B

A. 2355 + 435 = 2790
B. Correct. TEDE = 605 (CEDE) + 2355 (DDE) = 2960
C. 2355 + 744 + 435 = 3534
D. 2525 + 2355 = 4880

K/A: G2.3.1 (2.6/3.0)
T3, T3
Bank/Mod
Reference: Facility updated question bank 61 RAD022501 RAD022501

1 POINT

96. A valve needs to be repositioned for the completion of a surveillance. The valve is located in a high radiation area. Lead shielding is draped over the valve handwheel. Which of the following is an accepted ALARA practice for repositioning the valve?

A. Reposition the lead shielding along the valve piping enough to reposition the valve; replace the shielding to its original position; inform Radiation Protection when you have completed the task.

B. Reposition the lead shielding so that it stays between you and the valve; reposition the valve by reaching around the shielding; replace the shielding to its original position.

C. Remove the lead shielding; reposition the valve;contact the WCC SRO to have the lead shielding replaced.

D. Stop work, contact WCC SRO to have an evaluation performed.

A) D

Reasons:

Do not move or remove shielding without RP and engineering evaluation.

Reference: GET Manual, Page 44

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1 POINT

97. Which one of the following is considered to be an equivalent to a dose of 1 REM?

A. A dose of 1 REM of gamma radiation, a dose of 1 RAD of beta, a dose of 0.1 RADs of high energy protons, a dose of 0.5 RADs of alpha.

B. A dose of 1 RAD of gamma radiation, a dose of 1 RAD of beta, a dose of 0.05 RADs of neutrons, a dose of 0.1 RADs of alpha.

C. A dose of 1 REM of gamma radiation, a dose of 0.1 RADs of high energy protons, a dose of 0.05 RADs of neutrons, a dose of 0.5 RADs of alpha.

D. A dose of 1 RAD of gamma radiation, a dose of 1 RAD of beta, a dose of 0.1 RADs of high energy protons, a dose of 0.05 RADs of alpha.

A) D

Reference: Lesson Plans Vol 2, OP-OC-RAD-RPP, page 23 of 77.
EO - 1
K/A: G2.3.4 (2.5/3.1)
RO/SRO: BOTH
Level: M
Author: rfa

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1 POINT

98. Given the following plant conditions:

- 100% power.
- A tube rupture occurs that results in an ES actuation on low RCS pressure.
- An ALERT is declared based on the Fission Product Barrier Matrix.

Which one of the following identifies the INITIAL notification requirements for the NRC Operations Center, State and County agencies?

A. Notify the NRC Operations Center within 75 minutes; notify the State and County agencies as soon as possible.

B. Notify the NRC Operations Center in less than one (1) hour; notify the State and County agencies within 15 minutes.

C. Notify the NRC Operations Center within 75 minutes; notify the State and County agencies within 15 minutes.

D. Notify the NRC Operations Center within 15 minutes; notify the State and County agencies in less than one (1) hour.

A) B

A. Notify the NRC Operations Center in less than one (1) hour; notify the State and County agencies within 15 minutes.
B. CORRECT: Notify the NRC Operations Center in less than one (1) hour; notify the State and County agencies within 15 minutes.
C. Notify the NRC Operations Center in less than one (1) hour; notify the State and County agencies within 15 minutes.
D. Notify the NRC Operations Center in less than one (1) hour; notify the State and County agencies within 15 minutes.

Reference: Vol. V, Bk 1 of 2, OP-OC-EAP-SEP
Nuclear System Directives 114, 201, 202
RP/1002, Enc, 4.2 Alert

E.O. 17.2

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1 POINT

99. Given the following plant conditions:

- 100% power
- RCS pressure 2155 psig
- RCS temperature 579°F
- RCS makeup flow has increased from 40 to 45 gpm and stable
- Pressurizer level decreased and is now at setpoint and stable
- RIA-40, (CSAE Off-Gas Monitor) is in alarm

Which one of the following entry conditions has been met?

A. A small break LOCA is in progress, enter the EOP and perform the Immediate and Subsequent Actions.

B. A small break LOCA is in progress, enter the SGTR tab section of the EOP.

C. A tube leak is in progress, enter the EOP and perform the Immediate and Subsequent Actions.

D. A tube leak is in progress, enter AP/31, Primary to Secondary Leakage.

A) D

Reference: AP/31, Primary to Secondary Leakage

C/A

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1 POINT

100. Plant conditions:

- A fire has occurred
- Appendix R pumps required for plant shutdown cannot be operated from their normal power supply

Which ONE of the following is correct?

I&E will align power to these pumps from...

A. CT-5 (Lee Station feeder) through the Appendix R Switchgear.

B. CT-5 (Lee Station feeder) through motor starters on the back of the Appendix R Portable Valve Control Panel.

C. CT-4 (Keowee underground feeder) through the Appendix R Switchgear.

D. CT-4 (Keowee underground feeder) through motor starters on the back of the Appendix R Portable Valve Control Panel.

A) C

K/A: (2.9/3.4)
T3, T3
Bank
Reference: Facility updated question bank 46 CP101202 CP101202

END OF EXAM