Final Submittal

(Blue Paper)

1. Senior Operator Written Examination

OCONEE EXAM

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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

1. Given Unit 3 plant conditions:

   - Initial startup in progress following RFO
   - Moderator temperature coefficient = +.00265 DK/K/°F

   Which ONE of the following is correct?

   In the event of a rod ejection accident, the first reactivity coefficient that would insert negative reactivity is the...

   A. moderator temperature coefficient only.

   B. moderator void coefficient only.

   C. both moderator temperature and void coefficient.

   D. fuel temperature coefficient.

   A) D

   K/A: 001AK118 (3.4/3.8)
   T1G2, T1G1
   Bank
   Reference: Facility updated question bank 32 RT059 RT059

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1 POINT

2. 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   - Control rod groups 1 through 3 are fully withdrawn.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   C. Insert groups 1 through 4 to group 1 at 50% withdrawn, request Chemistry to resample the RCS for boron concentration, and calculate a SDM.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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1 POINT

3. 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

4. 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)

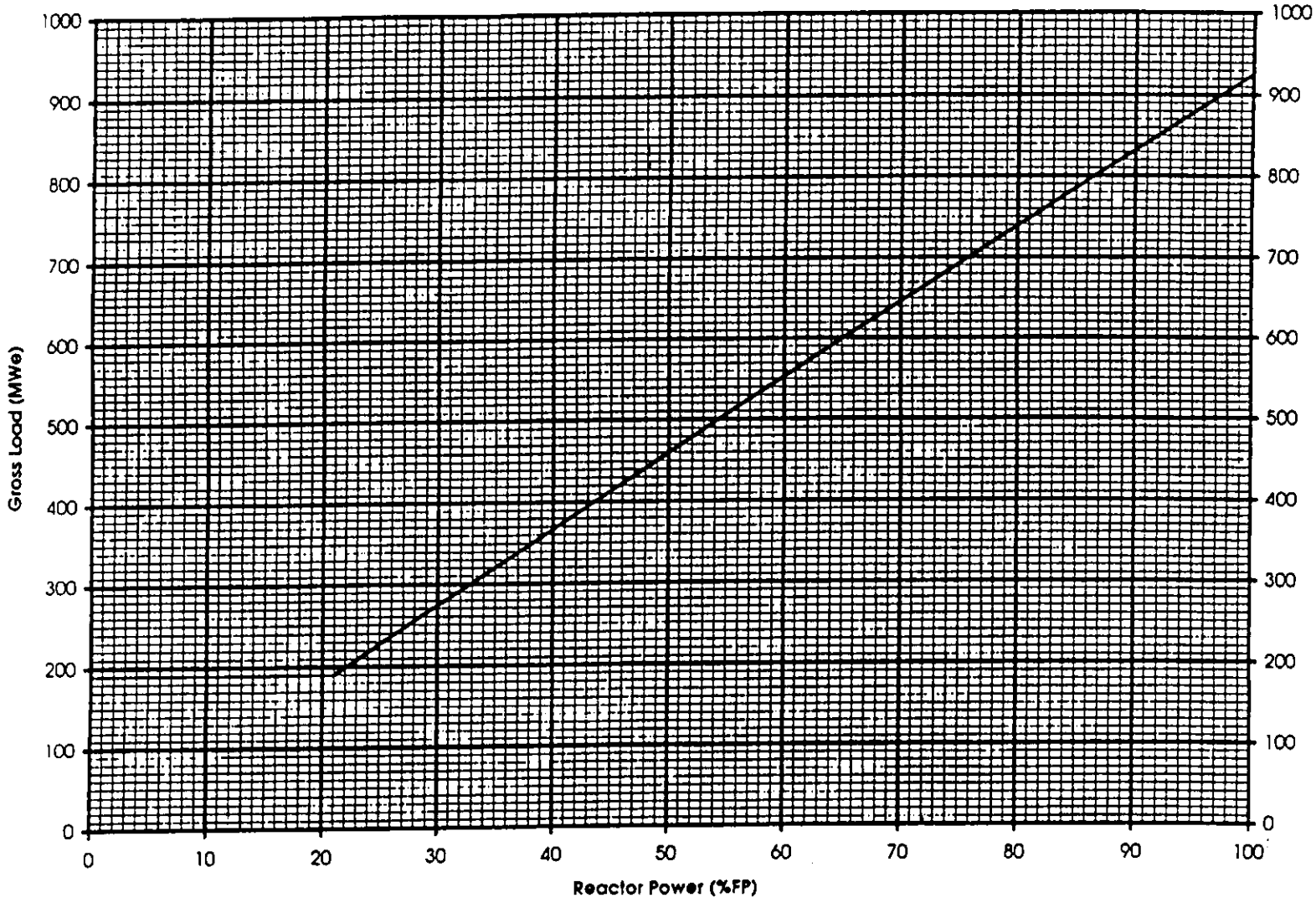
C. If the student uses use enclouse 12.13, Gross Load vs Reator Power, 320 MWe = 35% reactor power.
Thermal, this answer will be obtained.
(35% power X 2568 MWt = 898.8 = 899 MWe)

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

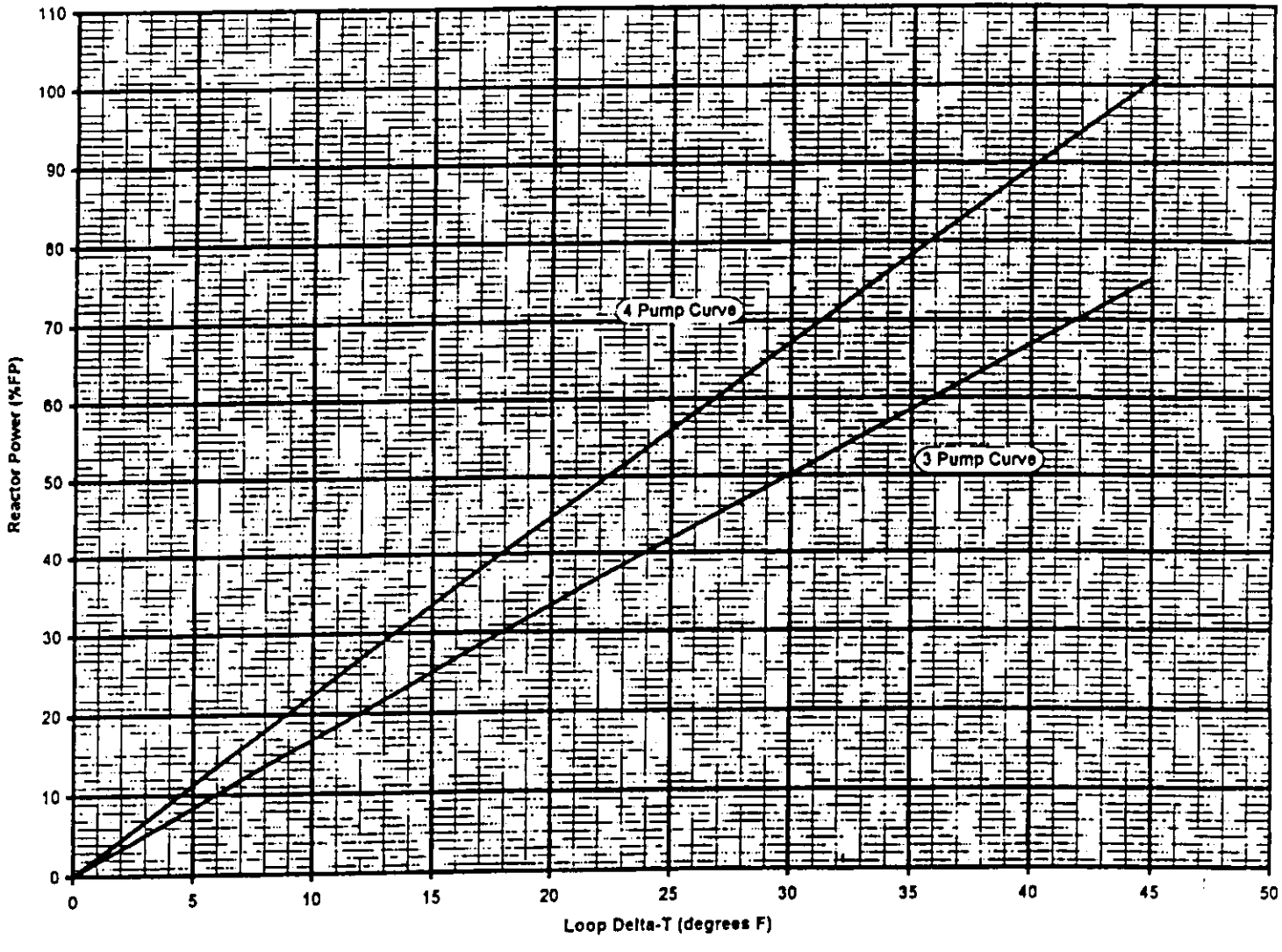
Enclosure 13.13

Gross Load Vs. Reactor Power



Enclosure 13.12

Unit 1 Cycle 20
Loop ΔT Vs. Reactor Power



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1 POINT

5. 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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6. 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

7. 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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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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8. 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

9. Which one of the following statements is the basis for why the operator must verify that the two LPI pumps are operating during LOCA Cooldown (LOCA CD), EP/1/A/1800/001, Step 4?

   A. BOTH LPI pumps must be in operation in order to provide adequate suction pressure for HPI injection.

   B. LPI pumps will need to be in operation when the BWST is depleted.

   C. LPI interlocks will NOT allow switch-over to the RB sumps on BWST low level without LPI pumps in operation.

   D. LOCA CD section of the EOP may require both HPI pumps and LPI pumps to be in operation.

A) D

Reference: Book II of II, Vol 6, OP-OC-EAP-LCD, page 11 of 40.
TO-2
K/A: 005K408 (3.1/3.5)
SRO
Level: M
Author: rfa

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1 POINT

10. Unit 1 plant conditions:

    - RCS temperature = 225°F.

    Which ONE of the following describes the ECCS train(s) and/or component(s) required to be **OPERABLE** to meet the Low Pressure Injection requirements while in this MODE?

    SEE ATTACHMENT: TS 3.5.3, Low Pressure Injection

    A. One LPI train is required to be OPERABLE.

    B. Two LPI trains are required to be OPERABLE.

    C. One LPI train AND LP-9 and LP-10 manually OPERABLE.

    D. Two LPI trains AND LP-9 and LP-10 manually OPERABLE.

    A) A

    A Correct

    006G2.006G2.1.12 (2.9/4.0)
    SRO - T2G2
    Bank
    Reference: Facility updated question bank 1 ADM010610 ADM010610
    Per TS 3.5.3, Low Pressure Injection NOTE 1 based on MODE 4.
    MEM

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 Low Pressure Injection (LPI)

LCO 3.5.3 Two LPI trains shall be OPERABLE.

---NOTES---

1. Only one LPI train is required to be OPERABLE in MODE 4.
2. In MODE 4, an LPI train may be considered OPERABLE during alignment, when aligned or when operating for decay heat removal (DHR) if capable of being manually realigned to the LPI mode of operation.
3. In MODES 1, 2, and 3, the LPI discharge header crossover valves shall be manually OPERABLE to open.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One LPI train inoperable in MODE 1, 2, or 3.	A.1 Restore LPI train to OPERABLE status.	72 hours
B. One or more LPI discharge header crossover valve(s) manually inoperable to open in MODE 1, 2, or 3.	B.1 Restore LPI discharge header crossover valve(s) to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One required LPI train inoperable in MODE 4.	D.1 Initiate action to restore required LPI train to OPERABLE status. AND D.2 ----------NOTE---------- Only required if DHR loop is OPERABLE. ---------- Be in MODE 5.	Immediately 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify each LPI 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 3.5.3.2	----------NOTE---------- Not applicable to operating LPI pump(s). ---------- Vent each LPI pump casing.	 31 days
SR 3.5.3.3	Verify each LPI 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

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.3.4	Verify each LPI 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 3.5.3.5	Verify each LPI pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.5.3.6	Verify, by visual inspection, each LPI 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 3.5.3.7	Cycle each LPI discharge header crossover valve, LPI cooler outlet throttle valve, and LPI header isolation valve open manually.	18 months

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11. Unit 1 plant conditions:

TIME

1300 - Small break LOCA occurs; SUBCOOLING MARGIN = 0°F

1301 - ES Channels 1 and 2 actuate

1330 - ES Channels 3 and 4 actuate

1331 - RCS pressure = 1035 psig and steady

Which **ONE** of the following is the **MAXIMUM** time the LPI pumps can operate at these conditions?

A. 1302

B. 1310

C. 1400

D. 1430

A) C

A. Incorrect- This is the time by which the RCPs would have to be tripped if subcooling were lost.
B. Incorrect- This is the time by which HPI flow should be verified to be at its acceptable flow.
C. Correct- The LPI pumps can only run for 30 minutes deadheaded and must be stopped to prevent pump damage time, pump damage would occur.
D. Incorrect - Twice the allowed time. This allows the operator not to pick the maximum time available for the correct answer.

K/A: 009EK202 (2.3/2.6)
SRO - T1G1
Bank
Reference: Facility updated question bank 18 PNS122401 PNS122401

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1 POINT

12. Unit 1 conditions:

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

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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

13. 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

14. Unit 1 plant conditions:

INITIAL CONDITIONS:

- Reactor power = 100%
- ALL ICS stations in MANUAL
- 1HP-120 in MANUAL

CURRENT CONDITIONS:

- Pressurizer level = 222" and increasing

Which ONE of the following would explain the reason for the level increase?

A. LDST level has decreased to 39".

B. Letdown temperature has increased to 132 degrees F.

C. 1E1 HDP has tripped due to a failed open heater dump valve.

D. 1C-14/15, Pol Demin Bypass Vlv Control, has tripped open.

A) C

A. Incorrect - At 40" LDST level, HP-24&25 will open. HPIP recircs would cause an increase in LDST level.

B. Incorrect - LD interlock on HP-5 at 135 degrees therefore no affect should be seen.

C. Correct - Reduction in FDW flow causes Tave increase and RCS expansion

D. Incorrect - Causes increase in FDW flow, Tave decrease and RCS shrink.

K/A: 011A104 (3.1/3.3)
SRO - T2G2
Bank
Reference: Facility updated question bank 4 PNS110402 PNS110402
C/A

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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. In EP/1/A/1800/001, LOCA Cooldown, when MUST RB spray pumps be secured?

When any RB spray pump is operating and ...

A. RB pressure is < 3psig **OR** < 24 hours into the event.

B. RB pressure is < 3psig **OR** > 24 hours into the event.

C. RB pressure is < 3psig **AND** > 24 hours into the event.

D. RB pressure is < 3psig **AND** < 24 hours into the event.

A) D

Reference: EOPs, LOCA CD, Page 6 of 9

MEM

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1 POINT

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.

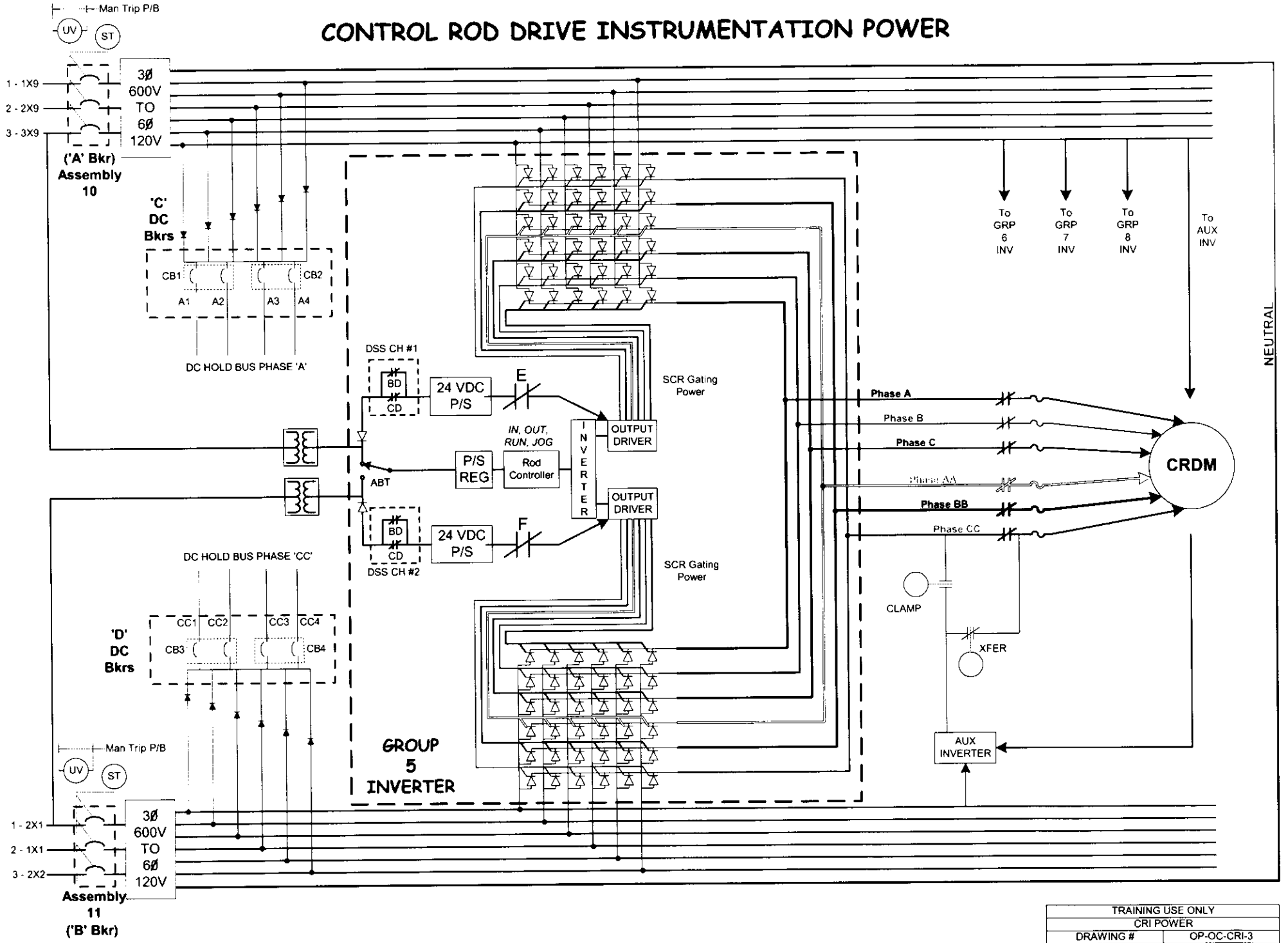
D. DC breaker, "D", and the "F" contactors open. This scheme de-energizes both DC hold buses, and both sets of regulation group SCRs by removing their gating SUPPLIES.

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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1 POINT

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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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

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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

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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

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02-18-2002

1 POINT

22. 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

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1 POINT

23.

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

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1 POINT

24. 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 SRO EXAM
02-18-2002

1 POINT

25. 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 SRO EXAM
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1 POINT

26. 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

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02-18-2002

1 POINT

27. 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

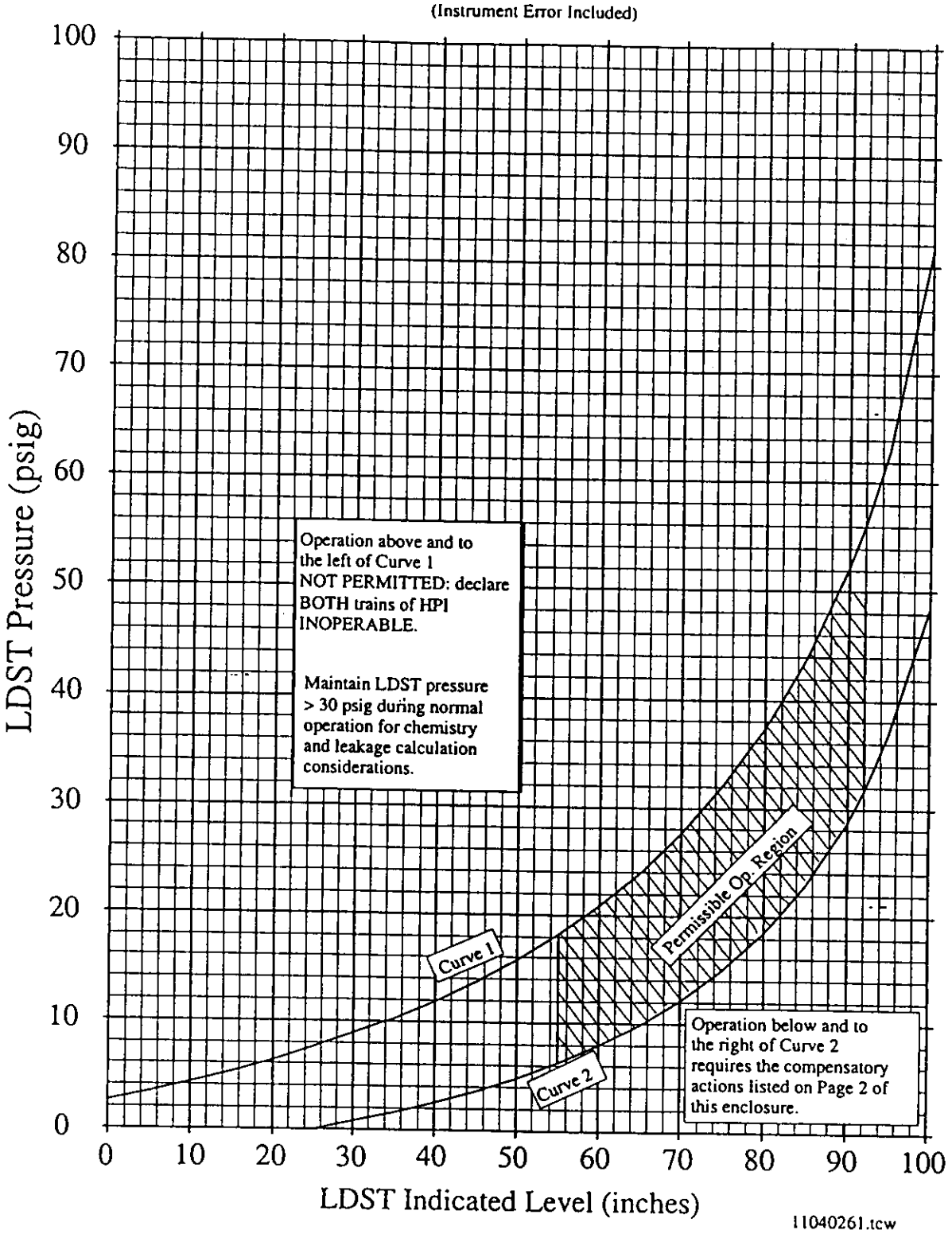
A. Correct - P/T is above and to left of curve in 1108/01. Per same encl. in 1108/01, both trains of HPI should be declared inoperable and TS 3.5.2 (BB3.5.2-6 applies)

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).

Enclosure 3.39

LDST Pressure Vs. Level (All Units)

(Instrument Error Included)



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Rev. 5
RTR 1/18/01

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

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1 POINT

28. 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

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1 POINT

29. 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 SRO EXAM
02-18-2002

1 POINT

30. 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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1 POINT

31. 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

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1 POINT

32. 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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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

33. 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

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1 POINT

34. 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.

OCONEE NRC SRO EXAM
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1 POINT

35. 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

1 POINT

36. While withdrawing control rods during an approach to criticality, the stable count rate doubles. If the same amount of reactivity that caused the first doubling is added again, stable count rate will _____ and the reactor will be _____.

    A. double; subcritical

    B. more than double; subcritical

    C. double; critical

    D. more than double; critical

    A) D

    Doubling counts means halving the distance to criticality. Adding the same amount of reactivity again will make the reactor critical.

    Reference: Reactivity Thumb rules

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1 POINT

37. Given the following plant conditions:

Bringing new fuel storage cask into the spent fuel building. While lifting the shipping cask off the truck, the rigging breaks, the cask drops onto the truck. The first cask knocks another cask off the truck and both cask are laying on the ground. Both casks are severely dented.

Health Physics takes gamma radiation readings:

- 15 mrem/hr on contact with the dropped casks.
- 3 mrem/hr at 30 cm from each cask.
- 2 mrem/hr general background reading.

Which of the following would be the proper posting for this general area?

A. Radiation Controlled Area.

B. Radiation Area.

C. High Radiation Area.

D. Extra High Radiation Area.

A) A

A. CORRECT: General area for radiological protection for all workers, requires an RWP and dosimetry.
B. Dose rate is less than 5 mr/hr at 30 cm.
C. Dose rate is less than 100 mr/hr at 30 cm.
D. Dose rate is less than 1000 mr/hr at 30 cm.

Reference: Vol 1, Radiation/Radiation Controls Chapter 2.
GET

MEM

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1 POINT

38. 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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1 POINT

39. 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 SRO EXAM
02-18-2002

1 POINT

40. Unit 3 plant conditions:

INITIAL CONDITIONS:

- Reactor power = 100%
- 3RIA-40 = 2874 cpm

CURRENT CONDITIONS:

- Reactor power = 92% and decreasing
- 3RIA-40 = 354,874 cpm and slowly increasing

Which ONE of the following describes the required position of 3V-196 (CSAE Exhaust to Stack Drain)?

A. OPEN

B. Locked OPEN

C. CLOSED

D. Locked CLOSED

A) D

D. Correct - When secondary activity increases V-196 should be LOCKED CLOSED to prevent release of activity to the basement trench.

K/A: 037AA209 (2.8/3.4)
T1G2, T1G2
Bank
Reference: Facility updated question bank 46 STG050601 STG050601

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

41. The EOP Steam Generator Tube Rupture tab , step 32 states:

    While maintaining RCP NPSH and pressurizer level, minimize core SCM by de-energizing all pressurizer heaters, using pressurizer sprays, or throttling HPI.

    Which one of the following is the reason for minimizing SCM?

    A. Ensure MSSV's remain closed.

    B. Prevent reactor head bubble formation.

    C. Minimize primary to secondary leakage.

    D. Maximize HPI flow into the core.

    A) C

    A. SCM will not ensure the MSSV's remain closed
    B. Head bubble formation is a function of cooldown.
    C. CORRECT: Reduces the delta P for leakage
    D. Will allow for more flow but not a factor in the tube rupture step.

    Reference: EOP Steam Generator Tube Rupture tab , step 32, page 7.

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1 POINT

42. 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 SRO EXAM
02-18-2002

1 POINT

43. 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 SRO EXAM
02-18-2002

1 POINT

44. The Main FDW pumps and Main Turbine anticipatory reactor trips are designed to prevent which of the following condition(s)?

A. Challenges to OTSG tube integrity.

B. Exceeding core thermal limits (fuel centerline melt).

C. Challenges to the PORV and code safeties.

D. Exceeding core DNBR limits.

A) C

A. They would be stressed but still within design limits.
B. These limits are based on LOCAs.
C. CORRECT; based on limiting the pressure spike on the loss of heat sink.
D. These are based on RCS flow, temperature, and flux.

Reference: Vol. VIII, Instrumentation & Controls, RPS

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

45. 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 SRO EXAM
02-18-2002

1 POINT

46. 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 SRO EXAM
02-18-2002

1 POINT

47. 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 SRO EXAM
02-18-2002

1 POINT

48. 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 SRO EXAM
02-18-2002

1 POINT

49. Given the following plant conditions:

- 100% power
- KI powerboard is deenergized

Which one of the following describes how seal injection flow to the RCPs would be controlled via HP-31 (seal injection control valve)?

A. Will respond in the manual mode only.

B. Will respond in auto from a backup power supply.

C. Will fail closed, the bypass valve will need to be throttled.

D. Will fail open, the auxiliary building operator will need to control flow locally.

A) B

A. Will control in manual AND automatic with a loss of KI
B. CORRECT:Will control in manual AND automatic with a loss of KI
C. The valve does not fail closed.
D. The valve does not fail open.

Reference: AOP Vol 1, AP/1/A/1700/014, Loss of Normal HPI MU and/or RCP Seal Injection.

Vol IV, HPI System

MEM

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1 POINT

50. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

51. 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 SRO EXAM
02-18-2002

1 POINT

52. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

53. 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 SRO EXAM
02-18-2002

1 POINT

54. 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.

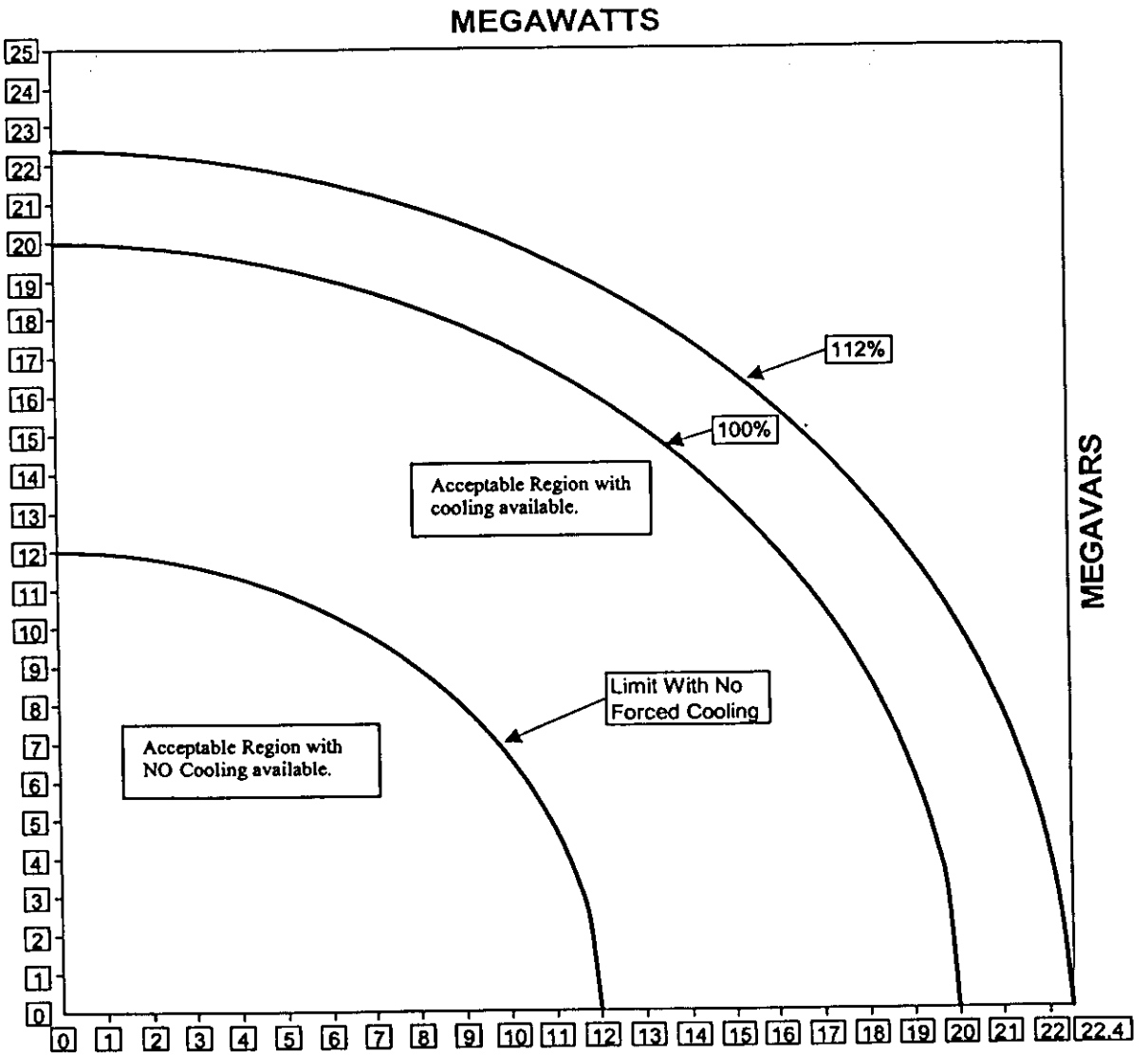
2. Verify both of the following available:
   __ CT-4 MEGA WATTS
   __ CT-4 MEGA VARS

__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 SRO EXAM
02-18-2002

1 POINT

55. Plant conditions:

INITIAL CONDITIONS:

- Unit 1, 2, and 3 reactor power = 100%
- 3A LPSW pump is OOS

CURRENT CONDITIONS:

- 3B LPSW pump suction inadvertantly closes

Which ONE of the following action(s), if any, is/are performed **FIRST**?

A. Monitor LPSW loads and reduce as necessary.

B. Cross connect unit 1/2's LPSW system with unit 3's and start another LPSW pump at unit 1/2 as required.

C. Cross connect unit 3's LPSW system with the HPSW system.

D. No corrective actions are necessary for continued LPSW system operation.

A) B

A. Incorrect - LPSW loads should be monitored and flow to components reduced as necessary if flow not restored by alternate unit
B. Correct - X-connection is done first when all LPSWPs are lost.
C. Incorrect - Step not performed unless flow can not be established from alternate unit.
D. Incorrect - 1 LPSWP per unit is required for normal operation.

K/A: 062AA203 (2.6/2.9)
T1G1, T1G1
Bank
Reference: Facility updated question bank 49 SSS051501 SSS051501

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1 POINT

56. 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.	Immediately
	OR	
	G.2 Estimate flow rate during actual releases.	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 SRO EXAM
02-18-2002

1 POINT

57. Which one of the following will occur on a STAR relay actuation?

A. Initiate load shed and prevent closure of a STANDBY breaker (S1 or S2) on to a faulted bus.

B. Initiate load shed and initiate transfer to STANDBY source.

C. Seek an alternate power source for the essential loads in the event the STARTUP source is not available and prevent closure of a STANDBY breaker (S1 or S2) on to a faulted bus.

D. Seek an alternate power source for the essential loads in the event the STANDBY source is not available and initiate retransfer to STARTUP source.

A) B
A. Incorrect, will not prevent S breaker from closing to a faulted bus.
B. Correct, it will Initiate load shed and initiate transfer to standby.
C. Incorrect, First part true but will not prevent S breaker from closing to a faulted bus.
D. Incorrect, Does not look at the standby source and will not initiate retransfer to startup.

Reference: Lesson Plans Vol IX, OP-OC-EL-PSL , page 26 of 55.
EO - 6.3
K/A: 062K404 (2.2/2.9) (also on Q 29)
RO/SRO: BOTH
Level: M
Author: rfa

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

58. 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 SRO EXAM
02-18-2002

1 POINT

59. Unit 1 plant conditions:

- Reactor power = 50%
- 1KI inverter output voltage = 55 volts
- The static transfer switch failed to swap the system output to A/C line
- The ASCO transfer switch swapped to A/C line.

If a subsequent Turbine trip were to occur, the TBV's should control in which ONE of the following conditions?

Assume NO operator action

A. Manual and open

B. Manual and closed

C. Auto and open

D. Auto and closed

A) B

A. Incorrect. Valves remain closed. Although KI is available, TBVs Baily's remain in hand.

B. Correct. On loss of KI power the valves swap to KU Hand and shift to manual. KI is restored by the ASCO transfer, but TBVs remain in manual and will not open on RX trip.

C. Incorrect. Auto power is available following ASCO transfer, but no operator action has been taken to place them in AUTO. Second part is correct, TBVs would open on Rx trip.

D. Incorrect, See "C" above for AUTO explanation. Also second part is incorrect because valves remain closed as they are still in manual.

K/A: 063K302 (3.5/3.7)
SRO - T2G1
Bank
Reference: Facility updated question bank 15 IC010701 IC010701
MEM

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

60. Plant conditions:

- All Oconee Units are operating at 100% RATED THERMAL POWER
- Both KHUs were declared inoperable at 0800 on 2/5 due to suspected relay problems (CONSIDER AS UNPLANNED)
- Standby buses were energized from a Lee Combustion Turbine at 0845 on 2/5
- No additional electrical equipment is out of service

Which ONE of the following is the **MAXIMUM** allowed time for restoring one KHU and its required emergency power path to OPERABLE status?

SEE ATTACHMENT: TS 3.8.1 (AC Sources/Operating)

A. 1200 on 2/5

B. 2000 on 2/5

C. 0800 on 2/8

D. 2000 on 2/7

A) B

K/A: 064G2.1.12 (2.9/4.0)
SRO - T3

Required reference: TS 3.8.1 (AC Sources/Operating)

Bank
Reference: Facility updated question bank 3 ADM010612 ADM010612
Condition I: UNPLANNED, I.3: 12 hours to restore one KHU and its required emergency power path to OPERABLE status. 0800 on 2/5 + 12 hours = 2000 on 2/5.

C/A

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources – Operating

LCO 3.8.1

a. The following AC electrical power sources shall be OPERABLE:

1. Two offsite sources on separate towers connected to the 230 kV switchyard to a unit startup transformer and capable of automatically supplying power to one main feeder bus; and

2. Two Keowee Hydro Units (KHUs) with one capable of automatically providing power through the underground emergency power path to both main feeder buses and the other capable of automatically providing power through the overhead emergency power path to both main feeder buses.

b. The Keowee Reservoir level shall be ≥ 775 feet above sea level.

c. The zone overlap protection circuitry shall be OPERABLE when the overhead electrical disconnects for the KHU associated with the underground power path are closed.

---NOTES---

1. A unit startup transformer may be shared with a unit in MODES 5 or 6.

2. The requirements of Specification 5.5.18, "KHU Commercial Power Generation Testing Program," shall be met for commercial KHU power generation.

3. The requirements of Specification 5.5.19, "Lee Combustion Turbine Testing Program," shall be met when a Lee Combustion Turbine (LCT) is used to comply with Required Actions.

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

ACTIONS

---NOTE---

LCO 3.0.4 is not applicable when both standby buses are energized to comply with Required Actions.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Both required offsite sources and the overhead emergency power path inoperable due to inoperable unit startup transformer.	A.1 Perform SR 3.8.1.3.	1 hour if not performed in previous 12 hours
	AND	
	A.2 Align the emergency startup bus to share another unit's startup transformer.	12 hours
	AND	
	A.3.1 Restore unit startup transformer to OPERABLE status and normal startup bus alignment.	36 hours
	OR	
	A.3.2 Designate one unit, sharing the startup transformer, to be shutdown.	36 hours
B. Unit designated to be shutdown due to sharing a unit startup transformer.	B.1 Be in MODE 3.	12 hours
	AND	
	B.2 Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. KHU or its required overhead emergency power path inoperable due to reasons other than Condition A.	C.1 Perform SR 3.8.1.3 for OPERABLE KHU.	1 hour if not performed in previous 12 hours AND Once per 7 days thereafter
	AND	
	C.2.1 Restore the KHU and its required overhead emergency power path to OPERABLE status.	72 hours AND 72 hours from discovery of inoperable KHU
	OR	
	C.2.2.1 Energize both standby buses from LCT via isolated power path.	72 hours AND 1 hour from subsequent discovery of deenergized standby bus
	AND	
	C.2.2.2 Suspend KHU generation to grid except for testing.	72 hours
	AND	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.2.3 Verify by administrative means that the remaining KHU and its required underground emergency power path and both required offsite sources are OPERABLE and the requirements of LCO 3.8.3, "DC Sources-Operating," LCO 3.8.6, "Vital Inverters-Operating," LCO 3.8.8, "Distribution Systems-Operating," LCO 3.3.17, "EPSL Automatic Transfer Function," LCO 3.3.18, "EPSL Voltage Sensing Circuits," LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," and LCO 3.3.21, "EPSL Keowee Emergency Start Function" are met. AND	72 hours
	C.2.2.4 Verify alternate power source capability by performing SR 3.8.1.16. AND	72 hours AND Every 31 days thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.2.5 Restore KHU and its required overhead emergency power path to OPERABLE status.	28 days when Condition due to an inoperable Keowee main step-up transformer AND 45 days from discovery of initial inoperability when Condition due to an inoperable KHU if not used for that KHU in the previous 3 years

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. KHU or its required underground power path inoperable.	D.1	Perform SR 3.8.1.4 for OPERABLE KHU.	1 hour if not performed in previous 12 hours
	AND		
	D.2	Energize either standby bus from LCT via isolated power path.	24 hours AND 1 hour from subsequent discovery of deenergized required standby bus
	AND		
	D.3	Restore KHU and its required underground emergency power path to OPERABLE status.	72 hours AND 72 hours from discovery of inoperable KHU
E. Required Action and associated Completion Time not met for Required Action D.2.	E.1	Be in MODE 3.	12 hours for one unit AND 24 hours for other unit(s)
	AND		84 hours
	E.2	Be in MODE 5.	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Zone overlap protection circuitry inoperable when overhead electrical disconnects for KHU associated with the underground power path are closed.	F.1 Restore zone overlap protection circuitry to OPERABLE status. OR F.2 Open overhead electrical disconnects for KHU associated with the underground power path.	72 hours 72 hours
G. Both emergency power paths inoperable due to one inoperable E breaker and one inoperable S breaker on the same main feeder bus.	G.1 Restore one breaker to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
H. ----------NOTE---------- Condition may be entered only when both required offsite sources are verified by administrative means to be OPERABLE and the requirements of LCO 3.8.3, "DC Sources-Operating;" LCO 3.8.6, "Vital Inverters-Operating;" LCO 3.8.8, "Distribution Systems-Operating;" LCO 3.3.17, "EPSL Automatic Transfer Function;" LCO 3.3.18, "EPSL Voltage Sensing Circuits;" LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," are verified by administrative means to be met. ---------- Both KHUs or their required emergency power paths inoperable for planned maintenance or test with both standby buses energized from LCT via isolated power path.	H.1	Energize both standby buses from LCT via isolated power path.	1 hour from discovery of deenergized standby bus
	AND		
	H.2	Restore one KHU and its required emergency power path to OPERABLE status.	60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
I. Both KHUs or their required emergency power paths inoperable for reasons other than Condition G and H.	I.1	Energize both standby buses from LCT via isolated power path.	1 hour AND 1 hour from subsequent discovery of deenergized standby bus
	AND		
	I.2	Determine by administrative means the OPERABILITY status of both required offsite sources, and of equipment required by LCO 3.8.3, "DC Sources-Operating," LCO 3.8.6, "Vital Inverters-Operating," LCO 3.8.8, "Distribution Systems-Operating," LCO 3.3.17, "EPSL Automatic Transfer Function," LCO 3.3.18, "EPSL Voltage Sensing Circuits," LCO 3.3.19, "EPSL 230 kV Switchyard DGVP."	1 hour
	AND		
	I.3	Restore one KHU and its required emergency power path to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
J. One or both required offsite sources inoperable due to reasons other than Condition A.	J.1	Energize both standby buses from LCT via isolated power path.	1 hour AND 1 hour from subsequent discovery of deenergized standby bus
	AND		
	J.2	Determine by administrative means the OPERABILITY status of both KHUs and their required emergency power paths and of equipment required by LCO 3.8.3, "DC Sources-Operating," LCO 3.8.6, "Vital Inverters-Operating," LCO 3.8.8, "Distribution Systems-Operating," LCO 3.3.17, "EPSL Automatic Transfer Function," LCO 3.3.18, "EPSL Voltage Sensing Circuits," LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," and LCO 3.3.21, "EPSL Keowee Emergency Start Function."	1 hour
	AND		
	J.3	Restore both offsite sources to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. ----------NOTE---------- Separate Condition entry is allowed for each breaker. ---------- One trip circuit in one or both closed N breakers inoperable. OR One trip circuit in one or both closed SL breakers inoperable.	K.1 Restore each trip circuit to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. ---------NOTE--------- Separate Condition entry is permitted for each inoperable AC Source, and LCO or SR not met. ---------- AC Source inoperable or LCO not met, as stated in Note for Condition H entry. OR AC Source inoperable or LCO not met, as stated in Required Action C.2.2.3 when in Condition C for > 72 hours. OR AC Source inoperable or LCO not met, as stated in Required Actions I.2 or J.2 when in Conditions I or J for > 1 hour. OR SR 3.8.1.16 not met.	----------NOTE---------- Not required when a KHU or its required emergency power path are made inoperable for ≤ 12 hours for the purpose of restoring the other KHU to OPERABLE status. ---------- L.1 Restore inoperable AC Source to OPERABLE status. AND L.2 Restore compliance with LCO. AND L.3 Restore compliance with SR 3.8.1.16.	4 hours 4 hours 4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
M. Required Action and associated Completion Time for Condition C, F, G, H, I, J, K or L not met. OR Required Action and associated Completion Time not met for Required Action D.1 or D.3.	M.1 Be in MODE 3. AND M.2 Be in MODE 5.	12 hours 84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite source.	7 days
SR 3.8.1.2	Verify battery terminal voltage is ≥ 125 V on float charge for each KHU's battery.	7 days
SR 3.8.1.3	Verify the KHU associated with the underground emergency power path starts automatically and energizes the underground emergency power path. Manually close the SK breaker to each de-energized standby bus.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	----------NOTE---------- The requirement to energize the underground emergency power path is not applicable 1) when the overhead disconnects are open for the KHU associated with the underground emergency power path or 2) when complying with Required Action D.1. ---------- Verify the KHU associated with the overhead emergency power path starts automatically and automatically or manually synchronize it to the Yellow bus in 230 kV switchyard. Energize the underground emergency power path after removing the KHU from the overhead emergency power path.	31 days
SR 3.8.1.5	----------NOTE---------- Not required to be performed for an SL breaker when its standby bus is energized from a LCT via an isolated power path. ---------- Verify each closed SL and each closed N breaker opens manually or on an actual or simulated actuation signal.	31 days
SR 3.8.1.6	----------NOTE---------- Not required to be performed for an S breaker when its standby bus is energized from a LCT via an isolated power path. ---------- Operate each S and each E breaker through a full cycle.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	Verify both KHU's underground tie breakers cannot be closed simultaneously.	12 months
SR 3.8.1.8	Verify each KHU's overhead emergency power path tie breaker cannot be closed when tie breaker to underground emergency power path is closed.	12 months
SR 3.8.1.9	----------NOTE---------- The upper limits on KHU frequency and voltage are not required to be met until the NRC issues an amendment that removes this Note (license amendment request to be submitted no later than April 5, 2001). ---------- Verify on an actual or simulated emergency actuation signal each KHU auto starts and: a. Achieves frequency ≥ 57 Hz and ≤ 63 Hz and voltage ≥ 13.5 kV and ≤ 14.49 kV in ≤ 23 seconds; and b. Supplies the equivalent of one Unit's maximum safeguard loads plus two Unit's hot shutdown loads when synchronized to system grid and loaded at maximum practical rate.	12 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.10	Verify each KHU's battery capacity is adequate to supply, and maintain in OPERABLE status, required emergency loads for design duty cycle when subjected to a battery service test.	12 months
SR 3.8.1.11	Verify each KHU's battery cells, cell end plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	12 months
SR 3.8.1.12	Verify each KHU's battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	12 months
SR 3.8.1.13	----------NOTE---------- Only applicable when the overhead electrical disconnects for the KHU associated with the underground emergency power path are closed. ----------	
	Verify on an actual or simulated zone overlap fault signal each KHU's overhead tie breaker and underground tie breaker actuate to the correct position.	12 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.14	----------NOTES---------- Not required to be performed for an SL breaker when its standby bus is energized from a LCT via an isolated power path. ---------- Verify each closed SL and closed N breaker opens on an actuation of each redundant trip coil.	18 months
SR 3.8.1.15	----------NOTE---------- Redundant breaker trip coils shall be verified on a STAGGERED TEST BASIS. ---------- Verify each 230 kV switchyard circuit breaker actuates to the correct position on a switchyard isolation actuation signal.	18 months
SR 3.8.1.16	----------NOTE---------- Only applicable when complying with Required Action C.2.2.4. ---------- Verify one KHU provides an alternate manual AC power source capability by manual or automatic KHU start with manual synchronize, or breaker closure, to energize its non-required emergency power path.	As specified by Required Action C.2.2.4

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1 POINT

61. 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

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1 POINT

62. 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

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1 POINT

63. Unit 1 is in MODE 1 at 100% power.

- At 0430 on 4/2, 1A Reactor Building Spray train is declared inoperable.
- At 1800 on 4/8, 1B Reactor Building Spray train is declared inoperable.
- At 1845 on 4/8, 1A Reactor Building Spray train is restored to OPERABLE status.

Which ONE of the following describes the MAXIMUM time allowed by TS, including any applicable extension, to restore 1B Reactor Building Spray train to OPERABLE status?

SEE ATTACHMENT: TS 3.6.5 (RB Spray and Cooling Systems)

A. 0430 on 4/9

B. 0430 on 4/10

C. 1800 on 4/15

D. 1800 on 4/16

A) B

A. INCORRECT - Does NOT take the allowance for the additional 24 hours allowed per Section 1.3.
B. CORRECT - LCO 3.6.5 ACTIONS allows 7 days plus an additional 24 hours is allowed per Section 1.3.
C. INCORRECT - See above
D. INCORRECT - See above

K/A: 069G2.1.12 (2.9/4.0)
SRO - T1G1
Bank
Reference: Facility updated question bank 5 ADM020601 ADM020601
Ref: ITS 3.6

3.6 CONTAINMENT SYSTEMS

3.6.5 Reactor Building Spray and Cooling Systems

LCO 3.6.5 Two reactor building spray trains and three reactor building cooling trains shall be OPERABLE.

---NOTE---
Only one train of reactor building spray and two trains of reactor building cooling are required to be OPERABLE during MODES 3 and 4.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One reactor building spray train inoperable in MODE 1 or 2.	A.1 Restore reactor building spray train to OPERABLE status.	7 days AND 14 days from discovery of failure to meet the LCO
B. One reactor building cooling train inoperable in MODE 1 or 2.	B.1 Restore reactor building cooling train to OPERABLE status.	7 days AND 14 days from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One reactor building spray train and one reactor building cooling train inoperable in MODE 1 or 2.	C.1 Restore one train to OPERABLE status.	24 hours
D. Required Action and associated Completion Time of Condition A, B, or C are not met.	D.1 Be in MODE 3.	12 hours
E. One required reactor building cooling train inoperable in MODE 3 or 4.	E.1 Restore required reactor building cooling train to OPERABLE status.	24 hours
F. One required reactor building spray train inoperable in MODE 3 or 4.	F.1 Restore required reactor building spray train to OPERABLE status.	24 hours
G. Required Action and associated Completion Time of Condition E or F not met.	G.1 Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Two reactor building spray trains inoperable in MODE 1 or 2. OR Two reactor building cooling trains inoperable in MODE 1 or 2. OR Any combination of three or more trains inoperable in MODE 1 or 2. OR Any combination of two or more required trains inoperable in MODE 3 or 4.	H.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.5.1	Verify each reactor building spray 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 3.6.5.2	Operate each required reactor building cooling train fan unit for ≥ 15 minutes.	31 days
SR 3.6.5.3	Verify each required reactor building spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.5.4	Verify that the containment heat removal capability is sufficient to maintain post accident conditions within design limits.	18 months
SR 3.6.5.5	Verify each automatic reactor building spray valve in each required 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 3.6.5.6	Verify each required reactor building spray pump starts automatically on an actual or simulated actuation signal.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.5.7	Verify each required reactor building cooling train starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.5.8	Verify each spray nozzle is unobstructed.	10 years

1 POINT

64. 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

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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

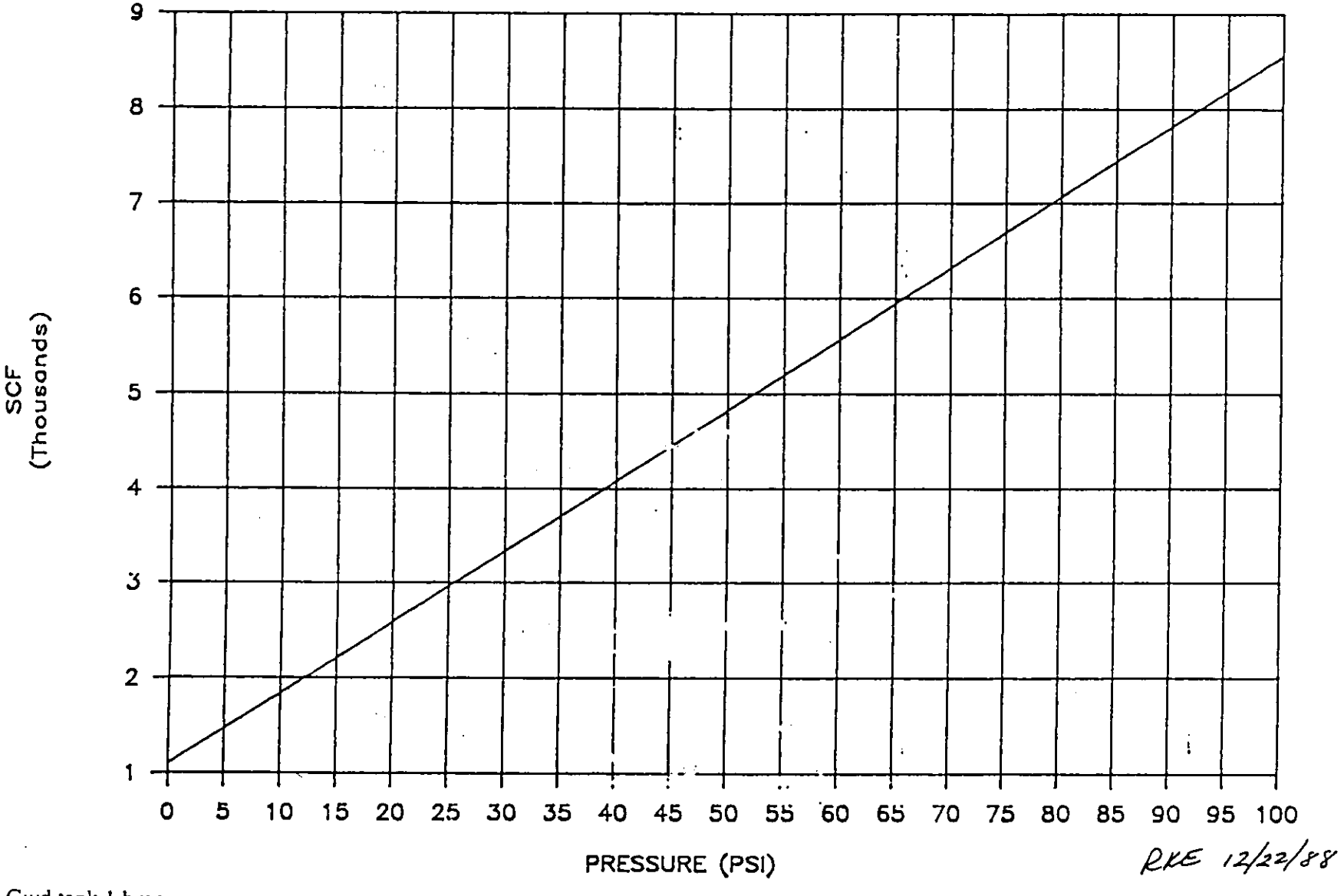
Required reference: 1108/01, Encl. 3.3, GWD Tank Volume vs Pressure Curve

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

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1 POINT

65. RIA-49, Reactor Building Gas, is in high alarm.

Which ONE of the following will automatically occur?

A. GWD-4, 5, 6, 7, 206, 207 and 217 will close.

B. PR-2, 3, 4 and 5 will close.

C. LWD-2 will close.

D. RIA 49A will come on scale.

A) C

A. Incorrect. RIA-37 & 38 close these valves.

B. Incorrect. RIA-45 & 46 will close these valves.

C. Correct. High alarm actuates RB Evacuation alarm as well as closing LWD-2.

D. Incorrect. The switchover acceptance range setpoint is not tied to the High alarm setpoint (separate setpoints).

K/A: 073K101 (3.6/3.9)
SRO - T2G2
Bank
Reference: Facility updated question bank 27 RAD010203 RAD010203
MEM

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1 POINT

66. Plant conditions:

- 0804:00, All Oconee Units operating in MODE 1 at 100% RTP.
- 0804:15, "CCW LAKE LEVEL LOW" stat-alarm actuates.
- 0804:15, Forebay elevation indicates 796' and decreasing.
- 0805:00, Dam Failure pushbuttons depressed on all units.

Which ONE of the following is expected to occur **NEXT**?

Units 1,2,3 CCW 10 through 13 (CCW Pump Discharge) will ...

A. close **and** 1,2,3 CCW 20 through 25 (Waterbox Disch) remain as is. CCW 8 (Emergency CCW Discharge to Tailrace) remains closed and CCW 9 (Emergency CCW Discharge to Intake) opens.

B. close **and** 1,2,3 CCW 20 through 25 (Waterbox Disch) remain as is. CCW 8 (Emergency CCW Discharge to Tailrace) opens and CCW 9 (Emergency CCW Discharge to Intake) remains closed.

C. remain "AS IS" **and** 1,2,3 CCW 20 through 25 (Waterbox Disch) close. CCW 8 (Emergency CCW Discharge to Tailrace) remains closed and CCW 9 (Emergency CCW Discharge to Intake) opens.

D. will remain "AS IS" **and** 1,2,3 CCW 20 through 25 (Waterbox Disch) close. CCW 8 (Emergency CCW Discharge to Tailrace) opens and CCW 9 (Emergency CCW Discharge to Intake) remains closed.

A) D

A Incorrect
CCW-8 will open. CCW-9 does not open until a CCW Pump is restarted.
B Incorrect
1,2,3 CCW-20 through 25 CLOSE.
C Incorrect
Condenser Discharge Valves CLOSE
D Correct

K/A: 075A201 (3.0/3.2)
SRO - T2G2
Bank
Reference: Facility updated question bank 22 STG031204 STG031204
MEM

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1 POINT

67. Given the following plant conditions:

0600 Plant at 100% power
0700 Plant at 80% power
1030 Chemistry sampled the RCS
1230 Chemistry analysis indicates:
- Dose equivalent I-131 concentration is 1.5uCi/gm
- RCS specific activity is 50 uCi/gm
- Gross specific activity is < 100/E(bar)

Which one of the following Tech Spec actions, if any, would be required?

SEE ATTACHMENT: TS 3.4.11 (RCS Specific Activity)

A. Reduce RCS activity to less than the Tech Spec limit immediately or be in MODE 3 within 12 hours.

B. Reduce RCS activity to less than the Tech Spec limit within 4 hours or be in MODE 3 within 12 hours.

C. Reduce RCS activity to less than the Tech Spec limit within 48 hours or be in MODE 3 within 12 hours.

D. No action required, chemistry results are within the Technical Specification limits.

A) C

A. Actions are required but not immediately
B. Actions are required but more than 4 hours is allowed
C. CORRECT; See T.S. 3.4.11 condition A and B 48 hours or MODE 3 W/I 12 hours
D. Activity is outside of the TS limits

Required Reference: TS 3.4.11

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 RCS Specific Activity

LCO 3.4.11 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS average temperature ≥ 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.11-1. AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	 Once per 4 hours 48 hours
B. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in unacceptable region of Figure 3.4.11-1.	B.1 Be in MODE 3 with RCS average temperature < 500°F.	12 hours

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Gross specific activity of the coolant not within limit.	C.1 Be in MODE 3 with RCS Average Temperature < 500°F.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	Verify reactor coolant gross specific activity $\leq 100/\bar{E}$ µCi/gm.	7 days
SR 3.4.11.2	----------NOTE---------- Only required to be performed in MODE 1. ----------	
	Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 µCi/gm.	14 days AND Between 2 and 6 hours after THERMAL POWER change of ≥ 15% RTP within a 1 hour period
SR 3.4.11.3	----------NOTE---------- Not required to be performed until 31 days after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ----------	
	Determine $\bar{E}$.	184 days

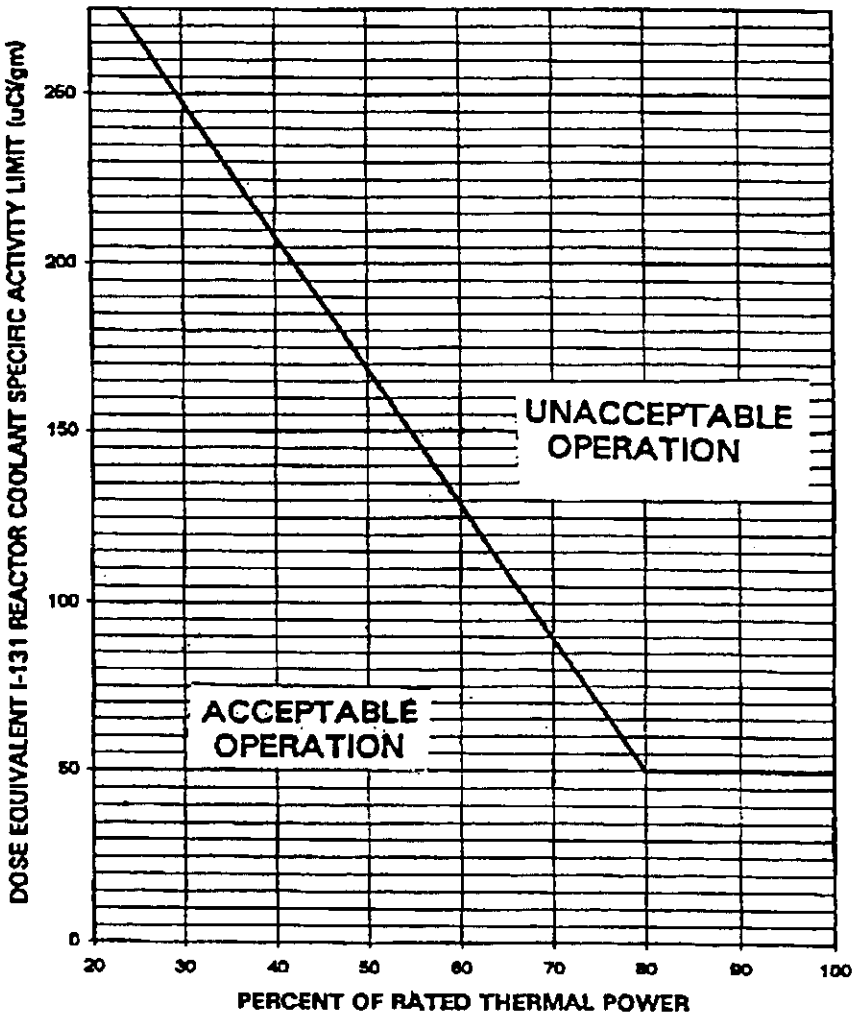

Figure 3.4.11-1 (page 1 of 1)
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity Limit Versus Percent of RATED TERMAL POWER With Reactor Coolant Specific Activity > 1.0 μCi/gm DOSE EQUIVALENT I-131

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1 POINT

68. Which one of the following statements is correct concerning the SSF D/G Service Water System with respect to diverting the D/G SW discharge to the yard drains during a Station Blackout?

A. Waiting no longer than **1 hour 50 minutes** ensures operability of the SSF HVAC System by limiting the inlet temperature to the HVAC condensers to less than or equal 110°F until the submersible pump can be placed in operation at 3.5 hours.

B. Waiting no longer than **2 hours 5 minutes** ensures operability of the SSF HVAC System by limiting the inlet temperature to the HVAC condensers to less than or equal 110°F until the submersible pump is installed in 3.5 hours.

C. Waiting at least **1 hour 50 minutes** ensures that enough water will be retained in the **Unit 1** CCW Intake piping to supply the SSF systems and the ASW Pump for all three units SG's until the submersible pump can be placed in operation at 3.5 hours.

D. Waiting at least **2 hours 5 minutes** ensures that enough water will be retained in the **Unit 2** CCW Intake piping to supply the SSF systems and the ASW Pump for all three units SG's until the submersible pump is installed in 3.5 hours.

A) B

Distractor analysis:

Waiting no longer than ***2 hours 5*** minutes ensures operability of the SSF HVAC System by limiting the inlet temperature to the HVAC condensers to less than or equal 110 F until the submersible pump ***is installed in 3.5 hours.***

Waiting at least ***1 hour 50*** minutes ensures that enough water will be retained in the unit ***2 CCW*** Intake piping to supply the SSF systems and the ASW Pump for all three units SG's until the submersible pump ***can be placed in operation at 3.5 hours.***

Reference: Book II of II, Vol 6, OP-OC-EAP-DGE, page 25 of 59.
EO - 8.3
K/A: 076K105 (3.8/4.0)
RO/SRO: Both
Level: C
Author: rfa

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1 POINT

69. 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

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1 POINT

70. 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

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1 POINT

71. 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.

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1 POINT

72. 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 SRO EXAM
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1 POINT

73. 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

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1 POINT

74. Which ONE of the following describes the correct input signal to the Auxiliary Shutdown Panel?

RCS pressure indication at the Auxiliary Shutdown Panel...

A. is selected via SASS from RPS Channel A or E.

B. originates from Train A ICCM pressure transmitter.

C. originates from ES Channel A or C pressure via amphonol.

D. is selected by Median select from RPS Channel A, B, or E.

A) D

A. Incorrect - This used to be correct before the new ICS mod. SASS output no longer feeds the ASDP.
B. Incorrect - ASDP indication is not from ICCM, ICCM is a WR signal
C. Incorrect - ASDP is a NR signal; ES is a WR signal and the anphonel feeds several different shared indication/controls
D. Correct - The new ICS modification changed this instrment feed to the ASDP by providing median select protection for the instrumentation.

K/A: A06AK21 (3.8/3.8)
T1G1, T1G1
Bank
Reference: Facility updated question bank 11 IC196 IC196

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02-18-2002

1 POINT

75. Plant conditions:

- Turbine Building Flood is in progress.

Which ONE of the following is correct?

Long term core cooling should be established using _____ because _____.

A. Station ASW / HPI pumps may become inoperable due to loss of pump cooling

B. Station ASW / LPI/HPI piggyback may not be available due to loss of LPSW

C. HPI Forced Cooling / SGs will be damaged by using raw lake water

D. HPI Forced Cooling / the BWST can be supplemented by SFP inventory

A) B

A. Incorrect, HPI pumps will not lose pump cooling because it is backed up by EWST.

B. Correct, with a possible loss of LPSW the RBES cannot be cooled in LPI/HPI piggyback.

C. Incorrect, HPI F/C is not the preferred method because of the possible loss of LPSW and inability to cool RBES.

D. Incorrect, HPI F/C is not the preferred method because of the possible loss of LPSW and inability to cool RBES.

Reference: Book II of II, Vol 6, OP-OC-EAP-TBF, page 9 of 24.
EO-3
K/A: AO7AK33 (3.6/3.2)
RO/SRO: Both
Level: M, PSA
Author: rfa

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

76. 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 SRO EXAM
02-18-2002

1 POINT

77. 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

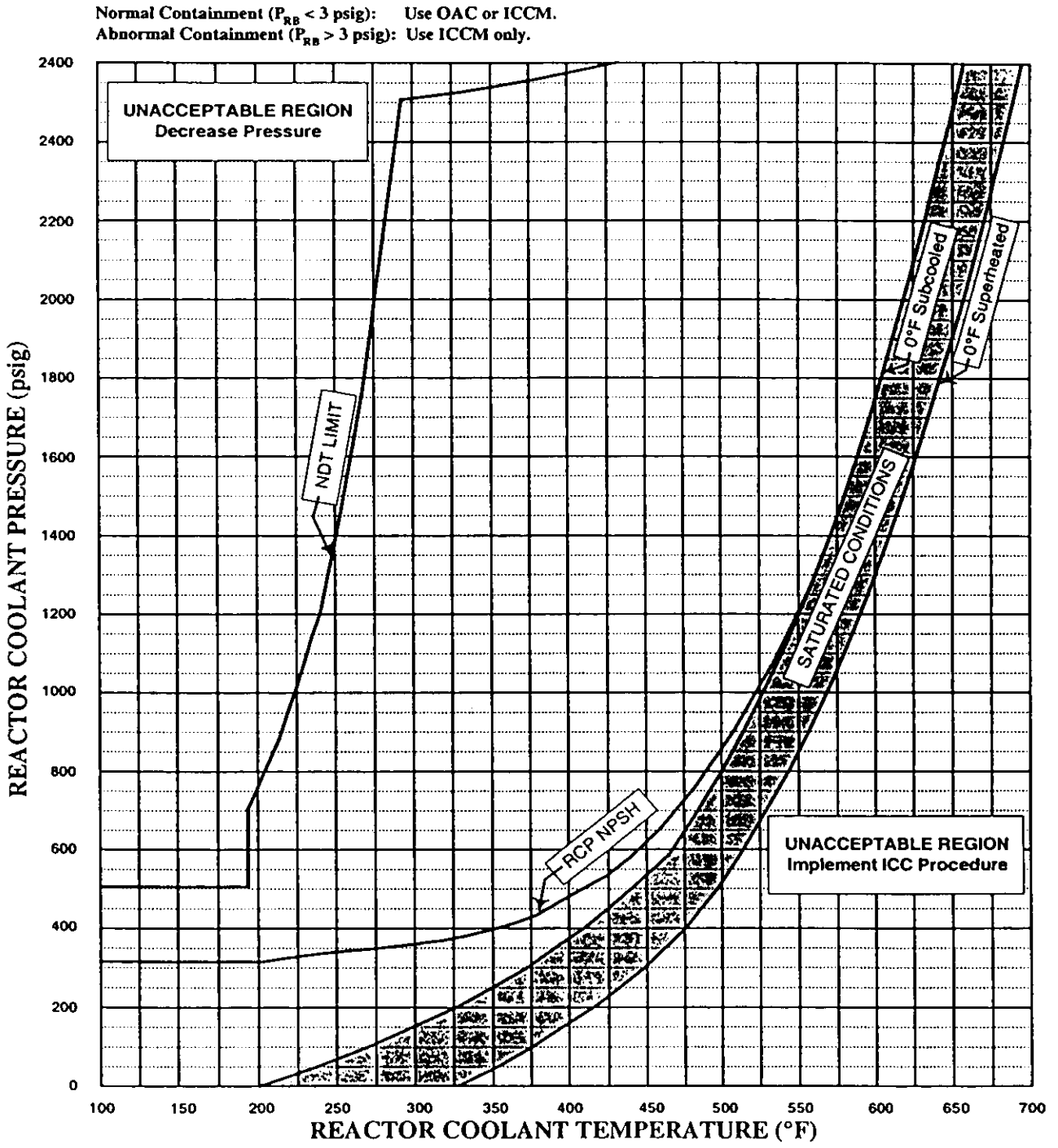
D. (-) 9°F flashing

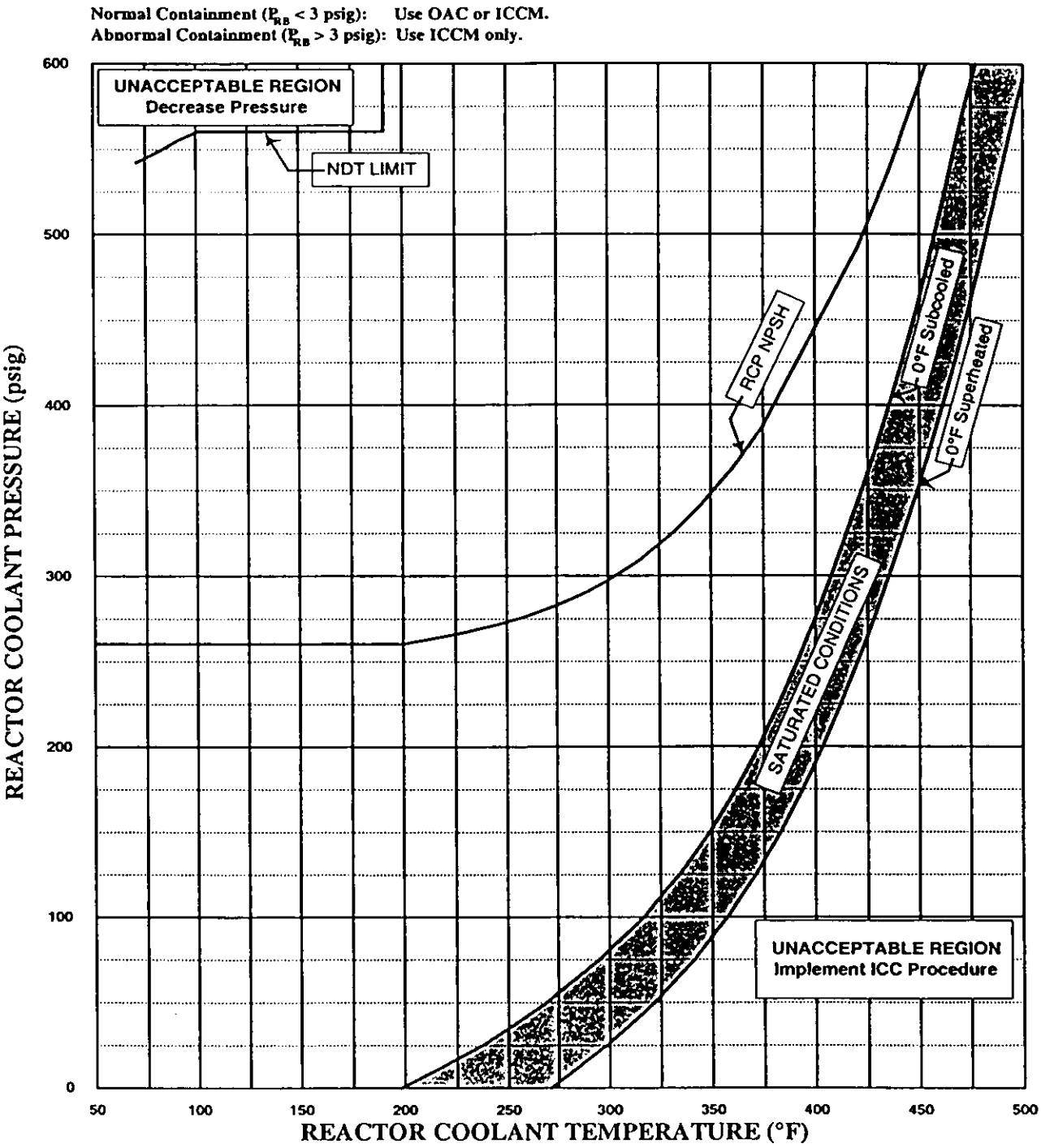
A) C

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.
UNACCEPTABLE REGION
Decrease Pressure
NDT LIMIT
RCP NPSH
SATURATED CONDITIONS
0°F Subcooled
0°F Superheated
UNACCEPTABLE REGION
Implement ICC Procedure
REACTOR COOLANT PRESSURE (psig)
REACTOR COOLANT TEMPERATURE (°F)
2400
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
100
150
200
250
300
350
400
450
500
550
600
650
700


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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

78. 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 SRO EXAM
02-18-2002

1 POINT

79. 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 SRO EXAM
02-18-2002

1 POINT

80. 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 SRO EXAM
02-18-2002

1 POINT

81. Unit 1 has been stabilized following an overcooling transient and the following conditions exist:

- Tavg = 550°F
- RCS Pressure = 2000 psig
- Pressurizer Level = 250 inches and slowly increasing
- Pressurizer Temperature = 610°F
- Pressurizer Heaters Energized

Which ONE of the following describes the PRESENT state of the pressurizer?

The pressurizer is _____ for the current RCS pressure and the _____ maintaining RCS pressure.

SEE ATTACHMENT: EOP Encl. 5.18 (P/T Curves)

A. saturated / pressurizer heaters are

B. subcooled / pressurizer heaters are

C. saturated / compressed steam bubble in the pressurizer is

D. subcooled / compressed steam bubble in the pressurizer is

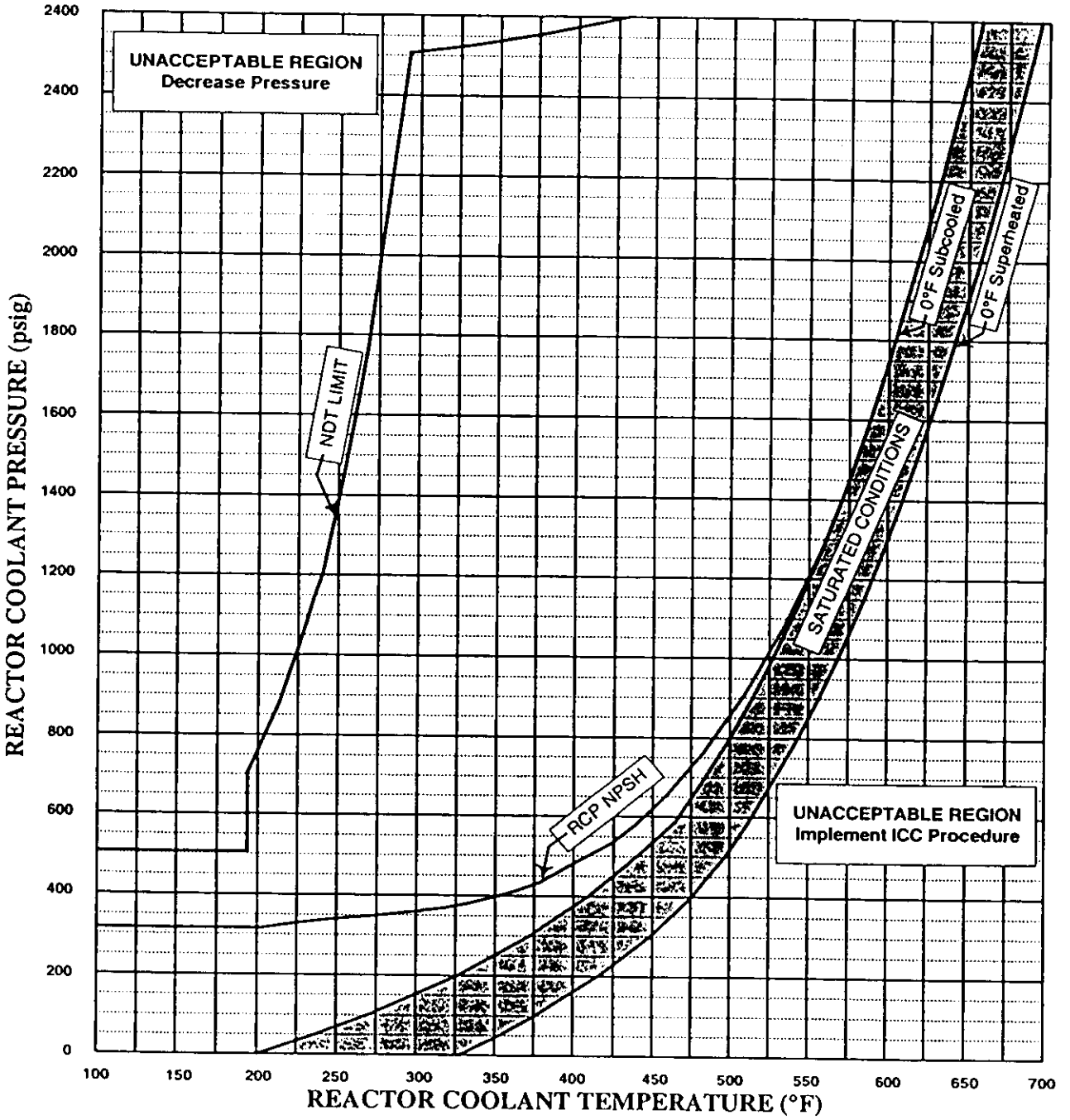
A) D

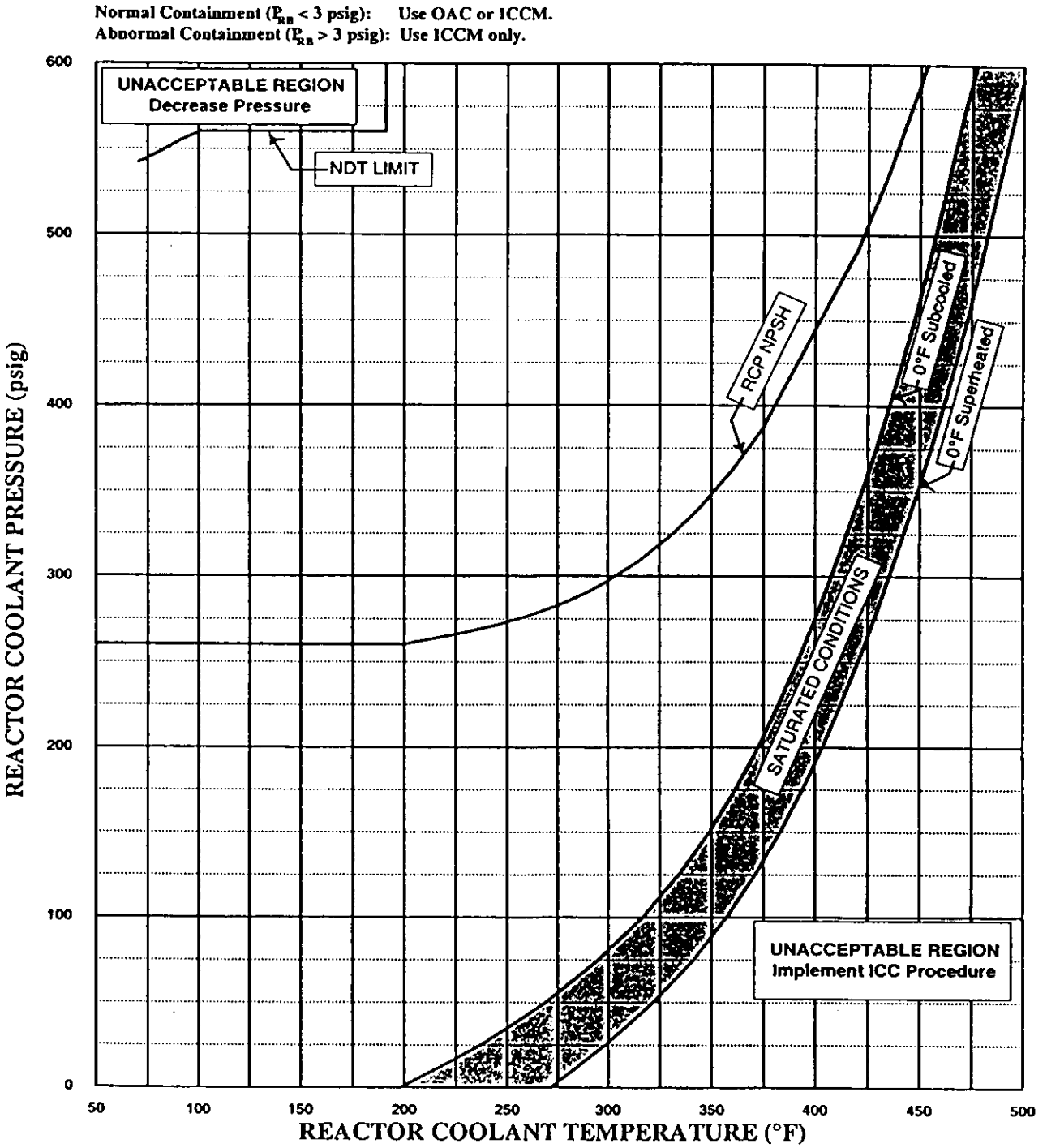
A. Incorrect - the pressurizer is not saturated.
B. Incorrect - the pressurizer is not saturated and the heaters will not increase pressure until saturated conditions are achieved.
C. Incorrect - the pressurizer is not saturated.
D. Correct - the pressurizer is not saturated and the steam bubble in the pressurizer is temporarily maintaining RCS pressure artificially above its true saturation point for the pressurizer temperature.

Required Attachment: EOP Encl. 5.18 (P/T Curves)

K/A: E05EK11 (3.8/3.8)
SRO - T1G1
Bank
Reference: Facility updated question bank 10 PNS142201 PNS142201

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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

82. 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 SRO EXAM
02-18-2002

1 POINT

83. Unit 2 conditions:

- Reactor power = 68%
- The 2B2 RCP has been secured for 3 days (vibration problems)
- ICS in MANUAL with I&E performing CRD Power Supply checks
- Group 2 Rod 7 API position changes to read 42% withdrawn
- Group 2 Rod 4 API position changes to read 82% withdrawn
- Group 2 remaining rods are at 100% withdrawn
- Reactor power indications support Quadrant Power Tilt changes

Which ONE of the following is the correct operator response?

A. Verify Shutdown Margin (SDM) exists as specified in the COLR within one hour or initiate boration to achieve SDM as specified in the COLR within one hour AND be in MODE 3 in 12 hours.

B. Restore at least one of the misaligned rods to alignment within 1 hour then declare the remaining misaligned rod inoperable and take actions for the inoperable rod.

C. Commence manual power reduction to less than 45% Full Power.

D. Manually trip the reactor.

A) D

A. Incorrect, the actions described are those required by ITS 3.1.4 however there are more restrictive requirements in the Dropped Rod AP.
B. Incorrect, Restoring a rod to alignment is an acceptable option only when there is ONE rod misaligned per ITS 3.1.4.
C. Incorrect, the actions described are the correct actions for ONE misaligned rod per the Dropped Rod AP.
D. Correct, Guidance given in the Dropped Control Rod AP.

K/A: E13EA22 (3.8/4.0)
T1G3, T1G3
Bank
Reference: Facility updated question bank 51 IC022101 IC022101

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

84. Which one of the following is the correct example of an EXCEPTION to TS LCO 3.0.4 where limited completion time is provided to allow restoration of inoperable equipment?

SEE ATTACHMENT: TS 3.0.4

A. The LCO is **ONLY** in Mode 1 with power $\geq 15\%$.

B. The LCO would **ONLY** require a power reduction to < 15%.

C. Mode changes made to comply with required actions or as part of a shutdown of the unit.

D. The required actions to be taken are specified in the support system LCO.

A) C

Reference: Lesson Plans Vol IX, OP-OC-ADM-ITS , page 16,17 of 25.
EO - 3
K/A: G2.1.12 (2.9/4.0)
RO/SRO: SRO
Level: M
Author: rfa

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.

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

85. 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 SRO EXAM
02-18-2002

1 POINT

86. 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 SRO EXAM
02-18-2002

1 POINT

87. Which one of the following statements is correct if the turbine generator's running isolated phase bus cooling fan trips?

A. The standby fan will **NOT** automatically start. The return duct damper automatically closes so that the return air is forced through the emergency damper instead of returning to the fan suction. Generator operation above 16,000 amps load is permitted but limited.

B. The standby fan will automatically start. The return duct damper is manually closed so that the return air is forced through the emergency damper instead of returning to the fan suction. Generator operation above 16,000 amps load is **NOT** permitted.

C. The standby fan will automatically start. Generator operation above 16,000 amps load is **NOT** permitted.

D. The standby fan will **NOT** automatically start. Generator operation above 16,000 amps load is permitted but limited.

A) D

Distractor Analysis:

If a running isolated phase bus cooling fan trips, The standby fan will NOT automatically start. An operator must start the fan manually from the panel. Generator operation above 16,000 amps load is limited to 30 minutes.

Following a loss of the isolated phase bus cooling system HX RCW cooling flow, with the cooler OOS, the emergency exhaust damper is manually opened. The return duct damper is also manually closed so that the return air is forced through the emergency damper instead of returning to the fan suction.

Reference: Lesson Plans Book II of II, Vol III, OP-OC-STG-IPBC , page 10 of 10.
EO - 3
K/A: G2.1.26 (2.2/2.6) This is a stretch but I believe it fits
RO/SRO: SRO
Level: C (Involves procedures and system knowledge)
Author: rfa

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

88. 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 SRO EXAM
02-18-2002

1 POINT

89. 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

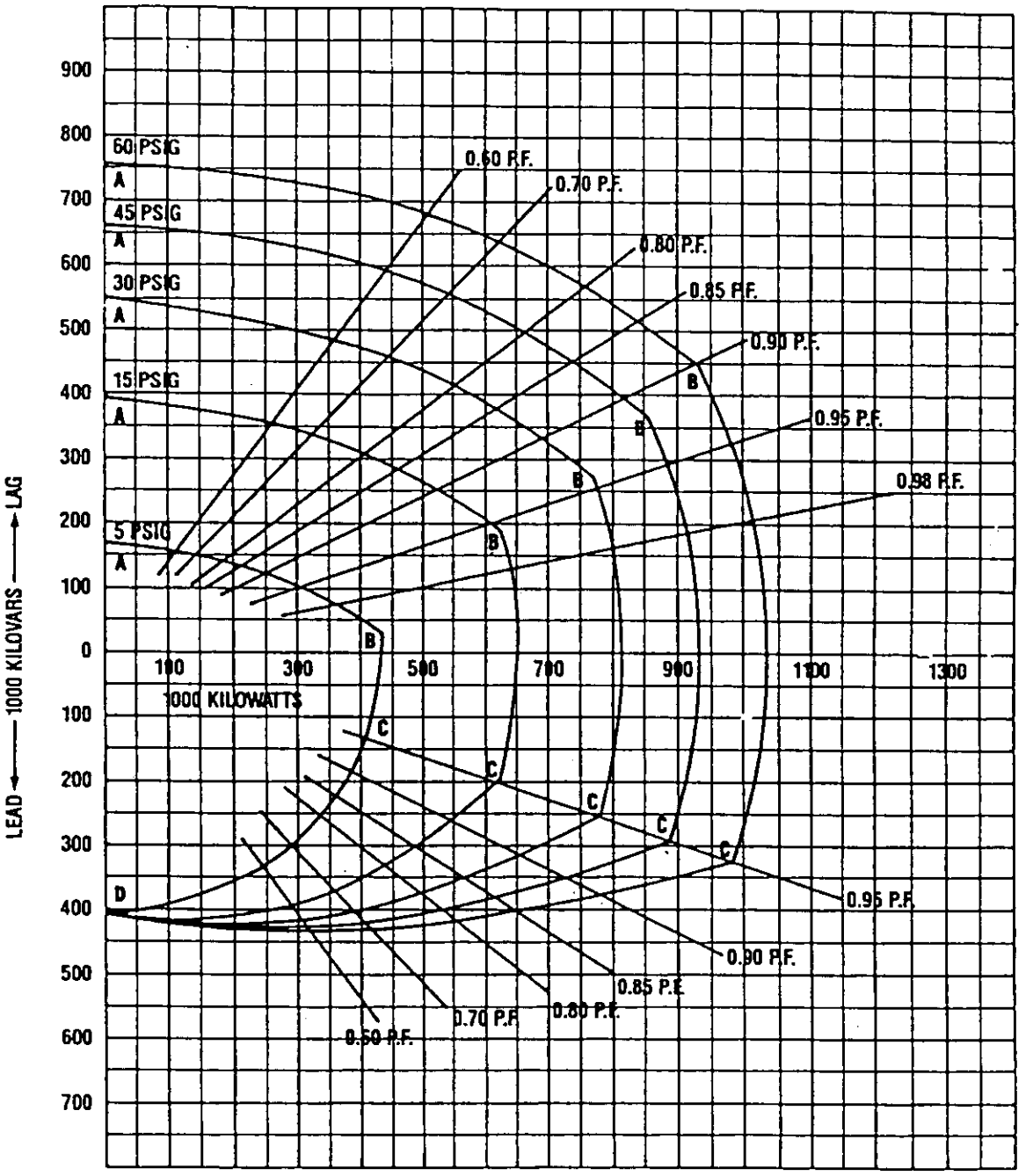
C. 321

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 SRO EXAM
02-18-2002

1 POINT

90. Unit 2 plant conditions:

- Unit is shutdown
- RCS temp = 185°F.
- At 2000 on 3/19 it is discovered that the last performance of SR 3.1.1.1 (required once per 24 hours in modes 3, 4, and 5) occurred at 0800 on 3/18.

Which ONE of the following is a Required TS action?

SEE ATTACHMENTs: TS 3.1.1 (Shutdown Margin)
TS 3.0 (Surveillance Requirment Applicability)

A. Immediately enter LCO 3.0.3.

B. Initiate boration by 2015 on 3/19.

C. Perform SR 3.1.1.1 prior to 0200 on 3/21.

D. Perform SR 3.1.1.1 prior to 2000 on 3/20.

A) D

D. Correct

Required ATTACHMENT: TS 3.1.1 (Shutdown Margin) and TS 3.0 (Surveillance Requirment Applicability)

K/A: G2.2.12 (3.0/3.4)
SRO - T3
Bank
Reference: Facility updated question bank 2 ADM010611 ADM010611
Per SR 3.0.3, due to a missed surveillance, the lesser of 24 additional hours or the specified frequency time is allowed to complete the surveillance.
MEM

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 The SDM shall be within the limit specified in the COLR.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM is within the limit specified in the COLR.	24 hours

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.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1

SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

SR 3.0.2

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

SR 3.0.3

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

3.0 SR APPLICABILITY (continued)

SR 3.0.4 Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into 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.

SR 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.

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

91. 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 SRO EXAM
02-18-2002

1 POINT

92. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

93. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

94. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

95. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

96. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

97. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

98. 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

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

99. Which one of the following event classifications is correct during an ATWS?

SEE ATTACHMENT: RP/1000/01 (Emergency Classification)

A. If the Control Rods CAN be manually tripped OR if DSS has inserted Groups 5-7, then the event will be classified as an ALERT (based solely on the ATWS) .

B. If the Control Rods CANNOT be manually tripped OR DSS has NOT inserted Groups 5-7, then the event will be classified as an SAE.

C. If the Control Rods CAN be manually tripped OR if DSS has inserted Groups 5-7, then the event will be classified as an SAE (based solely on the ATWS).

D. If the Control Rods CANNOT be manually tripped AND DSS has NOT inserted Groups 5-7, then the event will be classified as an ALERT.

A) A

Required ATTACHMENT RP/1000/01 (Emergency Claification)

Distractor analysis:

If the Control Rods CAN be manually tripped OR if DSS has inserted Groups 5-7, then the event will be classified as an ALERT (based solely on the ATWS) .

If the Control Rods CANNOT be manually tripped AND DSS has NOT inserted Groups 5-7, then the event will be classified as an SAE (based solely on the ATWS) .

Reference: Book II of II, Vol 6, OP-OC-EAP-UNPP, page 13 of 19.
EO-12
K/A: 2.4.29 (2.6/4.0)
RO/SRO: SRO Only
Level: M
Author: rfa

INFORMATION ONLY

Duke Power Company
PROCEDURE PROCESS RECORD

(1) ID No. RP/0/B/1000/001

Revision No 010

PARATION

Station Oconee Nuclear Station

(3) Procedure Title Emergency Classification

(4) Prepared By Donice Kelley Date 05/10/2001

(5) Requires 10CFR50.59 evaluation?

- ☐ Yes (New procedure or revision with major changes)
- ☒ No (Revision with minor changes)
- ☐ No (To incorporate previously approved changes)

(6) Reviewed By Ray Waterman (QR) Date 5/14/01

Cross-Disciplinary Review By _____ (QR)NA____ Date _____

Reactivity Mgmt. Review By _____ (QR)NA____ Date _____

(7) Additional Reviews

QA Review By _____ Date _____

Reviewed By _____ Date _____

Reviewed By _____ Date _____

(8) Temporary Approval *(if necessary)*

By _____ (SRO/QR) Date _____

By _____ (QR) Date _____

(9) Approved By M. A Thom Date 5-14-01

PERFORMANCE *(Compare with control copy every 14 calendar days while work is being performed.)*

(10) Compared with Control Copy _____ Date _____

Compared with Control Copy _____ Date _____

Compared with Control Copy _____ Date _____

(11) Date(s) Performed _____

Work Order Number (WO#) _____

COMPLETION

(12) Procedure Completion Verification

- ☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?
- ☐ Yes ☐ NA Listed enclosures attached?
- ☐ Yes ☐ NA Data sheets attached, completed, dated, and signed?
- ☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?
- ☐ Yes ☐ NA Procedure requirements met?

Verified By _____ Date _____

(13) Procedure Completion Approved _____ Date _____

Remarks *(Attach additional pages, if necessary)*

Duke Power Company Oconee Nuclear Site **Emergency Classification** **Reference Use**	Procedure No. RP/0/B/1000/001 Revision No. 010 Electronic Reference No. OX002WOS

Emergency Classification

NOTE:	This procedure is an implementing procedure to the Oconee Nuclear Site Emergency plan and must be forwarded to Emergency Planning within three (3) working days of approval.

1. Symptoms

1.1 This procedure describes the immediate actions to be taken to recognize and classify an emergency condition.

1.2 This procedure identifies the four emergency classifications and their corresponding Emergency Action Levels (EALs).

1.3 This procedure provides reporting requirements for non-emergency abnormal events.

1.4 The following guidance is to be used by the Emergency Coordinator/EOF Director in assessing emergency conditions:

1.4.1 The Emergency Coordinator/EOF Director shall review all applicable initiating events to ensure proper classification.

1.4.2 The BASIS Document (Volume A, Section D of the Emergency Plan) is available for review if any questions arise over proper classification.

1.4.3 IF An event occurs on more than one unit concurrently,

THEN The event with the higher classification will be classified on the Emergency Notification Form.

A. Information relating to the problem(s) on the other unit(s) will be captured on the Emergency Notification Form as shown in RP/0/B/1000/015A, (Offsite Communications From The Control Room), RP/0/B/1000/015B, (Offsite Communications From The Technical Support Center) or RP/0/B/1000/015C, (Offsite Communications From The Emergency Operations Facility).

1.4.4 IF An event occurs,

AND A lower or higher plant operating mode is reached before the Classification can be made,

THEN The classification shall be based on the mode that existed at the time the event occurred.

1.4.5 The Fission Product Barrier Matrix is applicable only to those events that occur at Hot Shutdown or higher.

A. An event that is recognized at Cold Shutdown or lower shall not be classified using the Fission Product Barrier Matrix.

1. Reference should be made to the additional enclosures that provide Emergency Action Levels for specific events (e.g., Severe Weather, *Fire*, Security).

1.5 IF A transient event should occur,

THEN Review the following guidance:

1.5.1 IF An Emergency Action Level (EAL) identifies a specific duration

AND The Emergency Coordinator/EOF Director assessment concludes that the specified duration is exceeded or will be exceeded, (i.e.; condition cannot be reasonably corrected before the duration elapses),

THEN Classify the event.

1.5.2 IF A plant condition exceeding EAL criteria is corrected before the specified duration time is exceeded,

THEN The event is NOT classified by that EAL.

A. Review lower severity EALs for possible applicability in these cases.

NOTE: Reporting under 10CFR50.72 may be required for the following step. Such a condition could occur, for example, if a follow up evaluation of an abnormal condition uncovers evidence that the condition was more severe than earlier believed.

1.5.3 IF A plant condition exceeding EAL criteria is not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g.; as a result of routine log or record review)

AND The condition no longer exists,

THEN An emergency shall NOT be declared.

1.5.4 IF An emergency classification was warranted, but the plant condition has been corrected prior to declaration and notification,

THEN The Emergency Coordinator must consider the potential that the initiating condition (e.g.; Failure of Reactor Protection System) may have caused plant damage that warrants augmenting the on shift personnel through activation of the Emergency Response Organization.

A. IF An *Unusual Event* condition exists,

THEN Make the classification as required.

1. The event may be terminated in the same notification or as a separate termination notification.

B. IF An *Alert*, *Site Area Emergency*, or *General Emergency* condition exists,

THEN Make the classification as required,

AND Activate the Emergency Response Organization.

1.6 Emergency conditions shall be classified as soon as the Emergency Coordinator/EOF Director assessment determines that the Emergency Action Levels for the Initiating Condition have been exceeded.

2. Immediate Actions

2.1 Determine the operating mode that existed at the time the event occurred prior to any protection system or operator action initiated in response to the event.

2.2 IF The unit is at Hot Shutdown or higher

AND The condition/event affects fission product barriers,

THEN GO TO Enclosure 4.1, (Fission Product Barrier Matrix).

2.2.1 Review the criteria listed in Enclosure 4.1, (Fission Product Barrier Matrix) and make the determination if the event should be classified.

2.3 Review the listing of enclosures to determine if the event is applicable to one of the categories shown.

2.3.1 IF One or more categories are applicable to the event,

2.3.2 THEN Refer to the associated enclosures.

2.3.3 Review the EALs and determine if the event should be classified.

A. IF An EAL is applicable to the event,

THEN Classify the event as required.

2.4 IF The condition requires an emergency classification,

THEN GO TO RP/0/B/1000/002, (Control Room Emergency Coordinator Procedure) Subsequent Actions.

2.5 Continue to review the emergency conditions to assure the current classification continues to be applicable.

3. Enclosures

DETERMINE THE APPROPRIATE CLASSIFICATION USING THE TABLE BELOW: CIRCLE EALS CHOSEN. ADD POINTS TO CLASSIFY. (SEE NOTE BELOW)

RCS BARRIERS (BD 5-7)	
Potential Loss (4 Points)	Loss (5 Points)
RCS Leakrate > Makeup capacity of one HPI pump in normal makeup mode (approx. 160 gpm) with Letdown isolated.	RCS Leak rate > available makeup capacity as indicated by a loss of subcooling
SGTR > Makeup capacity of one HPI pump in normal makeup mode (approx. 160 gpm) with Letdown isolated.	
Entry into the TSOR (Thermal Shock) operating range	1RIA 57/58 reading ≥ 1.0 R/hr 2 RIA 57 reading ≥ 1.6 R/hr 2 RIA 58 reading ≥ 1.0 R/hr 3RIA 57/58 reading ≥ 1.0 R/hr
HPI Forced Cooling	RCS pressure spike ≥ 2750 psig
Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment

FUEL CLAD BARRIERS (BD 8-9)	
Potential Loss (4 Points)	Loss (5 Points)
Average of the 5 highest CETC ≥ 700° F	Average of the 5 highest CETC ≥ 1200° F
Valid RVLS reading of 0"	Coolant activity ≥ 300 µCi/ml DEI
NOTE: RVLS is NOT valid if one or more RCPs are running OR if LPI pump(s) are running.	Hours Since SD / RIA57/58 R/hr 0 - < 0.5 : ≥ 300/150 0.5 - < 2.0 : ≥ 80/40 2.0 - 8.0 : ≥ 32/16
Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment

CONTAINMENT BARRIERS (BD 10-12)	
Potential Loss (1 Point)	Loss (3 Points)
CETC ≥ 1200° F ≥ 15 minutes OR CETC ≥ 700° F ≥ 15 minutes with a *valid* RVLS reading 0"	Rapid unexplained containment pressure decrease after increase OR containment pressure or sump level not consistent with LOCA
RB pressure ≥ 59 psig OR RB pressure ≥ 10 psig and no RBCU or RBS	Failure of secondary side of SG results in a direct opening to the environment with P/S leakage ≥ 10 gpm in the same SG
Hours Since SD / RIA57/58 - R/hr 0 - < 0.5 : ≥ 1800/860 0.5 - < 2.0 : ≥ 400/195 2.0 - 8.0 : ≥ 280/130	Failure of secondary side of SG results in a direct opening to the environment with P/S leakage ≥ 10 gpm in the other SG AND Feeding SG with secondary side failure from the affected unit
Hydrogen concentration ≥ 9%	Containment isolation is incomplete and a release path to the environment exists
Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment

UNUSUAL EVENT (1-3 Total Points)	ALERT (4-6 Total Points)	SITE AREA EMERGENCY (7-10 Total Points)	GENERAL EMERGENCY (11-13 Total Points)
OPERATING MODE: 1, 2, 3, 4 • Any potential loss of Containment • Any loss of containment	OPERATING MODE: 1, 2, 3, 4 • Any potential loss or loss of the Fuel Clad • Any potential loss or loss of the RCS	OPERATING MODE: 1, 2, 3, 4 • Loss of any two barriers • Loss of one barrier and potential loss of either RCS or Fuel Clad Barriers • Potential loss of both the RCS and Fuel Clad Barriers	OPERATING MODE: 1, 2, 3, 4 • Loss of any two barriers and potential loss of the third barrier • Loss of all three barriers
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY .NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4

NOTE: An event with multiple events could occur which would result in the conclusion that exceeding the loss or potential loss threshold is IMMINENT (i.e., within 1-3 hours). In this IMMINENT LOSS situation, use judgment and classify as if the thresholds are exceeded.

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
1. *RCS LEAKAGE* (BD 14) ========== OPERATING MODE: 1, 2, 3, 4 A. Unidentified leakage ≥ 10 gpm B. Pressure boundary leakage ≥ 10 gpm C. Identified leakage ≥ 25 gpm 2. *UNPLANNED* LOSS OF MOST OR ALL SAFETY SYSTEM ANNUNCIATION/ INDICATION IN CONTROL ROOM FOR > 15 MINUTES (BD 15) ========== OPERATING MODE: 1, 2, 3, 4 A.1 *Unplanned* loss of > 50% of the following annunciators on one unit for > 15 minutes: Units 1 & 3 1 SA1-9, 14-16, and 18, 3 SA1-9, 14-16, and 18 Unit 2 2 SA1-9, 14-16 AND A.2 Loss of annunciators or indicators requires additional personnel (beyond normal shift complement) to safely operate the unit 3. INABILITY TO REACH REQUIRED SHUTDOWN WITHIN LIMITS (BD 16) ========== OPERATING MODE: 1, 2, 3, 4 A. Required operating mode not reached within TS LCO action statement time (CONTINUED)	1. *UNPLANNED* LOSS OF MOST OR ALL SAFETY SYSTEM ANNUNCIATION/ INDICATION IN CONTROL ROOM (BD 19) ========== OPERATING MODE: 1, 2, 3, 4 A.1 *Unplanned* loss of > 50% of the following annunciators on one unit for > 15 minutes: Units 1 & 3 1 SA1-9, 14-16, and 18 3 SA1-9, 14-16, and 18 Unit 2 2 SA1-9, 14-16 AND A.2 Loss of annunciators /indicators requires additional personnel (beyond normal shift complement) to safely operate the unit AND A.3 Significant plant transient in progress OR A.4 Loss of the OAC and ALL PAM indications (END)	1. INABILITY TO MONITOR A SIGNIFICANT TRANSIENT IN PROGRESS (BD 21) ========== OPERATING MODE: 1, 2, 3, 4 A.1 *Unplanned* loss of > 50% of the following annunciators on one unit for > 15 minutes: Units 1 & 3 1 SA1-9, 14-16, and 18 3 SA1-9, 14-16, and 18 Unit 2 2 SA1-9, 14-16 AND A.2 A *significant transient* is in progress AND A.3 Loss of the OAC and ALL PAM indications AND A.4 *Inability to directly monitor* any one of the following functions: 1. Subcriticality 2. Core Cooling 3. Heat Sink 4. RCS Integrity 5. Containment Integrity 6. RCS Inventory (END)	
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
4. *UNPLANNED* LOSS OF ALL ONSITE OR OFFSITE COMMUNICATIONS (BD 17) ========== OPERATING MODE: All A. Loss of all onsite communications capability (ROLM system, PA system, Pager system, Onsite Radio system) affecting ability to perform Routine operations B. Loss of all onsite communications capability (Selective Signaling, NRC FTS lines, Offsite Radio System, AT&T line) affecting ability to communicate with offsite authorities. 5. FUEL CLAD DEGRADATION (BD 18) ========== OPERATING MODE: All: A. DEI - >5µCi/ml (END)			
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4			

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
1 ANY *UNPLANNED* RELEASE OF GASEOUS OR LIQUID RADIOACTIVITY TO THE ENVIRONMENT THAT EXCEEDS TWO TIMES THE SLC LIMITS FOR 60 MINUTES OR LONGER (BD 23) ********** OPERATING MODE: All A. *Valid* indication on radiation monitor RIA 33 of ≥ 4.06E+06 cpm for > 60 minutes (See Note 1) B. *Valid* indication on radiation monitor RIA 45 of ≥ 1.33E+06 cpm for > 60 minutes (See Note 1) C. Liquid effluent being released exceeds two times SLC 16.11.1 for > 60 minutes as determined by Chemistry Procedure D. Gaseous effluent being released exceeds two times SLC 16.11.2 for > 60 minutes as determined by RP Procedure NOTE 1: If monitor reading is sustained for the time period indicated in the EAL AND the required assessments (procedure calculations) cannot be completed within this period, declaration must be made on the *valid* Radiation Monitor reading. (CONTINUED)	1. ANY *UNPLANNED* RELEASE OF GASEOUS OR LIQUID RADIOACTIVITY TO THE ENVIRONMENT THAT EXCEEDS 200 TIMES RADIOLOGICAL TECHNICAL SPECIFICATIONS FOR 15 MINUTES OR LONGER (BD 28) ********** OPERATING MODE: All A. *Valid* indication on RIA 46 of ≥ 2.98E+04 cpm for >15 minutes (See Note 1) B.1 RIA 33 HIGH Alarm AND B.2 Liquid effluent being released exceeds 200 times the level of SLC 16.11.1 for > 15 minutes as determined by Chemistry Procedure C. Gaseous effluent being released exceeds 200 times the level of SLC 16.11.2 for >15 minutes as determined by RP Procedure 2. RELEASE OF RADIOACTIVE MATERIAL OR INCREASES IN RADIATION LEVELS THAT IMPEDES OPERATION OF SYSTEMS REQUIRED TO MAINTAIN SAFE OPERATION OR TO ESTABLISH OR MAINTAIN COLD SHUTDOWN (BD 30) ********** OPERATING MODE: All A. *Valid* radiation reading ≥ 15 mRad/hr in CR, CAS, or, Radwaste CR B. *Unplanned*/unexpected *valid* area monitor readings exceed limits stated in Enclosure 4.9 (CONTINUED)	1. BOUNDARY DOSE RESULTING FROM ACTUAL/IMMINENT RELEASE OF GASEOUS ACTIVITY (BD 32) ********** OPERATING MODE: All A. *Valid* reading on RIA 46 of ≥ 2.98E+05 cpm for >15 minutes (See Note 2) B. *Valid* reading on RIA 57 or 58 as shown on Enclosure 4.8 (See Note 2) C. Dose calculations result in a dose projection at the *site boundary* of: ≥ 100 mRem TEDE or 500 mRem CDE adult thyroid D. Field survey results indicate *site boundary* dose rates exceeding ≥100 mRad/hr expected to continue for more than one hour OR D.1 Analyses of field survey samples indicate adult thyroid dose commitment of ≥ 500 mRem CDE (3.84 E^{-7} µCi/ml) for one hour of inhalation NOTE 2: If actual Dose Assessment cannot be completed within 15 minutes, then the *valid* radiation monitor reading should be used for emergency classification. (CONTINUED)	1. BOUNDARY DOSE RESULTING FROM ACTUAL/ IMMINENT RELEASE OF GASEOUS ACTIVITY (BD 36) ********** OPERATING MODE: All A. *Valid* reading on RIA 46 of ≥ 2.98E+06 cpm for ≥15 minutes (See Note 3) B. *Valid* reading on RIA 57 or 58 as shown on Enclosure 4.8 (See Note 3) C. Dose calculations result in a dose projection at the *site boundary* of: C.1 ≥ 1000 mRem TEDE OR C.2 ≥ 5000 mRem CDE adult thyroid D. Field survey results indicate *site boundary* dose rates exceeding ≥1000 mRad/hr expected to continue for more than one hour OR D.1 Analyses of field survey samples indicate adult thyroid dose commitment of ≥ 5000 mRem CDE for one hour of inhalation NOTE 3: If actual Dose Assessment cannot be completed within 15 minutes, then the *valid* radiation monitor reading should be used for emergency classification. (END)
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

Assumptions used for calculation of vent monitors RIA 45 & 46:

1. Average annual meteorology (1.672 E-6 sec/m^3), semi-elevated
2. Vent flow rate 65,000 cfm (average daily flow rate)
3. No credit is taken for vent filtration
4. One hour release duration for ***Unusual Event***, 15 minute duration for ***Alert, Site Area Emergency, General Emergency***
5. ***General Emergency*** PAGs are 1 rem TEDE and 5 rem CDE; ***Site Area Emergency*** determination is based on 10% of the ***General Emergency*** PAGs
6. Calculations for monitor readings are based on whole body dose
7. Standard ODCM guidance together with NUMARC guidance indicates that effluent releases are based on Technical Specification releases

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
2 UNEXPECTED INCREASE IN PLANT RADIATION OR AIRBORNE CONCENTRATION (BD 25) OPERATING MODE: All A. LT 5 reading 14" and decreasing with makeup not keeping up with leakage WITH fuel in the core B. *Uncontrolled* water level decrease in the SFP and fuel transfer canal with all irradiated fuel assemblies remaining covered by water C. 1 R/hr radiation reading at one foot away from a damaged storage cask located at the ISFSI D. *Valid* area monitor readings exceeds limits stated in Enclosure 4.9. (END)	3. MAJOR DAMAGE TO IRRADIATED FUEL OR LOSS OF WATER LEVEL THAT HAS OR WILL RESULT IN THE UNCOVERING OF IRRADIATED FUEL OUTSIDE THE REACTOR VESSEL (BD 31) OPERATING MODE: All A. *Valid* RIA 3, 6, 41, OR 49 HIGH Alarm B. HIGH Alarm for portable area monitors on the main bridge or SFP bridge C Report of visual observation of irradiated fuel uncovered D. Operators determine water level drop in either the SFP or fuel transfer canal will exceed makeup capacity such that irradiated fuel will be uncovered (END)	2. LOSS OF WATER LEVEL IN THE REACTOR VESSEL THAT HAS OR WILL UNCOVER FUEL IN THE REACTOR VESSEL (BD 35) OPERATING MODE: 5, 6 A.1 Failure of heat sink causes loss of Cold Shutdown condition AND A.2 LT 5 indicates 0 inches after initiation of RCS makeup B.1 Failure of heat sink causes loss of Cold Shutdown condition AND B.2 Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup NOTE: This Initiating Condition is also located in Enclosure 4.4., (Loss of Shutdown Functions). High radiation levels will also be seen with this condition. (END)	
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	1. FAILURE OF RPS TO COMPLETE OR INITIATE A Rx SCRAM (BD 39) OPERATING MODE 1, 2, 3 A.1 *Valid* reactor trip signal received or required WITHOUT automatic scram AND A.1.1 DSS has inserted Control Rod Groups 5, 6, 7 OR A.1.2 Manual trip from the Control Room is successful and reactor power is less than 5% and decreasing **2. INABILITY TO MAINTAIN PLANT IN COLD SHUTDOWN (BD 41)** OPERATING MODE: 5, 6 A.1 Loss of LPI and/or LPSW AND A.2 Inability to maintain RCS temperature below 200° F as indicated by either of the following: A.2.1 RCS temperature at the LPI Pump Suction OR A.2.2 Average of the 5 highest CETCs as indicated by ICCM display OR A.2.3 Visual observation (END)	**1. FAILURE OF RPS TO COMPLETE OR INITIATE A Rx SCRAM (BD 42)** OPERATING MODE: 1, 2 A.1 *Valid* reactor trip signal received or required WITHOUT automatic scram AND A.2 DSS has NOT inserted Control Rod Groups 5, 6, 7 AND A.3 Manual trip from the Control Room was NOT successful in reducing reactor power to less than 5% and decreasing **2. COMPLETE LOSS OF FUNCTION NEEDED TO ACHIEVE OR MAINTAIN HOT SHUTDOWN (BD 43)** OPERATING MODE: 1, 2, 3, 4 A. Average of the 5 highest CETCs ≥1200° F shown on ICCM B. Unable to maintain reactor subcritical C. SSF feeding SG per EOP (CONTINUED)	**1. FAILURE OF RPS TO COMPLETE AUTOMATIC SCRAM AND MANUAL SCRAM NOT SUCCESSFUL WITH INDICATION OF CORE DAMAGE (BD 45)** OPERATING MODE: 1, 2 A.1 *Valid* Rx trip signal received or required WITHOUT automatic scram AND A.2 Manual trip from the Control Room was NOT successful in reducing reactor power to < 5% and decreasing AND A.3 Average of the 5 highest CETCs ≥1200° F on ICCM (END)
	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
		3. LOSS OF WATER LEVEL IN THE REACTOR VESSEL THAT HAS OR WILL UNCOVER FUEL IN THE REACTOR VESSEL (BD 44) OPERATING MODE: 5, 6 A.1 Failure of heat sink causes loss of Cold Shutdown conditions AND A.2 LT-5 indicates 0 inches after initiation of RCS Makeup B.1 Failure of heat sink causes loss of Cold Shutdown conditions AND B.2 Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup (END)	
		INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
1. LOSS OF ALL OFFSITE POWER TO ESSENTIAL BUSSES FOR GREATER THAN 15 MINUTES (BD 47) OPERATING MODE: All A.1 Loss of all offsite AC power to both the Red and Yellow Busses for > 15 minutes AND A.2 Unit auxiliaries are being supplied from Keowee or CT5 2. *UNPLANNED* LOSS OF REQUIRED DC POWER FOR GREATER THAN 15 MINUTES (BD 48) OPERATING MODE: 5, 6 A.1 *Unplanned* loss of vital DC power to required DC busses as indicated by bus voltage less than 110 VDC AND A.2 Failure to restore power to at least one required DC bus within 15 minutes from the time of loss (END)	1. LOSS OF ALL OFFSITE AC POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSSES (BD 49) OPERATING MODE: 5, 6 Defueled A.1 MFB 1 and 2 de-energized AND A.2 Failure to restore power to at least one MFB within 15 minutes from the time of loss of both offsite and onsite AC power 2. AC POWER CAPABILITY TO ESSENTIAL BUSSES REDUCED TO A SINGLE SOURCE FOR GREATER THAN 15 MINUTES (BD 50) OPERATING MODE: 1, 2, 3, 4 A. AC power capability has been degraded to a single power source for > 15 minutes due to the loss of all but one of: Unit Normal Transformer Unit SU Transformer Another Unit SU Transformer CT4 CT5 (END)	1. LOSS OF ALL OFFSITE AC POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSSES (BD 51) OPERATING MODE: 1, 2, 3, 4 A.1 MFB 1 and 2 de-energized AND A.2 Failure to restore power to at least one MFB within 15 minutes from the time of loss of both offsite and onsite AC power 2. LOSS OF ALL VITAL DC POWER (BD 52) OPERATING MODE: 1, 2, 3, 4 A.1 *Unplanned* loss of *vital* DC power to required DC busses as indicated by bus voltage less than 110 VDC AND A.2 Failure to restore power to at least one required DC bus within 15 minutes from the time of loss (END)	1. PROLONGED LOSS OF ALL OFFSITE POWER AND ONSITE AC POWER (BD 54) OPERATING MODE: 1, 2, 3, 4 A.1 MFB 1 and 2 de-energized AND A.2 SSF fails to maintain Hot Shutdown AND A.3 At least one of the following conditions exist: A.3.1 Restoration of power to at least one MFB within 4 hours is NOT likely OR A.3.2 Indications of continuing degradation of core cooling based on Fission Product Barrier monitoring (END)
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
1. *FIRES/EXPLOSIONS* WITHIN THE PLANT (BD 57) OPERATING MODE: All NOTE: Within the plant means Turbine Building, Auxiliary Building, Reactor Building, Keowee Hydro. A. Fire within the plant not extinguished within 15 minutes of Control Room notification or verification of a Control Room alarm B. Unanticipated explosion within the plant resulting in *visible damage* to permanent structures/equipment 2. CONFIRMED SECURITY THREAT INDICATES POTENTIAL DEGRADATION IN THE LEVEL OF SAFETY OF PLANT (BD 58) OPERATING MODE: All NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications. A. Discovery of *bomb* within plant *protected area* and outside security vital areas B. *Hostage/Extortion* situation C. *Violent* civil disturbance within the owner controlled area (END)	1. *FIRE/EXPLOSION* AFFECTING OPERABILITY OF PLANT SAFETY SYSTEMS REQUIRED TO ESTABLISH/MAINTAIN SAFE SHUTDOWN (BD 59) OPERATING MODE: All NOTE: Only one train of a system needs to be affected or damaged in order to satisfy this condition. A.1 *Fire/explosions* AND A.1.1 Affected safety-related system parameter indications show degraded performance OR A.1.2 Plant personnel report *visible damage* to permanent structures or equipment required for safe shutdown 2 SECURITY EVENT IN A PLANT PROTECTED AREA (BD 60) OPERATING MODE: All NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications. A. *Intrusion* into plant *protected area* by a hostile force B. *Bomb* discovered in an area containing safety related equipment (END)	1. SECURITY EVENT IN A PLANT VITAL AREA (BD 61) OPERATING MODE: All NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications A. *Intrusion* into any of the following plant areas by a hostile force: Reactor Building Auxiliary Building Keowee Hydro B. *Bomb* detonated in any of the following areas: • Keowee Hydro • Keowee Dam • ISFSI • Reactor Building • Auxiliary Building • SSF (END)	1. SECURITY EVENT RESULTING IN LOSS OF ABILITY TO REACH AND MAINTAIN COLD SHUTDOWN (BD 62) OPERATING MODE: All NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications A. Loss of physical control of the control room due to security event B. Loss of physical control of the Aux Shutdown panel and the SSF due to a Security Event (END)
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY. NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
1. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING THE *PROTECTED AREA* (BD 64) ========== OPERATING MODE: All A. Tremor felt and *valid* alarm on the strong motion accelerograph B Tornado striking within *Protected Area* Boundary C. Vehicle crash into plant structures/systems within the *Protected Area* Boundary D. Turbine failure resulting in casing penetration or damage to turbine or generator seals (CONTINUED)	1. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING THE PLANT *VITAL* AREA (BD 69) ========== OPERATING MODE: All A. Tremor felt and seismic trigger actuates (0.05g) B.1 Tornado, high winds, missiles resulting from turbine failure, vehicle crashes, or other catastrophic event AND NOTE: Only one train of a safety-related system needs to be affected or damaged in order to satisfy these conditions. B.1.1 *Visible damage* to permanent structures or equipment required for safe shutdown of the unit OR B.1.2 Affected safety system parameter indications show degraded performance 2. RELEASE OF TOXIC/FLAMMABLE GASES JEOPARDIZING SYSTEMS REQUIRED TO MAINTAIN SAFE OPERATION OR ESTABLISH MAINTAIN COLD SHUTDOWN (BD 71) ========== OPERATING MODE: All A. Report/detection of *toxic gases* in concentrations that will be life-threatening to plant personnel B. Report/detection of flammable gases in concentrations that will affect the safe operation of the plant: • Reactor Building • Auxiliary Building • Turbine Building • Control Room (CONTINUED)	1. CONTROL ROOM EVACUATION AND PLANT CONTROL CANNOT BE ESTABLISHED (BD 75) ========== OPERATING MODE: All A.1 Control Room evacuation has been initiated AND A.2 Control of the plant cannot be established from the Aux Shutdown Panel or the SSF within 15 minutes 2. KEOWEE HYDRO DAM FAILURE (BD 76) OPERATING MODE: All A. Imminent/actual dam failure includes any of the following: • Keowee Hydro Dam • Little River Dam • Dikes A, B, C, or D • Intake Canal Dike 3. OTHER CONDITIONS WARRANT DECLARATION OF *SITE AREA EMERGENCY* (BD 77) OPERATING MODE: All A. Emergency Coordinator/EOF Director judgment (END)	1. OTHER CONDITIONS WARRANT DECLARATION OF GENERAL EMERGENCY (BD 78) OPERATING MODE: All A.1 Emergency Coordinator/EOF Director judgment indicates: A.1.1 Actual/imminent substantial core degradation with potential for loss of containment OR A.1.2 Potential for *uncontrolled* radionuclide releases that would result in a dose projection at the site boundary greater than 1000 mRem TEDE or 5000 mRem CDE Adult Thyroid (END)
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

Natural Disasters, Hazards and Ot...nditions Affecting Plant Safety

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
2. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING KEOWEE HYDRO (BD 66) OPERATING MODE: All A. Reservoir elevation ≥ 807 feet with all spillway gates open and the lake elevation continues to rise B. Seepage readings increase or decrease greatly or seepage water is carrying a significant amount of soil particles C New area of seepage or wetness, with large amounts of seepage water observed on dam, dam toe, or the abutments D. Slide or other movement of the dam or abutments which could develop into a failure E. Developing failure involving the powerhouse or appurtenant structures and the operator believes the safety of the structure is questionable 3. RELEASE OF TOXIC OR FLAMMABLE GASES DEEMED DETRIMENTAL TO SAFE OPERATION OF THE PLANT (BD 67) OPERATING MODE: All A. Report/detection of toxic or flammable gases that could enter within the site area boundary in amounts that can affect normal operation of the plant B. Report by local, county, state officials for potential evacuation of site personnel based on offsite event (CONTINUED)	3. TURBINE BUILDING FLOOD (BD 72) OPERATING MODE: All A. Turbine Building flood requiring use of AP/1,2,3/A/1700/10, (*Uncontrolled* Flooding Of Turbine Building) 4. CONTROL ROOM EVACUATION HAS BEEN INITIATED (BD 73) OPERATING MODE: All A.1 Evacuation of Control Room AND ONE OF THE FOLLOWING: AND A.1.1 Plant control IS established from the Aux shutdown Panel or the SSF OR A.1.2 Plant control IS BEING established from the Aux Shutdown Panel or SSF 5. OTHER CONDITIONS WARRANT CLASSIFICATION OF AN *ALERT* (BD 74) OPERATING MODE: All A.1 Emergency Coordinator judgment indicates that: A.1.1 Plant safety may be degraded AND A.1.2 Increased monitoring of plant functions is warranted (END)		
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
4 OTHER CONDITIONS EXIST WHICH WARRANT DECLARATION OF AN *UNUSUAL EVENT* (BD 68) OPERATING MODE: All A. Emergency Coordinator determines potential degradation of level of safety has occurred (END)			
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4			

NOTE: IF Actual Dose Assessment cannot be completed within 15 minutes.
THEN The *valid* monitor reading should be used for Emergency Classification.

All RIA values are considered GREATER THAN or EQUAL TO

HOURS SINCE REACTOR TRIPPED	RIA 57 R/hr		RIA 58 R/hr*	
	Site Area Emergency	General Emergency	Site Area Emergency	General Emergency
0.0 - < 0.5	5.9E+003	5.9E+004	2.6E+003	2.6E+004
0.5 - < 1.0	2.6E+003	2.6E+004	1.1E+003	1.1E+004
1.0 - < 1.5	1.9E+003	1.9E+004	8.6E+002	8.6E+003
1.5 - < 2.0	1.9E+003	1.9E+004	8.5E+002	8.5E+003
2.0 - < 2.5	1.4E+003	1.4E+004	6.3E+002	6.3E+003
2.5 - < 3.0	1.2E+003	1.2E+004	5.7E+002	5.7E+003
3.0 - < 3.5	1.1E+003	1.1E+004	5.2E+002	5.2E+003
3.5 - < 4.0	1.0E+003	1.0E+004	4.8E+002	4.8E+003
4.0 - < 8.0	1.0E+003	1.0E+004	4.4E+002	4.4E+003

* RIA 58 is partially shielded

Assumptions used for calculation of high range in-containment monitors RIA 57 and 58:

1. Average annual meteorology (7.308 E^{-6} sec/m^3)
2. Design basis leakage (5.6 E^6 ml/hr)
3. One hour release duration
4. *General Emergency* PAGs are 1 rem TEDE and 5 rem CDE; *Site Area Emergency* determination is based on 10% of the *General Emergency* PAGs
5. Calculations for monitor readings are based on CDE because thyroid dose is limiting
6. No credit is taken for filtration
7. LOCA conditions are limiting and provide the more conservative reading

Unexpected/Unplanned Increas.. .n Area Monitor Readings

NOTE: This Initiating Condition is not intended to apply to anticipated temporary increases due to planned events (e.g.; incore detector movement, radwaste container movement, depleted resin transfers, etc.).

MONITOR NUMBER	UNITS 1, 2, 3	
	UNUSUAL EVENT 1000x NORMAL LEVELS mRAD/HR	*ALERT* mRAD/HR
RIA 7, Hot Machine Shop Elevation 796	150	≥ 5000
RIA 8, Hot Chemistry Lab Elevation 796	4200	≥ 5000
RIA 10, Primary Sample Hood Elevation 796	830	≥ 5000
RIA 11, Change Room Elevation 796	210	≥ 5000
RIA 12, Chem Mix Tank Elevation 783	800	≥ 5000
RIA 13, Waste Disposal Sink Elevation 771	650	≥ 5000
RIA 15, HPI Room Elevation 758	NOTE*	≥ 5000

NOTE: RIA 15 normal readings are approximately 9 mRad/hr on a daily basis. Applying 1000x normal readings would put this monitor greater than 5000 mRad/hr just for an *Unusual Event*. For this reason, an *Unusual Event* will NOT be declared for a reading less than 5000 mRad/hr.

1. List of Definitions and Acronyms

NOTE: Definitions are italicized throughout procedure for easy recognition.

1.1 ALERT - Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

1.2 BOMB - A fused explosive device

1.3 CONDITION A - Failure is Imminent or Has Occurred - A failure at the dam has occurred or is about to occur and minutes to days may be allowed to respond dependent upon the proximity to the dam.

1.4 CONDITION B - Potentially Hazardous Situation is Developing - A situation where failure may develop, but preplanned actions taken during certain events (such as major floods, earthquakes, evidence of piping) may prevent or mitigate failure.

1.5 CIVIL DISTURBANCE - A group of ten (10) or more people *violent*ly protesting station operations or activities at the site.

1.6 EXPLOSION - A rapid, *violent*, unconfined combustion, or a catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components. A sudden failure of a pressurized pipe/line could fit this definition. This definition includes MS line rupture and FW line ruptures.

1.7 EXTORTION - An attempt to cause an action at the station by threat of force.

1.8 FIRE - Combustion characterized by heat and light. Sources of smoke, such as slipping drive belts or overheated electrical equipment, do NOT constitute *fires*. Observation of flames is preferred but is NOT required if large quantities of smoke and heat are observed.

1.9 GENERAL EMERGENCY - Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels outside the Exclusion Area Boundary.

1.10 HOSTAGE - A person or object held as leverage against the station to ensure demands will be met by the station.

1.11 INTRUSION/INTRUDER - Suspected hostile individual present in a *Protected Area* without authorization.

1.12 INABILITY TO DIRECTLY MONITOR - Operational Aid Computer data points are unavailable or gauges/panel indications are NOT readily available to the operator.

1.13 LOSS OF POWER – Emergency Action Levels (EALs) apply to the ability of electrical energy to perform its intended function, reach its intended equipment. Ex. – If both MFBs, are energized but all 4160v switchgear is not available, the electrical energy can not reach the motors intended. The result to the plant is the same as if both MFBs were de-energized.

1.14 PROTECTED AREA - Encompasses all Owner Controlled Areas within the security perimeter fence.

1.15 REACTOR COOLANT SYSTEM (RCS) LEAKAGE – RCS Operational Leakage as defined in the Technical Specification Basis B 3.4.13.

1.16 RUPTURED (As relates to Steam Generator) - Existence of Primary to Secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

1.17 SABOTAGE - Deliberate damage, mis-alignment, or mis-operation of plant equipment with the intent to render the equipment unavailable.

1.18 SAFETY-RELATED SYSTEMS AREA - Any area within the *Protected area* which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.

1.19 SIGNIFICANT TRANSIENT - An *unplanned* event involving one or more of the following:

(1) Automatic turbine runback > 25% thermal reactor power
(2) Electrical load rejection > 25% full electrical load
(3) Reactor Trip
(4) Safety Injection System Activation

1.20 SITE AREA EMERGENCY - Events are in process or have occurred which involve actual or likely major failures of plant functions needed for the protection of the public. Any releases are NOT expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels outside the Exclusion Area Boundary.

1.21 SELECTED LICENSEE COMMITMENT (SLC) -Chapter 16 of the FSAR

1.22 SITE BOUNDARY - That area, including the *Protected Area*, in which DPC has the authority to control all activities including exclusion or removal of personnel and property (1 mile radius from the center of Unit 2).

1.23 TOXIC GAS - A gas that is dangerous to life or health by reason of inhalation or skin contact (e.g.; Chlorine).

1.24 UNCONTROLLED - Event is not the result of planned actions by the plant staff.

1.25 UNPLANNED - An event or action is UNPLANNED if it is not the expected result of normal operations, testing, or maintenance. Events that result in corrective or mitigative actions being taken in accordance with abnormal or emergency procedures are UNPLANNED.

1.26 UNUSUAL EVENT - Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

1.27 VALID - An indication or report or condition is considered to be VALID when it is conclusively verified by: (1) an instrument channel check; or, (2) indications on related or redundant instrumentation; or, (3) by direct observation by plant personnel such that doubt related to the instrument's operability, the condition's existence, or the report's accuracy is removed. Implicit with this definition is the need for timely assessment.

1.28 VIOLENT - Force has been used in an attempt to injure site personnel or damage plant property.

1.29 VISIBLE DAMAGE - Damage to equipment or structure that is readily observable without measurements, testing, or analyses. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Example damage: deformation due to heat or impact, denting, penetration, rupture,

Operating Modes Defined In Improved Technical Specifications

MODES

MODE	TITLE	REACTIVITY CONDITION (K_{eff})	% RATED THERMAL POWER (a)	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	≥0.99	> 5	NA
2	Startup	≥0.99	≤5	NA
3	Hot Standby	<0.99	NA	≥250
4	Hot Shutdown (b)	< 0.99	NA	250 > T > 200
5	Cold Shutdown (b)	< 0.99	NA	≤ 200
6	Refueling (c)	NA	NA	NA

(a) Excluding decay heat.

(b) All reactor vessel head closure bolts fully tensioned.

(c) One or more reactor vessel head closure bolts less than fully tensioned.

1. Instructions For Using Enclosure 4.1 – Fission Product Barrier Matrix

1.1 If the unit was at Hot S/D or above, (Modes 1, 2, 3, or 4) and one or more fission product barriers have been affected, refer to Enclosure 4.1, (Fission Product Barrier Matrix) and review the criteria listed to determine if the event should be classified.

1.1.1 For each Fission Product Barrier, review the associated EALs to determine if there is a Loss or Potential Loss of that barrier. Circle any that apply.

NOTE: An event with multiple events could occur which would result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e. within 1-3 hours). In this situation, use judgement and classify as if the thresholds are exceeded.

1.2 Three possible outcomes exist for each barrier. No challenge, potential loss, or loss. Use the worst case for each barrier and the classification table at the bottom of the page to determine appropriate classification.

1.3 The numbers in parentheses out beside the label for each column can be used to assist in determining the classification. If no EAL is met for a given barrier, that barrier will have 0 points. The points for the columns are as follows:

Barrier	Failure	Points
RCS	Potential Loss	4
	Loss	5
Fuel Clad	Potential Loss	4
	Loss	5
Containment	Potential Loss	1
	Loss	3

1.3.1 To determine the classification, add the highest point value for each barrier to determine a total for all barriers. Compare this total point value with the numbers in parentheses beside each classification to see which one applies.

1.3.2 Finally as a verification of your decision, look below the Emergency Classification you selected. The loss and/or potential loss EALs selected for each barrier should be described by one of the bullet statements.

EXAMPLE: Failure to properly isolate a 'B' MS Line Rupture outside containment, results in extremely severe overcooling.

TSOR entry conditions were satisfied.

Stresses on the 'B' S/G resulted in failure of multiple S/G tubes.

RCS leakage through the S/G exceeds available makeup capacity as indicated by loss of subcooling margin.

Barrier	EAL	Failure	Points
RCS	SGTR > Makeup capacity of one HPI pump in normal makeup mode with letdown isolated	Potential Loss	4
	Entry into TSOR operating range	Potential Loss	4
	RCS leak rate > available makeup capacity as indicated by a loss of subcooling	Loss	5
Fuel Clad	No EALs met and no justification for classification on judgment	No Challenge	0
Containment	Failure of secondary side of SG results in a direct opening to the environment	Loss	3

RCS _5_ + Fuel _0_ + Containment _3_ = Total _8_

A. Even though two Potential Loss EALs and one Loss EAL are met for the RCS barrier, credit is only taken for the worst case (highest point value) EAL, so the points from this barrier equal 5.

B. No EAL is satisfied for the Fuel Clad Barrier so the points for this barrier equal 0.

C. One Loss EAL is met for the Containment Barrier so the points for this barrier equal 3.

D. When the total points are calculated the result is 8, therefore the classification would be a *Site Area Emergency*.

E. Look in the box below "*Site Area Emergency*". You have identified a loss of two barriers. This agrees with one of the bullet statements. The classification is correct.

OCONEE NRC SRO EXAM
02-18-2002

1 POINT

100. The OSM has declared an Alert. After complete staffing for the emergency situation, the OSM will turn over the role of Emergency Coordinator to the _____ who is stationed in the _____.

A. Station Manager / Operational Support Center

B. Station Manager / Technical Support Center

C. Superintendent of Operations / Operational Support Center

D. Superintendent of Operations / Technical Support Center

A) B

A. Incorrect - Wrong location
B. Correct
C. Incorrect - Wrong person and location
D. Incorrect - Wrong person

Reference: Lesson Plans Book 1 of 2 Vol V, OP-OC-EAP-SEP , page 12 of 53.
EO - 1.11
K/A: G2.4.41 (2.3/3.7)
RO/SRO: SRO
Level: M
Author: rfa

END OF EXAM