

Draft Submittal
(Pink Paper)

Reactor Operator Written Exam

OCONEE JUNE 2006-301 EXAM

**05000269, 05000270, AND
05000287/2006301**

**JUNE 19 - 28, 2006 AND
JUNE 30, 2006 (WRITTEN)**

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 001AK2.05 001

The following Unit 1 conditions exist:

- Reactor Power = 95%
- Core is at the End-of-Life
- APSRs are at 120 inches

Current events:

- Operators observe APSRs moving out of the core without operator action

Assuming the APSRs continue to withdraw to their full-out position, which one of the following correctly describes the indications that the operators will observe as the rod continues movement out of the core?

- A. The CRD Travel Out Light will be LIT.
The Xenon Overlap Fault lamp will light as the control rod continues to move out.
- B. The CRD Travel Out Light will be LIT.
The Xenon Overlap Fault lamp will not light as the control rod continues to move out.
- C. The CRD Travel Out Light will not be LIT.
The Xenon Overlap Fault lamp will light as the control rod continues to move out.
- D. The CRD Travel Out Light will not be LIT.
The Xenon Overlap Fault lamp will not light as the control rod continues to move out.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Continuous Rod Withdrawal / 1

Knowledge of the interrelations between the Continuous Rod Withdrawal and the following:
Rod motion lights.

K/A MATCH ANALYSIS

Rod motions lights do not illuminate for movement of the APSRs. The applicant must know how these rod motion lights behave for APSR movement in order to correctly answer the question. A continuous rod withdrawal event is give in the stem, then the applicant must know how the indications will respond to the continuous rod withdrawal.

ANSWER CHOICE ANALYSIS

A. Incorrect. Travel out light does not light for APSRs. Plausible because as APSRs continue to withdraw, the Xenon Overlap will light. Also plausible because CRD Travel In/Out Lamps do light for rods other than APSRs.

B. Incorrect. Both pieces are incorrect. See others for plausibility explanation.

C. Correct. See referenced lesson plan Page 31 and 32.

D. Incorrect. Second part is incorrect. See others for plausibility.

REFERENCES

1. Lesson Plan IC-CRI, Control Rod Indication, Rev. 09a.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C D C D A D C C D A	Scramble Range: A - D
Tier:		1			Group:		2
Key Word:		CRI ROD INDICATION			Cog Level:		MEM 2.9
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

2. 001K6.14 001

The following Unit 3 conditions occur while operating at full power:
- Train 'A' CRD power supply voltage regulator fails high (> 150 V)
- The 'F' contactor opens

Which one of the following correctly describes the condition of the control rods?

- A. All safety rods trip. All regulating rods trip.
- B. All safety rods trip. No regulating rods trip.
- C. No safety rods trip. All regulating rods trip.
- D. No safety rods trip. No regulating rods trip.

K/A

Control Rod Drive

Knowledge of the effect of a loss or malfunction on the following CRDS components:
Location and interpretation of reactor trip breaker.

K/A MATCH ANALYSIS

The malfunction on the RTB is the CRD power supply voltage regulator failure, which has an effect on which rods trip. The applicant must have knowledge of where the RTBs are located within the one line circuits in order to know how the control rods will be affected.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Plausible because applicant may confuse which RTBs will cause a trip.
- B. Incorrect. Plausible - same reason as 'A'.
- C. Correct. The "A" and "C" RTBs open due to the voltage regulator failure. This will also open the "E" contactor. Having both the "E" and "F" contacts open will cause the reg rods to trip. The CC phase of safety rods are still holding the rods out of the core.
- D. Incorrect. Plausible because if the question stated that the "E" (vice the "F") contactor opens, then this answer would be correct.

REFERENCES

1. Lesson Plan IC-RPS, Reactor Protective System, Rev. 14.
2. Oconee I & C Exam Bank Question 46, IC022503.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C C C A B A D C A B	Scramble Range: A - D
Tier:		2			Group:		2
Key Word:		RPS CRD CRDS			Cog Level:		C/A 4.0
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

1. 002K3.03 001

Unit 1 was operating at 100% power when the following trends were observed:

- RCS pressure began to lower
- Pressurizer level began to rise
- SCM began to lower
- Quench tank level began to rise
- Quench tank pressure began to rise

Which one of the following correctly describes the initial effect on containment when these trends are observed?

- A. Containment pressure rises. Containment radiation levels rise.
- B. Containment pressure rises. Containment radiation levels remain constant.
- C. Containment pressure remains constant. Containment radiation levels rise.
- D. Containment pressure remains constant. Containment radiation levels remain constant.

K/A

Reactor Coolant

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

K/A MATCH ANALYSIS

Indications of a vapor space loca are present, which means that discharge from PORV will be contained in PRT, thus having no effect on containment parameters until the rupture disk blows.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Initially no discharge to containment to cause ctmt P to rise or rad levels to rise.
- B. Incorrect. Initially no discharge to containment to cause ctmt P to rise.
- C. Incorrect. Initially no discharge to containment to cause ctmt rad levels to rise.
- D. Correct. There will no effect on ctmt until rupture disk blows.

Plausibility based around whether applicant recognizes status of QT rupture disk. If disk is assumed to have blown, then containment pressure would rise. With normal levels of RCS activity an applicant would have to determine what the effects on ctmt radiation would be.

REFERENCES

N/A

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: D A D D A A A D B A

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	2	Group:	2
Key Word:	LOCA CONTAINMENT	Cog Level:	C/A 4.2
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

4. 003AG2.4.10 001

The following Unit 1 conditions exist:

- Diamond is in Auto
- Reactor Power = 50%
- Rod 6 of Group 2 drops fully into the core

Which one of the following correctly lists the two alarms that will annunciate given the above plant conditions?

- A. ICS RUNBACK and CRD OUT INHIBIT
- B. ICS RUNBACK and QUADRANT POWER TILT
- C. CRD POSITION ERROR and CRD OUT INHIBIT
- D. CRD POSITION ERROR and QUADRANT POWER TILT

ENSURE THAT THE UTILITY AGREES THAT THE SELECTED ROD WILL CAUSE THE ABOVE INDICATIONS - THEY SAID THEY WOULD LOOK AT IT WHEN THEY GET THE EXAM FOR REVIEW.

K/A

Dropped Control Rod / 1

Knowledge of annunciator response procedures.

K/A MATCH ANALYSIS

K/A is generic in the respect that it only requires knowledge of annunciator response procedures. K/A is matched because this question requires knowledge of whether or not specific annunciators should be in alarm with the given plant conditions - which is knowledge of the ARG.

ANSWER CHOICE ANALYSIS

- A. Incorrect. ICS runback will not occur because power is 50%. CRD OUT INHIBIT will not occur because power will not reach 60%. Plausible because both of these would occur if rod was dropped at higher power level.
- B. Incorrect. See above.
- C. Incorrect. CRD position error will occur, but the CRD OUT INHIBIT will not occur.
- D. Correct. Both will occur. Check with utility to be sure, but looking at the COLR and the ARG, along with the SAE-L, it certainly appears that this is the case.

REFERENCES

1. Exercise Guide SAE-L 009, Dropped Rod, 11/21/2005.
2. OP/1/A/6101/002, Alarm Response Guide 1SA-02, Rev. 16.
3. OP/1/A/6101/004, Alarm Response Guide 1SA-04, Rev. 11.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D B C B B D A B A A

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	1	Group:	2
Key Word:	DROPPED ROD ALARM	Cog Level:	MEM 3.0
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

5. 003K6.02 001

The following Unit 3 conditions exist:

- Reactor is operating at 70% power
- Instrument air pressure is 85 psig
- Seal Injection Flows to the RCPs are as follows:
 - RCP A1 < 4 gpm for 90 seconds
 - RCP A2 < 4 gpm for 45 seconds
 - RCP B1 < 4 gpm for 45 seconds
 - RCP B2 < 4 gpm for 45 seconds

- Current RCP parameters are as follows:

	<u>A1</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>
Motor Stator Temp (°F)	290	300	280	280
Seal Return Temp (°F)	260	255	240	245
Seal Inlet Temp (°F)	160	160	160	160
Seal Return Flow (°F)	0.1	0.1	0.1	0.1
Seal Press Upper Cav (psig)	1054	1046	695	713
Seal Press Lower Cav (psig)	2120	2102	1355	1415

Which one of the following correctly states the required operator actions dictated by the above plant conditions?

- A. Immediately trip the reactor, then stop all RCPs.
- B. Reactor may remain at 70% power. Stop RCP A1.
- C. Immediately trip the reactor, then stop RCPs A1 and A2.
- D. Reactor may remain at 70% power for a maximum of 100 hours with all four RCPs operating.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

UTILITY NEEDS TO VERIFY THAT THERE IS AN INDICATION FOR RCP 3A2 MOTOR STATOR TEMPERATURE.

K/A

Reactor Coolant Pump

Knowledge of the effect of a loss or malfunction on the following will have on the RCPS: RCP seals and seal water supply.

K/A MATCH ANALYSIS

A partial loss of seal injection flow (seal water supply) has occurred. Seal parameters have degraded which require RCP A1 to be tripped. Thus the knowledge being tested is the loss of seal water supply and its affect on RCP A1 operation.

ANSWER CHOICE ANALYSIS

A. Incorrect. No parameters exist that would require an immediate reactor trip. Plausible because instrument air pressure is lower than normal. When instrument air pressure is less than 80 psig, then CC flow to the RCPs is lost (or potentially lost). If seal injection flow is lost to each pump for > 1 minute, then seal injection flow is isolated to all RCPs. If the applicant assumes that no CC flow existed coincident with a loss of seal injection flow, then a reactor trip would be (or have been) required.

B. Correct. RCP seal return temp = 260 F, which requires stopping RCP A1. Reactor may remain at power with three operating RCPs.

C. Incorrect. No RCP trip criteria are met for RCP A2. Plausible because RCP A2 has indication of a seal failure and Motor Stator Temp is above setpoint but does not apply for this pump (this indication may not exist for RCP A2 - check with utility).

D. Incorrect. As indicated in analysis for 'B', RCP A1 parameters require the pump to be tripped. Plausible because seal return flow is almost zero and RCP operation is limited to 100 hours without seal return flow.

Note: What is normal seal inlet temp? I guessed 160 F.

Note: I supplied a Motor Stator Temp for RCP-A2 to add plausibility to distractor "C" because this is trip criteria for the other three RCPs. It is OK to provide this temp as long as there is an indication in plant, control room, or computer. If there is no indication, then the number should not be supplied.

REFERENCES

1. AP/3/A/1700/014, Loss of Normal HPI Makeup and/or RCP Seal Injection, Rev. 010.
2. AP/3/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 016.
3. Lesson Plan PNS-HPI, High Pressure Injection, Rev. 22.
4. Lesson Plan SSS-IA, Instrument Air System, Rev. 16.
5. Lesson Plan PNS-CPM, Reactor Coolant Pump Motor, Rev. 12b.
6. Figure from OP-OC-PNS-CPS, Page 17 of 27, Rev. 12.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	Answer:	BDDADBDDDC	Scramble Range:	A - D
Tier:		2					Group:		1	
Key Word:		RCP SEAL					Cog Level:		C/A 2.7	
Source:		N					Exam:		OC2006-301	
Test:		R					Author/Reviewer:		MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 004A4.15 001

Unit 1 initial plant conditions:

- Reactor power = 90% and stable for the previous week
- '1B' purification IX placed in service for delithiation
- ICS is in auto

Current conditions:

- Neutron error = +1.2 and increasing

Based on the above conditions, which one of the following actions is correct per the associated procedure?

- A✓ Per AP/39 (Unintentional Boration), initiate a power decrease to maintain Control Rods in desired band.
- B. Per AP/3 (Boron Dilution), open 1HP-13 (Purification IX Bypass), close 1HP-8 (Purification IX Inlet), Close 1HP-9 & 11 (Spare Purif IX Inlet).
- C. Per AP/39 (Unintentional Boration), trip the reactor, GO TO Unit 1 EOP.
- D. Per AP/3 (Boron Dilution), place 1HP-14 (LDST Bypass) in NORMAL, close 1HP-16 (LDST Makeup Isolation).

QUESTIONS REPORT
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K/A

Chemical and Volume Control

Ability to manually operate and/or monitor in the control room: Boron Concentration.

K/A MATCH ANALYSIS

Neutron error is increasing in the positive direction, which is indication of a boration. The K/A is met because the applicant, in order to choose the correct actions to take, must diagnose that a boration is in progress, which is causing rods to step out.

NOTE

I added that reactor has been at 90% for a week to rule out xenon as being the cause of the negative reactivity addition.

I also deleted the bullet for control rods moving out. The neutron error is enough for the applicants to know that a boration is taking place and control rods should be moving. The utility will have a chance to comment on these changes during their review.

ANSWER CHOICE ANALYSIS

A. Correct. AP/39, Page 3 of 9 supports the correct answer.

B. Incorrect. These are actions for a dilution (AP/3). If applicant does not understand how to interpret the neutron error, then a dilution could be incorrectly assumed, thus adding plausibility to this distractor.

C. Incorrect. This answer would be correct only if power was < 6%, per AP/39. Plausible because these actions are required for boration if plant conditions were different.

D. Incorrect. These are actions for a dilution (AP/3). If applicant does not understand how to interpret the neutron error, then a dilution could be incorrectly assumed, thus adding plausibility to this distractor.

REFERENCES

1. AP/1/A/1700/003, Boron Dilution, Rev. 003.
2. AP/1/A/1700/039, Unintentional Boration, Rev. 000.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A C D C D D C D D D Scramble Range: A - D
Tier: 2 Group: 1
Key Word: BORATION BORON CONC Cog Level: C/A 3.6
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

7. 004G2.4.46 001

The following Unit 1 conditions exist:

- Reactor Power = 60%
- HP RCP SEAL INLET HEADER FLOW HIGH/LOW has annunciated
- LETDOWN TEMPERATURE HIGH Statalarm has annunciated
- Letdown Temperature is 132 °F
- Seal Injection Flow = 7 gpm to each pump
- HP-5 (Letdown Isolation Valve) is open and allowing flow to the demins

Which one of the following correctly describes the validity of the two alarms, assuming the provided indications are accurate?

- A. HP RCP SEAL INLET HEADER FLOW HIGH/LOW is valid.
LETDOWN TEMPERATURE HIGH is valid.
- B. HP RCP SEAL INLET HEADER FLOW HIGH/LOW is valid.
LETDOWN TEMPERATURE HIGH is not valid.
- C. HP RCP SEAL INLET HEADER FLOW HIGH/LOW is not valid.
LETDOWN TEMPERATURE HIGH is valid.
- D. HP RCP SEAL INLET HEADER FLOW HIGH/LOW is not valid.
LETDOWN TEMPERATURE HIGH is not valid.

K/A

Chemical and Volume Control

Ability to verify that alarms are consistent with the plant conditions.

K/A MATCH ANALYSIS

Question tests whether or not two alarms should have come in with a given set of plant conditions.

ANSWER CHOICE ANALYSIS

A. Incorrect. Total seal injection flow must be less than 22 or higher than 42 for the seal alarm to come in. Plausible because on Units 2 and 3, the alarm would come in at a low flow of 30 gpm.

B. Incorrect. See above. Also plausible because the statalarm comes in at 130F, but the demins do not isolate until 135F. Therefore, an applicant may think that the statalarm is not valid, when in fact it is.

C. Correct. See Page 15 of 51 of referenced lesson plan. Also see 1SA-02, window B-2 of referenced ARP.

D. Incorrect. See (B) above for plausibility.

REFERENCES

1. OP/1/A/6101/002, Alarm Response Guide 1SA-02, Rev. 016.
2. Lesson Plan PNS-HPI, High Pressure Injection System, Rev. 22.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D A B C D D C D C Scramble Range: A - D
Tier: 2 Group: 1
Key Word: CVCS ALARM Cog Level: MEM 3.5
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

8. 005A2.04 001

The following Unit 1 conditions exist:

- RCS is vented
- FTC is not flooded
- LPI Pump 'C' is running
- LPI Pump 'A' is available, but not running
- LPI suction is aligned to the normal drop line
- LP-6 (LPI Pump 'C' has drifted to mid position)
- LPI Pump 'C' amps are oscilating
- LP INJECTION PUMP "A" DIFFERENTIAL PRESSURE LOW has annunciated
- Operators have stated that they will address the issue using Alarm Response Guidance, as well as AP/1/A/1700/026, Loss of Decay Heat Removal

Which one of the following describes a correct course of action as dictated by the Alarm Response Guide and AP/26?

- A. Throttle LP-12 and 14 (Decay Heat Cooler Outlets) to stabilize amps.
Allow LPI Pump 'C' to continue to run.
Ensure open LP-5 (LPI Pump 'A' Suction).
Start LPI Pump 'A'.
Secure LPI Pump 'C'.
- B. Throttle LP-17 and 18 (Decay Heat Cooler Outlets) to stabilize amps.
Allow LPI Pump 'C' to continue to run.
Ensure open LP-5 (LPI Pump 'A' Suction).
Start LPI Pump 'A'.
Secure LPI Pump 'C'.
- C✓ Secure LPI Pump 'C'. ✓
Verify suction path aligned from RC Hot Leg. ✓
Close LPSW-251 and 252. ✓
Close LP-12 and 14 (Decay Heat Cooler Outlets). ✓
Start LPI Pump 'A'. ✓
Maximize LPI flow through each LPI cooler using LP 12 and 14 (not to exceed 500 gpm).
- D. Secure LPI Pump 'C'.
Verify suction path aligned from RC Hot Leg.
Close LPSW-251 and 252.
Close LP-12 and 14 (Decay Heat Cooler Outlets).
Start LPI Pump 'A'.
Maximize LPI flow through each LPI cooler using LP 12 and 14 (not to exceed 1500 gpm).

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

REFERENCED PROCEDURE DID NOT USE NOUN NAMES FOR SOME OF THE COMPONENTS. DISCUSS WITH UTILITY IF NOUN NAMES ARE NEEDED IN THE QUESTION. THE UTILITY'S DECISION NOT TO USE NOUN NAMES CONSISTENTLY IN PROCEDURES MAY INDICATE THAT THE APPLICANTS NEED TO HAVE TAG NUMBERS MEMORIZED. - THIS COMMENTS REALLY APPLIES THROUGHOUT THE EXAM.

K/A

Residual Heat Removal

Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: RHR valve malfunction.

K/A MATCH ANALYSIS

The RHR suction valve drifting to mid position has caused a cavitation issue with the running pump. The AP is used to address the issue - mitigating the consequences.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Procedure requires that the 'C' pump to be stopped prior to taking other actions.
- B. Incorrect. Procedure requires that the 'C' pump to be stopped prior to taking other actions.
- C. Correct. Steps taken from AP.
- D. Incorrect. Flow initially must not exceed 500 gpm, not 1500 gpm.

REFERENCES

- 1. AP/1/A/1700/026, Loss of Decay Heat Removal, Rev. 017.
- 2. OP/1/A/6101/001, Alarm Response Guide 1SA-01, Rev. 009.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C C C B B A C C D A	Scramble Range: A - D
Tier:		2			Group:		1
Key Word:		LOSS OF RHR DHR			Cog Level:		C/A 2.9
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

9. 006A3.02 001

Unit 1 initial conditions:

- 100% power
- LPI Pump '1B' has just developed an electrical fault on the motor and its breaker has been racked out
- LPI Pump '1C' is tagged out for maintenance

Current plant conditions:

- RCS Pressure quickly dropped to 100 psig
- ES-4 failed to actuate
- No operator action has occurred

Which one of the following correctly describes the LPI pump motor current and flow indications that the operator will observe based on the above conditions?

- A. The 'A' LPI Pump amps are [utility to provide value consistent with deadhead].
Indicated 'A' LPI header flow is [utility to provide correct value for 100 psig RCS P].
- B. The 'A' LPI Pump amps are [utility to provide value consistent with deadhead].
Indicated LPI flow to the core is approximately zero gpm.
- C. The 'A' LPI Pump amps are [utility to provide value consistent with 100 psig RCS P].
Indicated LPI flow to the core is approximately zero gpm.
- D. The 'A' LPI Pump amps are [utility to provide value consistent with 100 psig RCS P].
Indicated 'A' LPI header flow is [utility to provide correct value for 100 psig RCS P].

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

UTILITY TO SUPPLY VALUES FOR AMPS.

K/A

Emergency Core Cooling

Ability to monitor automatic operation of the ECCS, including: Pumps.

K/A MATCH ANALYSIS

The question requires knowledge of what the LPI flow instruments and amps will read with a given plant condition. This is requisite knowledge to effectively monitor ECCS pump automatic operation.

ANSWER CHOICE ANALYSIS

A. Incorrect. Amps will be lower than if pump were pumping fluid. Plausible because applicant may think that amps for deadhead ops may be higher than if pump were moving fluid.

B. Incorrect. Amps will be lower than if pump were pumping fluid. Plausible because if ES-3, vice ES-4, failed then the 'A' Train would also be disabled.

C. Incorrect. Flow from the 'A' pump will reach the core. Amps will indicate higher than deadhead value. Plausible because if ES-3, vice ES-4, failed then the 'A' Train would also be disabled.

D. Correct. Flow from the 'A' pump will reach the core. Amps will indicate higher than deadhead value. The ES-4 failing to actuate will disable the 'B' Train, which also has a pump out. But, the 'A' train should be unaffected.

REFERENCES

1. Lesson Plan PNS-LPI, Low Pressure Injection System, Rev. 21.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9		
					Answer:	D B C C C B C B C D	Scramble Range:	A - D
Tier:		2			Group:			1
Key Word:		LPI PUMP ECCS AUTO			Cog Level:			C/A 4.1
Source:		N			Exam:			OC2006-301
Test:		R			Author/Reviewer:			MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

10. 006K2.01 001

Which one of the following correctly states the electrical bus that supplies control power to the '1C' HPI pump motor and the electrical bus that supplies control power to the breaker?

- A✓ Pump motor power is provided by Bus 1TD. Control power to the breaker is provided by 1DIB.
- B. Pump motor power is provided by Bus 1TD. Control power to the breaker is provided by 1DID.
- C. Pump motor power is provided by Bus 1TE. Control power to the breaker is provided by 1DIB.
- D. Pump motor power is provided by Bus 1TE. Control power to the breaker is provided by 1DID.

UTILITY NEEDS TO SUPPLY SUPPORTING DOCUMENTATION FOR CONTROL POWER.

K/A

Emergency Core Cooling

Knowledge of bus power supplies to the following: ECCS pumps.

K/A MATCH ANALYSIS

Applicant must have knowledge of power supply to ECCS pump motor.

ANSWER CHOICE ANALYSIS

A. Correct. Per conversation with utility rep. UTILITY NEEDS TO SUPPLY DOCUMENTATION ON CONTROL POWER.

B. Incorrect.

C. Incorrect.

D. Incorrect.

Plausibility is based on the question being a memory level item and the pumps and power supplies not being in alpha-numeric order. For instance, the A pump is powered by 1TC, the B pump is powered by 1TE, and the C pump is powered by 1TD. Therefore, the applicant cannot fall back on a systematic approach to determining the power supply, it simply must be known. There are four DC buses, of which three feed control power to the TC, TD, and TE buses.

REFERENCES

1. Lesson Plan PNS-HPI, High Pressure InjectionSystem , Rev. 22.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: ADDC ADB ADB

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier: 2
Key Word: HPI
Source: N
Test: R

Group: 1
Cog Level: MEM 3.6
Exam: OC2006-301
Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 007K4.01 001

The following Unit 1 conditions exist:

- Reactor power is 80% after a rapid down power
- PORV acuation occurred during the down power
- Quench Tank Temperature is 175 °F
- Quench Tank level is 84 inches and stable
- Operators desire to lower Quench Tank Temperature

Given the current plant conditions, which one of the following correctly describes pump operation for quench tank cooling?

- A✓ Either the Quench Tank Drain Pump or the Component Drain Pump may be used with its normal start feature.
- B. The Quench Tank Drain Pump may be used with its normal start feature, but the Component Drain Pump may not be used with its normal start feature.
- C. The Component Drain Pump may be used with its normal start feature, but the Quench Tank Drain Pump may not be used with its normal start feature.
- D. Neither the Quench Tank Drain Pump or the Component Drain Pump may be used with its respective normal start feature.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Pressurizer Relief/Quench Tank

Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following:
Quench tank cooling.

K/A MATCH ANALYSIS

The question tests knowledge of which pumps can be used to cool the QT in its current configuration. This tests knowledge of a design feature to cool the QT. There is also an interlock which auto trips both of the mentioned pumps at 80 inches in the QT when the pumps undergo a normal start. Therefore, the applicant must also have knowledge of this setpoint (interlock) in order to know that both pumps may be used with normal start feature.

ANSWER CHOICE ANALYSIS

- A. Correct. Procedurally both pumps may be operated as long as QT level is above 82 inches. (Also, there is an auto trip for both pumps at a QT level of 80 inches.)
- B. Incorrect. The Component Drain Pump may also be used with its normal start feature. Plausible because the QT level is below its nominal level.
- C. Incorrect. The Quench Tank Drain Pump may also be used with its normal start feature. Plausible because the QT level is below its nominal level.
- D. Incorrect. Both pumps may be used with their normal start feature. Plausible because the QT level is below its nominal level.

REFERENCES

1. Lesson Plan PNS-CS, Coolant Storage, Rev. 15a.
2. OP/1/A/1104/017, Quench Tank Operation, Rev. 033. (60040020)

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: A A C D C B D B B D	Scramble Range: A - D
Tier:	2		Group:	1
Key Word:	QUENCH TANK COOLING		Cog Level:	MEM 2.6
Source:	N		Exam:	OC2006-301
Test:	R		Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

12. 008A3.01 001

The following conditions exist on Unit 1:

- 'A' CC Pump is running
- 'B' CC Pump is in auto and off

The air supply to CC-8 completely severs. Operators then manually re-open CC-8.

Which one of the following correctly describes CCW Pump trips and auto starts when CC-8 is cycled?

- A. The 'A' CC Pump trips when CC-8 closes due to loss of instrument air. When CC-8 is manually opened, the 'B' CC Pump will automatically start.
- B. The 'A' CC Pump trips when CC-8 closes due to loss of instrument air. When CC-8 is manually opened, the 'B' CC Pump will not automatically start.
- C. The 'A' CC Pump remains running when CC-8 closes due to loss of instrument air. When CC-8 is manually opened, the 'B' CC Pump will automatically start.
- D. The 'A' CC Pump remains running when CC-8 closes due to loss of instrument air. When CC-8 is manually opened, the 'B' CC Pump will not automatically start.

K/A

Component Cooling Water

Ability to monitor automatic operation of the CCWS, including: Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS.

K/A MATCH ANALYSIS

Knowledge of pump trip signal from CC-8 closing is tested.

ANSWER CHOICE ANALYSIS

A. Correct. The 'A' pump trips when CC-8 closes. A standing low flow condition (< 575 gpm) will exist due to CC-8 closing. Therefore, when CC-8 is manually opened both pumps will start. See referenced lesson plan pages 17 and 18.

B. Incorrect. Plausible because 'A' pump will trip and 'B' pump was in standby.

C. Incorrect. Plausible because CC-8 closes on ES signal from channels 5 and 6. This failure mechanism is slightly different in that air to CC-8's actuator has failed. If applicant does not know that the pump trip signal is generated from valve position itself, then they may think this to be a credible choice.

D. Incorrect. See above.

REFERENCES

1. Lesson Plan PNS-CC, Component Cooling System, Rev. 11c.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: ADDCCABDCD

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	2	Group:	1
Key Word:	CCW PUMP AUTO	Cog Level:	MEM 2.7
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

13. 008AK2.01 001

The following conditions exist:

- RCS Pressure = 2185 psig
- Quench Tank Pressure = 35 psig
- The PORV is stuck partially open

Which one of the following correctly states the approximate temperature of fluid downstream of the PORV?

- A. 649 °F
- B. 281 °F
- C. 260 °F
- D. 235 °F

K/A

Pressurizer Vapor Space Accident / 3

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Valves.

K/A MATCH ANALYSIS

The partially stuck open PORV is creating a constant enthalpy throttling process, which is the interrelation between the Pzr Vapor Space LOCA and the valve. Verifying tailpipe temperatures is a diverse means of verification of PORV position, which is the cause of the LOCA.

ANSWER CHOICE ANALYSIS

- A. Incorrect. This temperature is saturated for current pzr pressure, but since PORV flow is a constant enthalpy process, the downstream temperature would not be at saturation for the pzr. It would more closely approximate saturation temperature of the downstream Quench Tank.
- B. Correct. Using Mollier diagram and using absolute pressure values.
- C. Incorrect. This temperature can be obtained if the student uses 35 psig without converting to absolute.
- D. Incorrect. This temperature can be obtained if the student subtracts 15 psi from the stem value of Quench Tank pressure (20 psia).

REFERENCES

1. Steam Tables / Mollier Diagram.
2. Crystal River 03-301.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: B D B D C B A A A C

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier: 1
Key Word: PORV LOCA
Source: B
Test: R

Group: 1
Cog Level: C/A 2.7
Exam: OC2006-301
Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

14. 008K4.02 001

Which one of the following correctly describes the process for CC system startup in accordance with OP/1/A/1104/008, Component Cooling System?

- A. Station an operator at the CC Surge Tank to manually maintain water level between 12 and 18 inches.
Prior to pump start throttle the associated discharge valve to 1/4 turn open to avoid a water hammer condition.
- B. Station an operator at the CC Surge Tank to manually maintain water level between 12 and 18 inches.
Prior to pump start throttle the associated discharge valve to 1/4 turn open to avoid emptying the Surge Tank.
- C. Station an operator at the CC Surge Tank to manually maintain water level between 18 and 30 inches.
Prior to pump start throttle the associated discharge valve to 1/4 turn open to avoid a water hammer condition.
- D. Station an operator at the CC Surge Tank to manually maintain water level between 18 and 30 inches.
Prior to pump start throttle the associated discharge valve to 1/4 turn open to avoid emptying the Surge Tank.

K/A

Component Cooling Water

Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following:
Operation of the surge tank, including the associated valves and controls.

K/A MATCH ANALYSIS

The design features being tested are knowledge of the manual surge tank fill and manual throttling of pump discharge. There are no auto features associated with the surge tank, but these manual features are designed into the system to keep the surge tank at an acceptable level.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Plausible because water hammer is a concern with starting pumps in many systems. Also plausible because 12 inches is the low level alarm for the surge tank, therefore it may be reasonable for an applicant to think that it would be acceptable to simply keep the alarm from annunciating.
- B. Incorrect. See above.
- C. Incorrect. See above.
- D. Correct. See Enclosure 4.1, Page 4 of 5, of referenced procedure.

REFERENCES

- 1. OP/1/A/1104/008, Component Cooling System, Rev. 47.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: DDADDACAA B Scramble Range: A - D
Tier: 2 Group: 1
Key Word: CCW CC SURGE TANK Cog Level: MEM 2.9
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

15. 009EK3.12 001

Unit 1 initial conditions at 09:00 hours:

- KVIA is not energized
- Reactor manually tripped due to small break LOCA

Conditions at 09:30 hours:

	<u>CH. A</u>	<u>CH. B</u>	<u>CH. C</u>
- RCS Analog Channel Pressures (psig)	-----	1615	1610
- RB Analog Channel Pressures (psig)	-----	3.1	2.9

Conditions at 09:40 hours:

- KVIA is re-energized

Conditions at 09:45 hours:

	<u>CH. A</u>	<u>CH. B</u>	<u>CH. C</u>
- RCS Analog Channel Pressures (psig)	1605	1600	1595
- RB Analog Channel Pressures (psig)	2.8	3.2	3.1

Which one of the following correctly describes the reason for letdown isolation?

- A✓ Letdown automatically isolates due to RB Pressure at 09:30 hours with a 2/3 trip logic for ES channels 1 and 2.
- B. Letdown automatically isolates due to RB Pressure at 09:45 hours with a 2/3 trip logic for ES channels 1 and 2.
- C. Letdown automatically isolates due to RCS Pressure at 09:45 hours with a 2/3 trip logic for ES channels 1 and 2.
- D. Letdown automatically isolates due to RCS Pressure at 09:45 hours with a 3/3 trip logic for ES channels 1 and 2.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Small Break LOCA / 3

Knowledge of the reasons for the following responses as they apply to the small break LOCA: Letdown isolation.

K/A MATCH ANALYSIS

Knowledge of a SBLOCA and its affect on letdown isolation is required to answer question. The RB and RCS Pressures have input into ES Channels 1 and 2, which causes L/D isolation.

ANSWER CHOICE ANALYSIS

A. Correct. 3.1 psig is above setpoint and CH. A will also yield a trip condition, therefore, 2/3 logic is made up for ES actuation.

B. Incorrect. Letdown does not auto isolate at 0945 hrs because it is already isolated. Plausible because it requires applicant to know if failure of analog channel causes a trip condition when the power is lost. If this misconception exists, then this would be a correct answer.

C. Incorrect. Letdown does not auto isolate at 0945 hrs because it is already isolated. Same logic as 'B' above. Also requires applicant to know the setpoints.

D. Incorrect. Letdown does not auto isolate at 0945 hrs because it is already isolated. Plausible because applicant may think that a standing trip condition would exist when the bus re-energizes.

REFERENCES

1. Lesson Plan IC-ES, Engineered Safeguards, Rev. 13a.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9		
			Answer: A C C C D B A D B B	Scramble Range: A - D	
Tier:	1		Group:	1	
Key Word:	LOCA LETDOWN ISOLATI		Cog Level:	C/A 3.4	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 010K6.04 001

The following Unit 1 conditions exist:

- Pressurizer Code Safety Relief Valves were set at 2500 psig while at hot ambient conditions a few hours ago while coming out of a refueling outage
- Prior to, and immediately following, the setting of the Pressurizer Code Safety Relief Valves, the Quench Tank Parameters were within their normal bands
- One of the PORVs inadvertently opened and its associated block valve was not able to be closed until Quench Tank Pressure reached 90 psig
- Quench Tank Pressure remains stable at 90 psig

Which one of the following correctly states the required Tech Spec actions, if any?

- A. No Tech Spec actions are required.
- B. Complete required actions of LCO 3.4.10, Pressurizer Safety Valves, or meet the condition of the LCO by reducing Quench Tank pressure by 20 psig.
- C. Complete required actions of LCO 3.4.10, Pressurizer Safety Valves, or place the unit outside of the applicability of the LCO by going to Mode 3 with Cold Leg Temperatures equal to 350 °F.
- D. This condition is not addressed by LCO 3.4.10, Pressurizer Safety Valves; therefore, actions of LCO 3.0.3 are required to be performed.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

UTILITY NEEDS TO VERIFY THAT THE ADDITIONAL BACKPRESSURE ON THE SAFETIES WORKS TO RAISE THE SETPOINT AT WHICH THEY WILL LIFT. IF THE VALVES OPERATE WITH A PILOT (OR SOMETHING) WHERE THE QUENCH TANK PRESSURE WILL HAVE NO EFFECT ON SAFETY PERFORMANCE, THAT WILL BE FINE, IT JUST CHANGES THE CORRECT ANSWER.

K/A

Pressurizer Pressure Control

Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS:
PRT.

K/A MATCH ANALYSIS

The Pzr Code Safety Relief Valves are part of the PCS, as evidenced by K/A 010K2.04, 010A1.01, etc. They mechanically control pressure in the RCS around a setpoint, which is the pressure at which the safeties are set to lift. The malfunction of the PRT (Quench Tank) is that pressure is too high and the rupture disk has failed to actuate. This higher pressure has an effect on the performance of the safeties.

Question is RO knowledge because it can be answered with systems knowledge, knowledge of 1 hour or less Tech Specs, and knowledge of Tech Spec entry conditions.

ANSWER CHOICE ANALYSIS

A. Incorrect. Safeties would lift at about 2590 psig, which is outside that allowed by LCO 3.4.10. Plausible because applicant must understand how the safety works and be able to calculate additional back pressure to compare to Tech Specs.

B. Correct. The Safeties were set at 2500 psig. Normal Quench Tank Pressure is in the neighborhood of < 5 psig. Therefore, 2590 psig would be the approximate RCS pressure at which the safeties would lift. This is higher than that allowed by LCO 3.4.10 (2575 psig). Reducing Quench Tank Pressure by 20 psig would bring the safeties within the required band in the LCO.

C. Incorrect. Applicability for LCO is less than 325 F. Plausible because the Applicability statement does have a cold leg temp requirement.

D. Incorrect. This condition is addressed by LCO 3.4.10. Also the actions of LCO 3.0.3 are different than the actions of LCO 3.4.10, with respect to cooldown. Plausible because it is logical to assume that Tech Specs would cover one safety being inop, but not two. There are multiple cases in Tech Specs where a loss of safety function will place the operators in 3.0.3.

REFERENCES

1. NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operations - Pressurized Water Reactors, Rev. 2.
2. Tech Spec 3.4.10, Pressurizer Safety Valves.
3. Lesson Plan PNS-PZR, Pressurizer, Rev. 15.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: B C C A C D B C A A	Scramble Range: A - D
Tier:	2		Group:	1	
Key Word:	PCS PZR PRESSURIZER		Cog Level:	C/A 2.9	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

17. 011EK2.02 001

A LOCA has just occurred on Unit 1 with the following indications:

At 22:11:00 hours:

- RCS Pressure = 1220 psig
- RCS Cold Leg Temperature = 569 °F
- Reactor Power = 2 %
- RCP Amps = stable & normal

At 22:12:00 hours:

- RCS Pressure = 1210 psig
- RCS Cold Leg Temperature = 570 °F
- Reactor Power = 1 %
- RCP Amps = stable & normal

At 22:13:00 hours:

- RCS Pressure = 1200 psig
- RCS Cold Leg Temperature = 573 °F
- Reactor Power = 0.50 %
- RCP Amps = stable & normal

At 22:14:00 hours:

- RCS Pressure = 1190 psig
- RCS Cold Leg Temperature = 577 °F
- Reactor Power = 0.25 %
- RCP Amps = oscilating & abnormal

Which one of the following correctly states when Rule 2, Loss of SCM, RCP trip criteria are first met?

- A. 22:11:00 hours
- B. 22:12:00 hours
- C. 22:13:00 hours
- D. 22:14:00 hours

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Large Break LOCA / 3

Knowledge of the interrelations between the following and the LBLOCA: Pumps.

K/A MATCH ANALYSIS

Rule 2 is required due to the LOCA and subsequent loss of SCM. When SCM = 0 and power is less than or equal to 1% (with amps stable), then the RCPs must be secured. Therefore, the question tests the interrelation between RCPs and the LOCA.

ANSWER CHOICE ANALYSIS

A. Incorrect. RCS is still subcooled. Plausible because this would be indicative of saturated conditions if pressure is not converted to absolute numbers.

B. Correct. RCS is saturated (actually slightly superheated) / power < or = 1% / amps stable and normal. Therefore Rule 2 RCP trip criteria is met.

C. Incorrect. RCS is now superheated and power is less than 1% with stable amps. Therefore, the trip criteria is still met, but incorrect because this is not when the RCPs trip criteria is first met. Plausible if applicant thinks that superheated conditions are needed.

D. Incorrect. Similar reasoning as stated above. Plausible if applicant thinks that RCPs must exhibit unstable amps prior to tripping.

REFERENCES

1. EP/1/A/1800/001 L, EOP - Rules & Appendix, Rev. 034.
2. Oconee EAP Bank Question 6, EAP010.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: B C C D B B D D C A	Scramble Range: A - D
Tier:	1		Group:	1	
Key Word:	LOCA RCP TRIP		Cog Level:	C/A 2.6	
Source:	M		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

18. 011K4.02 001

Unit 3 initial conditions:

- Reactor Power = 100%
- Pressurizer Level Instrument #3 selected
- 3HP-120 (RC Volume Control) in AUTOMATIC
- SASS in AUTOMATIC

Which one of the following correctly describes the response of pressurizer level indication if a "Data Link Failure" is displayed on "3B" ICCM Train?

- A. Pressurizer level indication fails low.
- B. Pressurizer level indication fails as is.
- C. Pressurizer level indication swaps to Instrument #1.
- D. Pressurizer level indication swaps to Instrument #2.

K/A

Pressurizer Level Control

Knowledge of PZR LCS design feature(s) and / or interlock(s) which provide for the following: PZR level controller.

K/A MATCH ANALYSIS

Knowledge of pZR level cntr and SASS is needed to correctly answer the question. SASS is a design feature for pZR level control.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Plausible because with SASS in manual and a loss of power on ICCM train, this would be correct.
- B. Incorrect. Plausible because with SASS in manual and an internal failure of ICCM, this would be correct.
- C. Correct. See referenced lesson plan pages 24 - 30. SASS is in AUTO, so a swap will occur. Instrument #2 is always the second input to SASS when Instrument #3 is initially selected.
- D. Incorrect. According to the lesson plan, a swap to instrument #1 will also occur. Instrument #2 is never the second SASS input. Plausible because an auto swap will actually occur.

REFERENCES

1. Lesson Plan PNS-PZR, Rev. 15.
2. Oconee Exam Bank Question 282, PNS143501.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C B C D A A D A D D Scramble Range: A - D

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

Tier:	2	Group:	2
Key Word:	PRESSURIZER LEVEL	Cog Level:	C/A 3.3
Source:	M	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

19. 012A3.06 001

The following Unit 1 events occur sequentially:

- Reactor is at 100% power
- A low RCS Pressure condition momentarily occurs and the 'A' RPS Channel Reactor Trip Bistable OUTPUT STATE LIGHT is bright and the OUTPUT MEMORY LIGHT is bright
- 'B', 'C', and 'D' RPS Channel Reactor Trip Bistable OUTPUT STATE LIGHTs remained dim
- RCS Pressure returns to normal
- 'A' RPS Channel OUTPUT STATE LIGHT was reset
- 'A' RPS Channel OUTPUT MEMORY LIGHT was not reset
- The reactor operator momentarily places the 'B' RPS Channel to SHUTDOWN BYPASS, then takes it back out of SHUTDOWN BYPASS

Which one of the following correctly describes the status of the 'B' RPS Channel OUTPUT STATE LIGHT and the status of the reactor?

- A. 'B' RPS Channel Reactor Trip Bistable OUTPUT STATE LIGHT turns bright when the channel is placed to SHUTDOWN BYPASS, then returns to dim when taken out of SHUTDOWN BYPASS.
The reactor does not trip.
- B. 'B' RPS Channel Reactor Trip Bistable OUTPUT STATE LIGHT turns bright when the channel is placed to SHUTDOWN BYPASS, then returns to dim when taken out of SHUTDOWN BYPASS.
The reactor trips.
- C. 'B' RPS Channel Reactor Trip Bistable OUTPUT STATE LIGHT turns bright when the channel is placed to SHUTDOWN BYPASS and remains bright when the channel is taken out of SHUTDOWN BYPASS.
The reactor does not trip.
- D. 'B' RPS Channel Reactor Trip Bistable OUTPUT STATE LIGHT turns bright when the channel is placed to SHUTDOWN BYPASS and remains bright when the channel is taken out of SHUTDOWN BYPASS.
The reactor trips.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

UTILITY NEEDS TO MAKE SURE THAT THE OUTPUT MEMORY LIGHT BEING LIT WILL NOT CAUSE A REACTOR TRIP IF THE OUTPUT STATE LIGHT HAS BEEN RESET. (4/5/6 Utility states: The memory light does not signify a trip signal being present) ALSO UTILITY NEEDS TO CONFIRM WHETHER OR NOT A CHANNEL MUST BE RESET WHEN TAKEN OUT OF SHUTDOWN BYPASS. (4/5/6 Utility states: A channel must be reset when taken out of shutdown bypass, otherwise it will have a standing trip signal).

K/A

Reactor Protection

Ability to monitor automatic operation of the RPS, including: Trip logic.

K/A MATCH ANALYSIS

Question requires knowledge of RPS trip logic. The applicant must determine whether or not the appropriate logic will be made up to cause an automatic reactor trip when the 'B' channel is taken to shutdown bypass.

ANSWER CHOICE ANALYSIS

- A. Incorrect. When taken out of S/D B/P, the channel must be reset for the OUTPUT STATE LIGHT to return to a dim condition. Plausible because by transferring back out of S/D B/p, the condition that caused the light to turn bright has been taken away.
- B. Incorrect. The rx does not trip. Plausible because of justification in 'A' above, as well as requiring the applicant to know the effects of not resetting the OUTPUT MEMORY LIGHT.
- C. Correct. The channel must be reset after being taken out of shutdown bypass, otherwise a trip signal will exist on that channel (according to utility on 4/5/6). The 'A' channel no longer has a trip condition, therefore simply going to shutdown bypass will generate a trip condition only on one channel, which will not cause a rx trip signal.
- D. Incorrect. The reactor does not trip. Plausibility justified in 'B' above.

REFERENCES

1. Lesson Plan IC-RPS, Reactor Protection System, Rev. 14.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C B B C C D C B B C	Scramble Range: A - D
Tier:		2			Group:		1
Key Word:		RPS LOGIC S/D BYPASS			Cog Level:		C/A 3.7
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

20. 013G2.4.2 001

Unit 1 initial conditions:

- 100% power
- Building Spray Pump 'B' is tagged out for maintenance
- KVIB is de-energeized

Current conditions:

- Reactor Building Pressure = 10.5 psig and increasing
- Subcooled Margin is 15 °F and lowering
- Building Spray Pump 'A' is not operating
- All Lights on RZ Module associated with ES-7 are OFF
- Operators are at the Subsequent Action Step that determines if ES Actuation is required.

Which one of the follwing correctly describes required actions that will mitigate the above conditions?

- A. Go to Enclosure 5.1 (ES Actuation) and manually actuating ES-7 digital channel.
- B. Go to Enclosure 5.1 (ES Actuation). Building Spray Pump '1A' must be manually started and BS-1 ('A' BS Pump Outlet) must be manually opened.
- C. Remain in Subsequent Actions and monitor Building Spray flow. BS-1 ('A' BS Pump Outlet) is already open.
- D. Remain in Subsequent Actions and monitor Building Spray flow through the Building Spray Cross-connect flowpath.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Engineered Safety Features Actuation

Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.

K/A MATCH ANALYSIS

RB P = 10.5 psig initiates ES Channels 7 and 8 for building spray actuation. When ES actuation occurs, this is entry conditions into EOP Enclosure 5.1. Therefore the applicant must have knowledge of the requirement to enter the EOP enclosure and the actions that are required to get a train of building spray to initiate.

ANSWER CHOICE ANALYSIS

A. Incorrect. Enclosure 5.1 must be employed to align correct ES components. In this case, ES-7 failed to actuate and will not manually actuate, as indicated by lights OFF. Pumps and valves must be manually aligned.

B. Correct. See 'A' above. The 'A' BS Pump must be manually started and BS-1 must be manually opened.

C. Incorrect. BS-1 is not already opened. Plausible if applicant thinks KVIB feeds ES-7, which initiates 'B' Train.

D. Incorrect. Cross connects are not open and no pumps are running.

REFERENCES

1. EP/1/A/1800/001, EOP - IMAs and SAs, Rev. 34.
2. Lesson Plan IC-ES, Engineered Safeguards, Rev. 13a.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B D D A B B C D C Scramble Range: A - D
Tier: 2 Group: 1
Key Word: BS ESFAS EOP ENTRY Cog Level: C/A 3.9
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

21. 013K1.12 001

The following conditions exist with all three units initially at full power:

Initial Conditions:

- KHU-1 and 2 are operating supplying the grid
- ACB-4 is closed

Current Conditions:

- Unit 1 RB Pressure is 3.5 psig and rising
- Keowee frequency is 62 cycles and lowering

Which one of the following correctly describes breaker response associated with the above conditions?

- A. ACB-1, 2, and 4 remain closed.
- B. ACB-1 and 2 open. ACB-4 remains closed.
- C. ACB-1, 2, and 4 open. ACB-4 then automatically re-closes.
- D. ACB-1, 2, and 4 open. ACB-1, 2, and 4 automatically reclose.

INCORPORATED UTILITY COMMENTS FROM 4/5/6.

K/A

Engineered Safety Features Actuation

Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: ED/G.

K/A MATCH ANALYSIS

ED/G and KHU are being viewed as inter-changeable. The question is testing knowledge of Keowee breaker operation induced by an ESFAS.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Plausible because no electrical problems exist.
- B. Incorrect. Plausible because Keowee output bkr to underground was already closed.
- C. Correct. See highlighted portions of referenced lesson plans for supporting documentation.
- D. Incorrect. Plausible because no electrical problems exist.

See highlighted portions of referenced lesson plans for supporting documentation.

REFERENCES

1. Lesson Plan EL-KHG, Keowee Hydro Generators, Rev. 15.
2. Lesson Plan IC-ES, Engineered Safeguards, Rev. 13a.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: C D B C C C B A B D

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	2	Group:	1
Key Word:	KEOWEE ESFAS	Cog Level:	MEM 4.1
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

22. 015/17AG2.1.7 001

The following conditions exist on Unit 1:

- 1TA and 1TB de-energized while the plant was at 100% power
- Operators have diagnosed a small loss of inventory from the RCS
- HPI is currently throttled
- Operators have recently restored power to 1TA and 1TB
- Operators have just re-started the first RCP
- SCM = 0 °F

Which one of the following correctly describes required operator actions based on the above indications?

- A. Rule 2 must be implemented immediately.
- B. Rule 2 implementation may be delayed for 5 minutes.
- C. Full HPI flow must immediately be established in accordance with Rule 6.
- D. Full HPI flow may be delayed for 2 minutes in accordance with Rule 6.

K/A

RCP Malfunctions / 4

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

K/A MATCH ANALYSIS

The loss of power is the RCP malfunction. The operators must have knowledge of the plant conditions and instrument readings to correctly restart and monitor the RCP restart evolution. The question tests knowledge of what actions to take based on the plant conditions.

ANSWER CHOICE ANALYSIS

A. Incorrect. The note at the top of Enc. 5.6, page 7 of 9, states that Rule 2 may be delayed for up to 2 minutes, thus Rule 2 is not immediately required to be implemented. Plausible because normally, when RCPs are not being started, Rule 2 would be immediately implemented.

B. Incorrect. The note at the top of Enc. 5.6, page 7 of 9, states that Rule 2 may be delayed for up to 2 minutes, not 5 minutes. Plausible because Rule 2 implementation may, in fact, be delayed.

C. Correct. Stem of question states that HPI is throttled. Rule 6 must be implemented immediately per Enc. 5.6, Step 37.

D. Incorrect. Stem of question states that HPI is throttled. Rule 6 must be implemented immediately per Enc. 5.6, Step 37. Plausible because Rule 2 implementation may be delayed for 2 minutes based on the note at the top Enc. 5.6, page 7 of 9.

REFERENCES

1. EP/1/A/1800/001 M, EOP - Encl 5.1 - 5.16, Rev. 34.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C B C A A C A B D D Scramble Range: A - D
Tier: 1 Group: 1
Key Word: RCP RESTART Cog Level: C/A 3.7
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

23. 015K2.01 001

The following Unit 1 conditions exist:

- NI-5 has failed high
- RPS Channel "B" +15 volt power supply has deenergized

Which one of the following correctly describes the status of the reactor and the "B" Channel Trip Light and Breaker Trip Light?

- A. The reactor does not trip.
Channel Trip Light is OFF. Breaker Trip Light is OFF.
- B. The reactor does not trip.
Channel Trip Light is BRIGHT. Breaker Trip Light is BRIGHT.
- C. The reactor trips.
Channel Trip Light is OFF. Breaker Trip Light is OFF.
- D. The reactor trips.
Channel Trip Light is BRIGHT. Breaker Trip Light is BRIGHT.

K/A

Nuclear Instrumentation

Knowledge of bus power supplies to the following: NIS channels, components, and interconnections.

K/A MATCH ANALYSIS

The 15 V RPS power supply feeds the NIs in that cabinet. The question requires knowledge of how the plant will respond when a power supply that feeds the NIs is lost.

ANSWER CHOICE ANALYSIS

- A. Incorrect - Reactor will trip. If the 120 volt A/C power was lost, then the lights would lose power and go out.
- B. Incorrect - Reactor will trip. Plausible because the Breaker Trip Light will be BRIGHT.
- C. Incorrect - Breaker trip light will be BRIGHT. Plausible for same reason as "A".
- D. Correct - The the associated CRD breaker will open (breaker light bright) because of the loss of power to the tripping logic. The reactor will trip on two of four channels due to NI-5 being failed high.

REFERENCES

1. Lesson Plan OP-OC-IC-NI, Nuclear Instrumentation, Rev. 14.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: DCBADDCCAD Scramble Range: A - D

Tier: 2

Group: 2

Key Word: RPS NI POWER SUPPLY

Cog Level: C/A 3.3

Source: M

Exam: OC2006-301

Test: R

Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

24. 022AK1.03 001

The following Unit 1 initial conditions exist:

- Reactor Power = 50%
- SASS is in Manual to support I&C maintenance

Current conditions:

- Temperature compensation for the inservice Pzr Level Channel fails high
- HP RCP SEAL INJECTION HEADER FLOW HIGH/LOW annunciates

Which one of the following correctly states why the Bailey Hand/Auto Station needs to be placed to manual and how the current conditions affect the HPI pump status?

- A. The Bailey Hand/Auto Station needs to be placed in manual to reposition HP-120 because actual pressurizer level is > indicated pressurizer level. Standby HPI pump will automatically start.
- B✓ The Bailey Hand/Auto Station needs to be placed in manual to reposition HP-120 because actual pressurizer level is < indicated pressurizer level. Standby HPI pump will automatically start.
- C. The Bailey Hand/Auto Station needs to be placed in manual to reposition HP-120 because actual pressurizer level is > indicated pressurizer level. Standby HPI pump will not automatically start.
- D. The Bailey Hand/Auto Station needs to be placed in manual to reposition HP-120 because actual pressurizer level is < indicated pressurizer level. Standby HPI pump will not automatically start.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Loss of Rx Coolant Makeup / 2

Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Pump Makeup: Relationship between charging flow and PZR level.

K/A MATCH ANALYSIS

A partial loss of makeup occurs due to the Temperature Compensation failing high. This is also supported by the Low RCP Seal Inj alarm. The operational implications are being tested by requiring knowledge that HP-120 must be adjusted because pZR level indication is no longer accurate.

ANSWER CHOICE ANALYSIS

A. Incorrect. Actual level will be < indicated level. Plausible because applicant must deduce how the malfunctioning temperature correction will affect the indicated pZR level.

B. Correct. The alarm coming in is indication that the S/B HPI Pump will start. Temperature compensation failing high will cause actual level to be < indicated level.

C. Incorrect. Standby pump will start. Plausible because applicant may not know pump start is coincident with the alarm. Plausible because applicant must deduce how the temperature correction, or lack thereof, will affect the indicated pZR level.

D. Incorrect. Standby pump will start. Plausible because applicant may not know pump start is coincident with the alarm.

REFERENCES

1. Lesson Plan PNS-PZR, Pressurizer, Rev. 15.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	B D C B A A C A C D	Scramble Range: A - D
Tier:		1			Group:	1	
Key Word:		PZR LEVEL CHARGING			Cog Level:	C/A 3.0	
Source:		N			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

25. 022G2.1.33 001

Unit 1 initial conditions at 10:00 hours:

- RCS Temp = 300 °F
- 'A' train BS Pump breaker is removed from service and its handswitch lights go dark

Current conditions 11:00 hours:

- The 'B' train of BS inadvertently actuated
- Prior to securing the 'B' BS pump, Operators noted that the pump did not indicate any flow
- Operators verified that the proper valve alignment had existed for BS to discharge to the RB

Which one of the following correctly describes entry into LCO 3.6.5, Reactor Building Spray and Cooling Systems?

- A. LCO 3.6.5 was required to be entered at 10:00 hours because two trains of BS are required to be operable in Modes 1, 2, 3, and 4.
- B. LCO 3.6.5 was required to be entered at 10:00 hours because two trains of BS are required to be operable in Modes 1, 2, 3 (BS not required to be operable in Mode 4 per Tech Specs)
- C. LCO 3.6.5 was required to be entered at 11:00 hours because only one train of BS is required to be operable in Modes 3 and 4.
- D. LCO 3.6.5 was required to be entered at 11:00 hours because only one train of BS is required to be operable in Mode 3 with RCS temperature below 325 °F, Mode 4, and Mode 5.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Containment Cooling

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

K/A MATCH ANALYSIS

The question requires knowledge of the conditions of the containment cooling LCO and system indications that would result in the LCO not being met. The applicant must recognize that the pump not developing flow when the train inadvertently actuated would be a plant parameter that would place them in noncompliance with the LCO.

Q is RO knowledge because only the entry conditions are being tested.

ANSWER CHOICE ANALYSIS

A. Incorrect. Current plant conditions are Mode 3, therefore LCO is not required to be entered at 1000 hrs. Plausible because two trains are in fact required in Modes 1 and 2 as stated in the LCO (although the Note modifies this).

B. Incorrect. Current plant conditions are Mode 3, therefore LCO is not required to be entered at 1000 hrs. Plausible because two trains are required in Modes 1 and 2.

C. Correct. See TS Note.

D. Incorrect. Applicability does not have a temperature stipulation for Mode 3. Mode 5 is also incorrect. Plausible because it makes sense to require only one train at lower modes and lower temperatures.

Plausibility of distractors are due to the memory level of the question and that the applicability does, in fact, change with respect to Mode.

REFERENCES

1. Tech Spec 3.5.5, Reactor Building Spray and Cooling System.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C D A B A D A D A A	Scramble Range: A - D
Tier:		2			Group:	1	
Key Word:		TECH SPEC TS RBC RBS			Cog Level:	C/A 3.4	
Source:		N			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

1. 022K3.02 001

The following Unit 1 conditions exist:

Initial conditions:

- 100 % power
- 'A' Core Flood Tank Level = 13.2 feet
- 'B' Core Flood Tank Level = 12.6 feet
- LCO 3.6.5, Reactor Building Spray and Cooling Systems, has been entered due to not having the required trains of cooling operable
- Containment Temperature = 105 °F

Current conditions:

- A small steam leak exists in Containment
- Containment temperature = 135 °F.

Which one of the following correctly describes the response of CFT Level alarms as Containment Temperature increased from 105 °F to 135 °F?

- A. 1SA-08 / B-11, CORE FLOOD TANK "A" LEVEL HIGH/LOW, annunciates.
1SA-08 / B-12, CORE FLOOD TANK "B" LEVEL HIGH/LOW, remains unchanged.
- B. 1SA-08 / B-11, CORE FLOOD TANK "A" LEVEL HIGH/LOW, annunciates.
1SA-08 / B-12, CORE FLOOD TANK "B" LEVEL HIGH/LOW, clears.
- C. 1SA-08 / B-11, CORE FLOOD TANK "A" LEVEL HIGH/LOW, clears.
1SA-08 / B-12, CORE FLOOD TANK "B" LEVEL HIGH/LOW, annunciates.
- D. 1SA-08 / B-11, CORE FLOOD TANK "A" LEVEL HIGH/LOW, remains unchanged.
1SA-08 / B-12, CORE FLOOD TANK "B" LEVEL HIGH/LOW, annunciates.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Containment Cooling

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

K/A MATCH ANALYSIS

The loss of containment cooling is resulting in containment temperature increasing. This increased temperature has an effect on CFT level because the reference leg will heat up much quicker than the CFT contents, thus causing level indication to go up. This increase in CFT level will cause the "A" CFT Level to increase above the high setpoint (initial conditions is barely below the setpoint) and the "B" CFT Level to increase above the low setpoint (initial conditions is barely below the setpoint). Thus the alarm for the "A" tank level will annunciate and the alarm for the "B" tank will clear.

ANSWER CHOICE ANALYSIS

A. Incorrect. Plausible because applicant must know what the low level setpt is. If the applicant thinks that the low level alarm for "B" has already annunciated and the temp change will cause level to go down, then the "A" low level alarm may annunciate.

B. Correct. High setpoint for "A" CFT is 13.3 feet. Low setpoint for "B" CFT is 12.7 feet. A 30F temp rise will cause > 0.1 feet level change in the CFT. Thus the "A" CFT Level Alarm annunciates and the "B" CFT Level Alarm clears.

C. Incorrect. Plausible because applicant must know setpoints. If applicant thinks that increased containment temp causes indicated level to go down, then "A" high alarm could clear and "B" low alarm could annunciate.

D. Incorrect. Plausible because applicant must know setpoints. If applicant thinks "A" CFT Level alarm is already in alarm and "B" CFT Level will rise enough to bring it into alarm, then this becomes a credible answer choice.

REFERENCES

1. 1SA-08 / B11, CORE FLOOD TANK "A" LEVEL HIGH/LOW.
2. 1SA-08 / B12, CORE FLOOD TANK "B" LEVEL HIGH/LOW.
3. Lesson Plan PNS-CF, Core Flood System, Rev. 12b.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	B C B C C C B B D C	Scramble Range: A - D
Tier:		2			Group:		1
Key Word:		CFT LEVEL ALARM RB			Cog Level:		C/A 3.0
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

2. 025AK2.02 001

Unit 1 initial conditions:

- The plant tripped from 100% power due to a trip of all RCPs
- Operators subsequently began a cooldown
- RHR high pressure mode was aligned

Current conditions:

- All LPI pumps have lost power
- Operators have entered AP/26 (Loss of Decay Heat Removal), Section 4A (RCS Intact and RC Loops Full)
- RCS Temperature = 250 °F
- RCS Pressure = 295 psig
- Condenser is still available

Which one of the following correctly describes operation of LP-3 (LPI Hot Leg Suction) and steam generator feedwater supply based on the given plant conditions?

- A. 1LP-3 is required to be closed.
SGs shall be fed via MFW nozzles.
- B. 1LP-3 is required to be closed.
SGs shall be fed via AFW nozzles.
- C. 1LP-3 is not required to be closed.
SGs shall be fed via MFW nozzles.
- D. 1LP-3 is not required to be closed.
SGs shall be fed via AFW nozzles.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Loss of RHR System / 4

Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: LPI or Decay Heat Removal / RHR pumps.

K/A MATCH ANALYSIS

The loss of RHR/LPI pumps creates a loss of RHR System. This question tests knowledge of required operator actions when the RHR/LPI pumps are lost. These actions are required to mitigate the consequences of losing the pumps and losing RHR.

ANSWER CHOICE ANALYSIS

A. Incorrect. RCPs must be operating to feed via MFW nozzles. Plausible because SGs are required to be fed.

B. Correct. LP-3 is required to be closed based on Section 4A, Step 5. Based on RCPs not running, the AFW nozzles must be used (Encl 5.9 Step 5)

C. Incorrect. RCPs must be operating to feed via MFW nozzles. Plausible because SGs are required to be fed. Also plausible because applicant may not know the closure requirements for 1LP-3.

D. Incorrect. LP-3 is required to be closed based on Section 4A, Step 5. Plausible because applicant may not know the closure requirements for 1LP-3.

REFERENCES

1. AP/1/A/1700/026, Loss of Decay Heat Removal, Rev. 017.
2. Lesson Plan PNS-LPI, Low Pressure Injection System, Rev. 21.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: B A C C D C A D C B	Scramble Range: A - D
Tier:	1		Group:	1	
Key Word:	LOSS OF DHR/RHR		Cog Level:	C/A 3.2	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

3. 026AG2.4.24 001

The following Unit 1 conditions exist:

- Reactor Power = 100% with all RCPs operating
- CC degradation has been caused by leakage identified by an operator
- CC Surge Tank level is 10 inches and decreasing at 0.5 inches per minute
- One CC Pump is operating
- CC TOTAL FLOW is 675 gpm

Which one of the following correctly describes the AP/20 (Loss of Component Cooling) strategy for mitigating the conditions as described above?

- A. Secure the operating CC Pump. Then isolate the leak and make-up to the CC Surge Tank. When Surge Tank level returns to normal, then restart the CC Pump.
- B. Start the standby CC Pump. Then attempt to isolate the leak and make-up to the CC Surge Tank.
- C. Isolate the leak. Then make-up to the CC Surge Tank and notify RW of the CC spill. Verify RCP seal injection flow is within normal limits.
- D. Start the standby CC Pump. Then attempt to isolate the leak and make-up to the CC Surge Tank. Isolate letdown and concurrently perform steps of AP/32 (Loss of Letdown).

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Loss of Component Cooling Water / 8
Knowledge of loss of cooling water procedures.

K/A MATCH ANALYSIS

Question tests knowledge of AP/20 (Loss of CC).

ANSWER CHOICE ANALYSIS

A. Incorrect. No guidance exists for securing the operating pump. Enough time exists for filling the CC Surge Tank and leak isolation prior to securing the CC pump. Plausible because applicant may find it logical to secure the pump to reduce the leak, isolate the leak, fill the tank, then restart the pump. RCPs are OK without CC, thus adding more plausibility to this distractor.

B. Incorrect. No guidance exists for starting the standby pump when CC Total Flow is above 575 gpm). Plausible for an applicant to think that cooling could be enhanced by starting another pump.

C. Correct. Strategy is stated on Page 5 of AP/20.

D. Incorrect. No guidance exists for starting the standby pump when CC Total Flow is above 575 gpm. Plausible for an applicant to think that cooling could be enhanced by starting another pump. Also plausible because procedure gives them steps to isolate L/D, but only when no CC flow exists.

REFERENCES

1. AP/1/A/1700/020, Loss of Component Cooling, Rev. 9.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: C A C B D B B D D C	Scramble Range: A - D
Tier:	1		Group:	1
Key Word:	LOSS OF CCW		Cog Level:	C/A 3.3
Source:	N		Exam:	OC2006-301
Test:	R		Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 026G2.4.31 001

Unit 1 initial conditions:

- Reactor power = 100%
- 1SA-7/D3, ES RB SPRAY, POWER SUPPLY FAILURE OR CHANNEL 'A' MODULE REMOVED, is in alarm
- I&E has determined the cause of the alarm to be Analog Channel 'A' power supply failure and is investigating the cause

Current conditions:

- A LBLOCA has occurred
- RCS pressure is 485 psig and decreasing
- RB pressure is 10.5 psig and increasing
- ES Channels 1-6 have actuated

Which one of the answer choices correctly completes the following sentences?

Reactor Building Spray initiation circuitry is currently in a _____ initiation logic. Based on current plant conditions, manual initiation of ES Channels 7 and 8 _____ is required.

- A. one out of two
is
- B. two out of two
is not
- C. one out of two
is not
- D two out of two
is

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Containment Spray

Knowledge of annunciators, alarms, and indications, and use of response instructions.

K/A MATCH ANALYSIS

Actions being tested are directed by the alarm response guides, based on indications, when failures occur in the Reactor Building Spray System, therefore, the K/A is met.

ANSWER CHOICE ANALYSIS

- A. Incorrect. ES Channels 7 & 8 Logic is 2 / 2 with one channel de-energized. Plausible because ES-Channels 1-6 would be in 1 / 2 logic.
- B. Incorrect. Plausible because applicant would need to know the RBS setpoint to know if it would need to be manually initiated. Also plausible because the 2 / 2 logic is correct.
- C. Incorrect. ES Channels 7 & 8 Logic is 2 / 2 with one channel de-energized and ES Channels 7 and 8 must be manually initiated. Plausible because ES-Channels 1-6 would be in 1 / 2 logic. Also plausible because applicant would need to know the RBS setpoint to know if it would need to be manually initiated.
- D. Correct. See Window A-4 and D-3 of 1SA-07.

REFERENCES

- 1. OP/1/A/6101/007, Alarm Response Guide, 1SA-07, Rev. 006.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: D A A C A A C B B	Scramble Range: A - D
Tier:	2		Group:	1
Key Word:	RBS BUILDING SPRAY		Cog Level:	C/A 3.3
Source:	N		Exam:	OC2006-301
Test:	R		Author/Reviewer:	OCONEE/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

5. 027AK1.02 001

The crew has just completed a 6% per hour power ascension from 75% to 90% rated thermal power. A Pressurizer PORV has just been identified as leaking to the Quench Tank.

Which ONE of the following describes the effect on RCS temperature and Pressurizer water temperature, associated with the above events? (Assume no operator actions.)

- A. RCS temperature will initially rise from its steady state value. Pressurizer water temperature will initially rise from its steady state value.
- B. RCS temperature will initially rise from its steady state value. Pressurizer water temperature will initially lower from its steady state value.
- C. RCS temperature will initially lower from its steady state value. Pressurizer water temperature will initially rise from its steady state value.
- D. RCS temperature will initially lower from its steady state value. Pressurizer water temperature will initially lower from its steady state value.

K/A

Pressurizer Pressure Control System Malfunction / 3

Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions: Expansion of liquids as temperature increases.

K/A MATCH ANALYSIS

The K/A requires the testing of knowledge of operational implications of a PCS malfunction, which is accomplished with the PORV leaking. The K/A also requires testing the implications of expansion of liquids as temperature increases. Therefore, the K/A is met because the RCS temperature goes up, causing the liquid volume to expand. The safety valve leaks, reducing the pressure in the pressurizer. Both of these items cause an insurge into the pressurizer, which initially lowers the pressurizer temperature (operational implication).

ANSWER CHOICE ANALYSIS:

- A. Incorrect. Xenon is burning out due to the power ascension, which will cause RCS temperature to increase. The rise in RCS temperature will cause the RCS volume to expand coupled with the PORV leaking causes an above average insurge into the Pzr, which will drop the average water temperature in the Pzr initially beyond the heaters capacity to compensate.
- B. Correct. See analysis for A above.
- C. Incorrect. See analysis for A above.
- D. Incorrect. See analysis for A above.

REFERENCES

- 1. VC Summer 2005-301 Exam, 027AK1.02.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: B A C B C A D A C A

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	1	Group:	1
Key Word:	PRESSURIZER PCS	Cog Level:	C/A 2.8
Source:	B	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

6. 028AA2.03 001

Unit 1 is at 100%, steady state pressurizer level, with SASS in manual when the following event occurs:

- RC-LT-004P2 (Pzr Level 2 Input into ICCM A) is selected for pressurizer level control
- RC-LT-004P2 develops a leak on its reference leg

Which one of the following correctly describes the effect on charging flow indication, as well as correctly describes the effect on the SSF?

- A. HP-120 throttles in the close direction.
The SSF pressurizer level indication is not affected.
- B. HP-120 throttles in the open direction.
The SSF pressurizer level indication is not affected.
- C. HP-120 throttles in the close direction.
The SSF pressurizer level indication is affected.
- D. HP-120 throttles in the open direction.
The SSF pressurizer level indication is affected.

K/A

Pressurizer Level Malfunction / 2

Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: Charging subsystem flow indicator and controller.

K/A MATCH ANALYSIS

Applicant must apply knowledge of a pressurizer level malfunction and determine its effects on the level indication, and subsequently the level indication's effect on charging and the SSF.

ANSWER CHOICE ANALYSIS

A. Incorrect. See "B" and "C".

B. Incorrect. Plausible because applicant must know how the ref leg leak will affect indicated level and if it will also affect the SSF. Only one of the level channels feeds the SSF, so an applicant may not remember which one performs this function. Also an applicant must work through in his head how the reference leg failure will impact the indicated level in order to know how HP-120 will move.

C. Correct. The designated LT shares a reference leg with the LT that feeds the SSF. A leak in the reference leg will cause indicated level to rise and charging flow (HP-120) will throttle down to reduce level.

D. Incorrect. See "B" and "C".

REFERENCES

1. Lesson Plan PNS-PZR, Pressurizer, Rev. 15.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C C A A B C C C D B

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	1	Group:	2
Key Word:	PRESSURIZER LEVEL	Cog Level:	C/A 2.8
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

7. 028G2.1.8 001

Unit 1 plant conditions:

Initial conditions:

- Reactor power = 100%
- Post Accident Gaseous Sample Panel in service for testing

Current Conditions:

- RCS Pressure = 1075 psig
- RB Pressure = 12 psig

Based on the above conditions, which one of the following is correct with respect to the isolation of the Post Accident Gaseous Sample Panel and the operation of the Hydrogen Analyzer?

- A✓ Immediately isolate the Post Accident Gaseous Sample Panel and place the RB Hydrogen Analyzer in service at the remote panel.
- B. Immediately isolate the Post Accident Gaseous Sample Panel and place the RB Hydrogen Analyzer in service at the local panel.
- C. Immediately notify Chemistry to isolate the Post Accident Gaseous Sample Panel and place the RB Hydrogen Analyzer in service at the remote panel.
- D. Immediately notify Chemistry to isolate the Post Accident Gaseous Sample Panel and place the RB Hydrogen Analyzer in service at the local panel.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Hydrogen Recombiner and Purge Control

Ability to coordinate personnel activities outside the control room.

K/A MATCH ANALYSIS

This is a generic K/A for section 028. The K/A catalog states typical tasks that are associated with system 028. One of the tasks listed is, "Operate the hydrogen analyzer." This question tests knowledge of tasks that are required to be performed outside of the control room.

ANSWER CHOICE ANALYSIS

A. Correct. The hydrogen analyzer containment isolation valve controls are located in the control room. The remote H2 Anal Panel must be used because there is no Op Proc to place the local panel in service.

B. Incorrect. There is no procedural guidance for placing the local panel I/S. Plausible because the first part of the answer choice is correct and the second part is correct except for which panel.

C. Incorrect. Containment isolation valves are controlled from the control room and must be immediately closed by the RO. Plausible because the second part of the answer choice is correct.

D. Incorrect. Containment isolation valves are controlled from the control room and must be immediately closed by the RO. Plausible because the H2 Anal is required to be placed I/S on an ES signal and the local panel is actually located in the same vicinity as the remote panel (according to utility rep).

REFERENCES

1. OP/1/A/1102/022, RB Hydrogen Anyzer System, Rev. 015.

2. Oconee PNS Exam Bank Question Question 150, PNS101201.

3. OP/1/A/1102/022, RB Hydrogen Analyzer System, Rev. 015.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A C D A A D D B A D	Scramble Range: A - D
Tier:		2			Group:		2
Key Word:		RB HYDROGEN ANALYZER			Cog Level:		MEM 3.8
Source:		M			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

8. 029EK1.03 001

Unit 2 conditions:

Initial conditions:

- Reactor power = 70%
- ICS is in automatic

Current conditions:

- Main turbine has tripped
- CRD breakers have opened
- Control rods have partially inserted
- Reactor power = 7% and stable by Wide Range NIs
- Rule 1 has just been entered

Which one of the following is the correct course of action that will mitigate the problem in accordance with Rule 1?

- A. Dispatch an operator to open 600 V CRD breakers on 2X9-5C (U-2 CRD NORM FDR BKR) and 1X1-5B (U-2 CRD ALT POWER SUPPLY).
- B. Open 2HP-24 and 2HP-25. Start all three HPI Pumps. Open 2HP-26 and 2HP-27.
- C✓ Open 2HP-24 and 2HP-25. Start the 'A' and 'C' HPI Pumps. Open 2HP-26 and 2HP-27.
- D. Manually drive the stuck control rods to the in-limit.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

ATWS / 1

Knowledge of the operational implications of the following concepts as they apply to the ATWS:
Effects of boron on reactivity.

K/A MATCH ANALYSIS

ATWS has occurred due to rods sticking and power stabilizing at 7%. The question tests knowledge of actions to take to add negative reactivity to mitigate the ATWS. Therefore, the K/A implicitly tests the knowledge of boron's effect on reactivity.

ANSWER CHOICE ANALYSIS

A. Incorrect. Incorrect. Incorrect because rods have already tried to trip into the core, so de-energizing CRD breakers will do nothing further to mitigate. Plausible because it is a step in the procedure.

B. Incorrect. Three pumps are not needed or required. Plausible because applicant may think that more pumps are required to give them more boration capability.

C. Correct. Steps 4-6 of Rule 1.

D. Incorrect. CRDS has no power due to the reactor trip. (Ensure the facility agrees with this, because in some CE plants this would be a correct answer)

REFERENCES

1. Oconee Exam Bank Question 223, EAP111003.
2. EP/2/A/1800/001, EOP - IMAs and SAs, Rev. 036.
3. EP/2/A/1800/001 L, EOP - Rules & Appendix, Rev. 036.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C C A B B B B B D C	Scramble Range: A - D
Tier:		1			Group:		1
Key Word:		ATWS			Cog Level:		C/A 3.6
Source:		M			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

9. 033A1.01 001

Unit 3 is at 100% power with the "A" spent fuel pool cooling pump operating.

Which one of the following spent fuel pool levels will automatically trip the operating spent fuel pool cooling pump at the time that level is reached?

- A. - 0.1 feet
- B. - 0.5 feet
- C. - 2.0 feet
- D. - 2.5 feet

K/A

Spent Fuel Pool Cooling

Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with Spent Fuel Pool Cooling System operating the controls including: Spent Fuel Pool Water Level.

K/A MATCH ANALYSIS

Question tests knowledge of SFP Level interlock that will trip cooling pumps. Therefore, question tests knowledge that will allow applicant to predict SFP Level's impact on SFP cooling (specifically the pumps).

ANSWER CHOICE ANALYSIS

- A. Incorrect. Plausible because this is the minimum level required to run 1 pump.
- B. Incorrect. Plausible because this is the minimum level to start the SFC system.
- C. Incorrect. Plausible because this is the admin limit to ensure TS 3.7.11 is met.
- D. Correct. See referenced lesson plan page 11.

REFERENCES

1. Lesson Plan FH-SFC, Spent Fuel Cooling System, Rev 12c.
2. OP/3/A/1104/006, SF Cooling System, Rev. 68.
3. Oconee Fuel Handling Exam Bank Question 42, FH050301.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer:

Scramble Range: A - D

Tier: 2

Group: 2

Key Word: SPENT FUEL LEVEL SFP

Cog Level: MEM 2.7

Source: M

Exam: OC2006-301

Test: R

Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

10. 035K1.02 001

Unit 1 startup and power ascension is about to commence. All systems are in their normal alignments. Which one of the following correctly describes the MSR response to increased steam flow from the steam generators as the power ascension progresses to full power?

- A✓ The first stage reheater will automatically adjust its tube side steam demand from the high pressure turbine as the cross-around steam flow increases. The second stage reheaters are controlled by an automatic control system which varies second stage tube side steam supply pressure linearly with load over the first half of the load range.
- B. Operators must manually adjust first stage reheater tube side steam demand from the high pressure turbine as the cross-around steam flow increases. The second stage reheaters are controlled by an automatic control system which varies second stage tube side steam supply pressure linearly with load over the first half of the load range.
- C. The first stage reheater will automatically adjust its tube side steam demand from the high pressure turbine as the cross-around steam flow increases. The second stage reheaters are controlled by an automatic control system which varies second stage tube side steam supply pressure linearly with load over the entire load range.
- D. Operators must manually adjust first stage reheater tube side steam demand from the high pressure turbine as the cross-around steam flow increases. The second stage reheaters are controlled by an automatic control system which varies second stage tube side steam supply pressure linearly with load over the entire load range.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Steam Generator

Knowledge of the physical connections and/or cause-effect relationship between the S/GS and the following systems: MRSS.

K/A MATCH ANALYSIS

The question requires knowledge of how the steam production rate in the steam generators will ultimately affect the MSRs.

ANSWER CHOICE ANALYSIS

- A. Correct. See pages 11 and 12 of lesson plan STG-MSR.
- B. Incorrect. First stage reheaters may be left in service and the tube side steam demand is auto adjusted. Plausible because second part of answer choice is correct.
- C. Incorrect. Second stage tube side steam supply pressure only varies over the first half of the entire load range. Plausible because first half of answer choice is correct.
- D. Incorrect. Second stage tube side steam supply pressure only varies over the first half of the entire load range. Plausible because the second stage is auto controlled, but it only varies linearly over the first half of the range.

REFERENCES

1. Lesson Plan STG-MSR, Moisture Separator Reheaters, Rev. 11.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A D A B D D C D B B	Scramble Range: A - D
Tier:		2			Group:		2
Key Word:		MSR			Cog Level:		MEM 3.2
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

11. 038EA2.02 001

Unit 1 plant conditions:

- Reactor Power = 100%
- 1RIA-17 = 18 mr/hr
- Pressurizer Level = 210 inches and slowly lowering
- '1A' HPI Pump operating
- 1HP-5 (Letdown Isolation) closed
- 1HP-120 (Pressurizer Level Control) is fully open
- RC Makeup Flow = 160 gpm

Which one of the following describes the correct operator action and the reason for the action?

Increase HPI and

- A. trip the reactor to minimize the amount of RCS leakage.
- B. trip the reactor to minimize the amount of secondary side contamination.
- C. perform a controlled shutdown and cooldown to ≤ 532 °F to avoid lifting the main steam safety valves.
- D. perform a controlled shutdown and cooldown to ≤ 532 °F to stop the primary to secondary leakage across the tubes by isolating the affected SG.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Steam Gen. Tube Rupture / 3

Ability to determine or interpret the following as they apply to a SGTR: Existence of an S/G tube rupture and its potential consequences.

K/A MATCH ANALYSIS

Question tests knowledge of operator actions, which are driven by potential consequences. Procedures give direction to shutdown & cooldown to avoid lifting SG Safeties, which is important to minimize radiological releases if a safety were to stick open.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Reactor trip would increase likelihood of SG safeties lifting. Plausible because this is an AP/2 (Excessive RCS Leakage) action, but not an action in SGTR EOP. If the applicant misdiagnoses the event as a LOCA, rather than a SGTR, then this could be a correct answer. This answer choice also helps provide a solid match to the K/A, because it requires the applicant to correctly determine the existence of a SGTR based on plant parameters.
- B. Incorrect. Reactor trip would increase likelihood of SG safeties lifting. Plausible because this is an AP/2 (Excessive RCS Leakage) action, but not an action in SGTR EOP. Also plausible because this is an action that would help to minimize secondary side contamination.
- C. Correct.
- D. Incorrect. The leak will not stop when the SG is isolated. The bank question verbiage was modified to more explicitly state primary to secondary leakage. I had a concern of an applicant being able to argue that the leakage was stopped at the point of the SG. Plausible because the leakage will continue to decrease as RCS pressure decreases.

REFERENCES

1. EP/1/A/1800/001 G, EOP - SGTR, Rev. 034.
2. AP/1/A/1700/002, Excessive RCS Leakage, Rev. 10.
3. Oconee Emergency and Abnormal Procedures Exam Bank Question 165, EAP090101.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C C D B D C A B D D	Scramble Range: A - D
Tier:		1			Group:		1
Key Word:		SGTR SHUTDOWN			Cog Level:		C/A 4.5
Source:		B			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

12. 039K5.01 001

The following Unit 1 conditions exist:

- Operators are in the process of starting up the plant
- Turbine heatup is in progress
- Unit 1 Turbine Bypass Lines Pumping Trap has malfunctioned and cannot empty to the condenser

If the malfunctioning pumping trap is not addressed, which one of the following correctly describes the impact of the malfunctioning pumping trap and the operator's ability to monitor the pumping trap's condition?

- A✓ Water could accumulate in the Turbine Bypass Lines and in the Main Steam Lines. Operators can monitor using the Hi Level Indication for the Turbine Bypass Lines Pumping Trap.
- B. Water could accumulate in the Turbine Bypass Lines and in the Main Steam Lines. No Hi Level Indication for the Turbine Bypass Lines Pumping Trap exists.
- C. Water could accumulate in the Turbine Bypass Lines, but not the Main Steam Lines. Operators can monitor using the Hi Level Indication for the Turbine Bypass Lines Pumping Trap.
- D. Water could accumulate in the Turbine Bypass Lines, but not in the Main Steam Lines. No Hi Level Indication for the Turbine Bypass Lines Pumping Trap exists.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Main and Reheat Steam

Knowledge of the operational implications of the following concepts as they apply to the MRSS:
Definition and causes of steam/water hammer.

K/A MATCH ANALYSIS

These steam traps are designed to prevent water hammer, as stated in the lesson plan. A malfunction of the trap will introduce a cause for the water hammer, therefore the K/A is met.

ANSWER CHOICE ANALYSIS

- A. Correct. On Unit 1 only, the MSL traps feed to the Turb B/P Lines Pumping Traps. Water could accumulate in both areas for Unit 1. Also, Unit 1 only has Hi Level Indication.
- B. Incorrect. See above.
- C. Incorrect. See above.
- D. Incorrect. See above.

Plausibility of distractors is based on each part of each answer being correct depending on which unit is being referenced.

REFERENCES

- 1. Lesson Plan STG-MSR, Moisture Separator Reheaters, Rev. 11.
- 2. Lesson Plan STG-MS, Main Steam, Rev. 9.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9		
					Answer:	A C D A D D B D C B	Scramble Range:	A - D
Tier:		2			Group:			1
Key Word:		WATER HAMMER STEAM			Cog Level:			C/A 2.9
Source:		N			Exam:			OC2006-301
Test:		R			Author/Reviewer:			MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

13. 041A3.01 001

Unit 1 initial conditions at 18:00 hrs:

- Power = 100 %
- TBVs are in automatic control

Conditions at 18:15 hours:

- WR RCS ICCM Train 'A' Pressure = 2455 psig
- WR RCS ICCM Train 'B' Pressure = 2455 psig

Current conditions at 18:16 hours:

- RCS Tavg = 553 °F and trending down
- No operator action has taken place

Which one of the following correctly states the status of the turbine bypass valve?

- A. TBV will control at setpoint + 125 psig. TBV should be open or throttling in the open direction.
- B. TBV will control at setpoint + 125 psig. TBV should be closed or throttling in the closed direction.
- C. TBV will control at setpoint + 0 psig. TBV should be open or throttling in the open direction.
- D. TBV will control at setpoint + 0 psig. TBV should be closed or throttling in the closed direction.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Steam Dump/Turbine Bypass Control

Ability to monitor automatic operation of the SDS, including: RCS T-ave. meter (cooldown rate).

K/A MATCH ANALYSIS

Question tests the ability to monitor RCS Tavg, notice a cooldown that was in excess of what was expected, and understand how TBV is designed to automatically bring temp back to setpoint, thereby bringing RCS Tavg back to where it should be.

ANSWER CHOICE ANALYSIS

A. Incorrect. See explanation below - TBV should be shutting, not opening. Plausible because if TBV were controlling at setpoint + 0 psig, then opening would be correct.

B. Correct. The DSS feeds ICS and tells it to control SG pressure at setpoint + 125psig. Setpoint + 125 = 1010 psig, which corresponds to a SG temp of 548F. The lesson plan states that this will maintain about 555 F for an approximate RCS Tavg. Therefore, with an RCS Tavg at 553 F, the SG Temps and Pressures will also be low and the TBV will need to close to bring pressure back to 1010 psig.

C. Incorrect. Plausible because with just a turbine trip, the TBV would control at setpoint + 0 psig. Applicant would need to have a misunderstanding about the status of the ICS control of TBV, but this could be possible.

D. Incorrect. Plausible because with just a turbine trip, the TBV would control at setpoint + 0 psig. Applicant would need to have a misunderstanding about the status of the ICS control of TBV, but this could be possible.

REFERENCES

1. ICS Lesson Plan, Integrated Master, Chapter 3, Rev. 8.
2. Lesson Plan IC-CRI, Control Rod Indication, Rev. 9a

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: B B D A C C D B C D	Scramble Range: A - D
Tier:	2		Group: 2		
Key Word:	TBV TURBINE ICS		Cog Level: C/A 3.2		
Source:	N		Exam: OC2006-301		
Test:	R		Author/Reviewer: MAB/RFA		

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

14. 054AA1.04 001

Which one of the following correctly describes Loss of Heat Transfer (LOHT) IF AT ANY TIME carryover step criteria for establishing HPI forced cooling?

- A. HPI is established AND no RCPs are running.
- B. SCM = 25 °F and decreasing AND Pressurizer level = 340 inches.
- C. MFW and AFW flow to both SGs = 0 gpm AND RCS pressure = 2200 psig.
- D✓ HPI is established AND MFW and AFW flow to both SGs = 0 gpm.

K/A

Loss of Main Feedwater / 4

Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): HPI, under total feedwater loss conditions.

K/A MATCH ANALYSIS

Identifying correct answer requires applicant to monitor HPI flow and AFW/MFW flow. Therefore, the question requires knowledge of the applicant related to monitoring HPI under a total loss of FW. Question was written in its current configuration to try to keep it at the memory level. If necessary, it could be revised at the C/A level.

ANSWER CHOICE ANALYSIS

- A. Incorrect. This is Rule 8 entry condition. Plausible because HPI is established and Rule 8 gives options for opening PORVs.
- B. Incorrect. SCM is not yet at zero. Plausible because Pressurizer level is at 340 inches, which is one of the criteria in the IAAT steps.
- C. Incorrect. RCS pressure must reach 2300 psig. Plausible because FW flow is zero. Also plausible because RCS pressure is one of the relevant parameters.
- D. Correct. See IAAT Page of LOHT procedure.

REFERENCES

1. EP/1/A/1800/001 E, EOP - LOHT, Rev. 034.
2. Lesson Plan, EAP-HPI CD, HPI Cooling Cooldown, Rev. 09.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	D C B A B C D A D D	Scramble Range: A - D
Tier:		1			Group:		1
Key Word:		LOHT HPI COOLDOWN			Cog Level:		MEM 4.4
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 055AG2.1.32 001

Unit 1 initial plant conditions:

- Reactor has tripped
- CT-1 Lockout received
- Keowee Unit 1 Emergency Locked Out
- Keowee Unit 2 Emergency Locked Out
- Blackout Tab of EOP in progress

Current conditions:

- Central Switchyard is energizing the Main Feeder Buses

Which one of the following actions is required per the Limits and Precautions of OP/0/A/1106/019 (Keowee Hydro At Oconee)?

- A. Within one hour align the emergency startup bus to share Unit 2's startup transformer.
- B. Within 24 hours align the emergency startup bus to share Unit 2's startup transformer.
- C. Within one hour BOTH Standby Buses must be energized from a Lee Combustion Turbine.
- D. Within 24 hours EITHER Standby Bus must be energized from a Lee Combustion Turbine.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Station Blackout / 6

Ability to explain and apply all system limits and precautions.

K/A MATCH ANALYSIS

Question tests knowledge of Limits/Precautions that apply during a Station Blackout.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Time requirements from TS 3.8.1, Condition A are incorrect. Per TS 3.8.1, Condition A, this would be correct for inoperable startup transformer. Plausible because this action would be correct for inoperable startup transformer.
- B. Incorrect. Time requirements from TS 3.8.1, Condition A are incorrect. Plausible because this action would be correct for inoperable startup transformer and the time is the same as if only the Keowee underground was OOS.
- C. Correct. Limits and Precautions of OP/0/A/1106/019 (Keowee Hydro At Oconee) states: If both Power Paths become inoperable, within one hour, the Standby Buses must be energized from the Lee Combustion Turbine per OP/0/A/1107/003 (100 KV Power Supply).
- D. Incorrect. Per TS 3.8.1, if only the Keowee underground was OOS, this would be correct.

Plausibility is based on actions and time requirements from Tech Specs, but many of the Precautions/Limitations are rooted in Tech Specs also. Therefore, the under prepared applicant may choose one of the distractors.

REFERENCES

- 1. Tech Spec 3.8.1, AC Sources - Operating.
- 2. OP/0/A/1106/019, Keowee Hydro at Oconee, Rev. 072.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: C A D B D A B D B C	Scramble Range: A - D
Tier:	1		Group:	1	
Key Word:	BLACKOUT BO		Cog Level:	MEM 3.4	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	OCONEE/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 056AK3.02 001

Unit 1 conditions:

- Operators have just entered AP/1/A/1800/001 B, Blackout
- RCS $T_{\text{cold}} = 560$ °F
- Operators have just completed the step where they have verified 100 gpm EFDW is being fed to each SG

Which one of the following states the how RCS T_{cold} is required to be controlled and why it is controlled in that manner?

- A. The RCS is required to be cooled to 550 °F as indicated by T_{cold} .
Cooldown should be temporarily halted at 550 °F to allow the reactor vessel head temperature to equalize with the RCS temperature.
- B. The RCS is required to be cooled to 550 °F as indicated by T_{cold} .
Cooldown should be halted at 550 °F because further cooldown could empty the pressurizer and disrupt natural circulation.
- C. Attempt to stabilize RCS T_{cold} at 560 °F.
Cooldown could void the hot legs and reactor vessel head.
- D. Attempt to stabilize RCS T_{cold} at 560 °F.
Doing a natural circulation cooldown would require opening reactor vessel head vents, which do not have power during a blackout event.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Loss of Off-site Power / 6

Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Actions contained in EOP for loss of offsite power.

K/A MATCH ANALYSIS

Knowledge of the reasons for stabilizing RCS temp during a station blackout event are being tested. The said actions are part of the Blackout Tab in the EOPs.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Cooldown is not halted for head temp stabilization. Plausible because stabilization at 550 F is required by procedure. Also plausible because head voiding is something that does happen when cooling down via natural circulation.
- B. Correct. See referenced lesson plan, Page 10 of 32.
- C. Incorrect. RCS is required to be cooled to 550 F iaw Blackout procedure. Plausible because a correct reason is provided. See Page 10 of referenced lesson plan and Page 1 of referenced procedure.
- D. Incorrect. RCS is required to be cooled to 550 F iaw Blackout procedure. Plausible because a correct reason is provided. See Page 10 of referenced lesson plan and Page 1 of referenced procedure.

REFERENCES

- 1. EP/1/A/1800/001 B, EOP - Blackout, Rev. 034.
- 2. Lesson Plan BO, Blackout, Rev. 06.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: B C B D B D A B D B Scramble Range: A - D

Tier:	1	Group:	1
Key Word:	LOOP BO BLACKOUT	Cog Level:	C/A 4.4
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

17. 058AK3.01 001

Initial conditions:

- All three units at 50% power
- Safety Bus 1TC is de-energized
- KHU-1 is not running
- KHU-1 is aligned to the underground

Current conditions:

- PCB 8 and 9 trip open and do not reclose

Which one of the following correctly describes the status of KHU-1?

- A. KHU-1 will not start if called upon.
- B. KHU-1 will start and run if called upon. Control power will be supplied by Battery #1, with Battery Charger #1 not in service.
- C. KHU-1 will start and run if called upon. Control power will be supplied by Battery #1. Battery Charger #1 can be manually aligned to ONS 4160V bus.
- D. KHU-1 will start and run if called upon. Control power will be supplied by ONS 4160V bus indefinitely.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Loss of DC Power / 6

Knowledge of the reasons for the following responses as they apply to the loss of DC Power:
Use of dc control power by D/Gs.

K/A MATCH ANALYSIS

Normal supply to the DC Bus for the KHU is via a Battery Charger. The stem takes this power source away and tests knowledge of dc control power supply. The reasons for the responses are tested implicitly by testing if the applicants understand that there is an uninteruptable power supply provided by the battery.

ANSWER CHOICE ANALYSIS

A. Incorrect. KHU will start. Plausible if applicant thinks that control power is not available.

B. Correct. Control power will be provided by batteries. KHU BC gets power from 1XA which gets power either from KHU output or SWYD via PCB 8 or 9. Therefore, the BC is no longer supplying.

C. Incorrect. According to Page 30 of 34 of the EL-KHG lesson plan, the batteries KHG can operate on the batteries for approx 1 hour. Plausible because if applicant does not know which plant bus supplies the KHU, then this could be misconstrued as correct.

D. Incorrect. KHU would normally be supplied from 1TC via an auto swap. 1TC is de-energized, removing this as an option. Plausible because all other plant 4160 V buses are energized, so if they think that it is fed from another bus this could be a correct answer.

REFERENCES

1. Lesson Plan EL-KHG, Keowee Hydro Generators, Rev. 15.
2. Lesson Plan EL-DCD, DC Power Distribution, Rev. 11c.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9		
					Answer:	B A C B B A B A D D	Scramble Range:	A - D
Tier:		1			Group:			1
Key Word:		KEOWEE CONTROL POWER			Cog Level:			C/A 3.4
Source:		N			Exam:			OC2006-301
Test:		R			Author/Reviewer:			MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

18. 059A4.01 001

The following Unit 3 conditions exist:

<u>Time</u>	<u>FWP Suction Pressures (psig)</u>			<u>'A' FWP Brq Oil Pressure (psig)</u>		
	<u>P1</u>	<u>P2</u>	<u>P3</u>	<u>P1</u>	<u>P2</u>	<u>P3</u>
10:00:00	236 lowering	235 lowering	236 lowering	3.9	5.1	5.2
10:00:01	235 lowering	234 lowering	235 lowering	3.8	5.1	5.2
10:00:16	230 stable	231 stable	229 stable	3.7	5.1	5.2
10:00:31	235 rising	235 rising	234 rising	3.7	5.1	5.2
10:00:32	236 rising	236 rising	236 rising	3.7	5.1	5.2

- Current time is 10:00:33.

Which one of the following correctly describes the current status of the FWP alarms?

- A. Alarms FWPT A TRIP and FWPT B TRIP do not annunciate AND FWPT A BEARING OIL PRESSURE LOW annunciates.
- B. Alarms FWPT A TRIP and FWPT B TRIP annunciate AND FWPT A BEARING OIL PRESSURE LOW annunciates.
- C. Alarms FWPT A TRIP and FWPT B TRIP do not annunciate AND FWPT A BEARING OIL PRESSURE LOW does not annunciate.
- D. Alarms FWPT A TRIP and FWPT B TRIP annunciate AND FWPT A BEARING OIL PRESSURE LOW does not annunciate.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Main Feedwater

Ability to manually operate and monitor in the control room: MFW turbine trip indication.

K/A MATCH ANALYSIS

The conditions given in the question are adequate indications for the operator to determine that the FWPT TRIP alarms should annunciate.

ANSWER CHOICE ANALYSIS

- A. Incorrect. The FWP TRIP alarms will annunciate and the FWPT BRG alarm will not annunciate. Plausible because the BRG OIL LO P alarm will annunciate on 2/3 channels less than 5 psig. Also plausible because Units 1 and 2 have a 90 second time delay on the low suction pressure trip, which is different than the 30 second time delay on Unit 3.
- B. Incorrect. FWPT BRG alarm will not annunciate. Plausible because first part of answer choice is correct and the BRG OIL LO P alarm will annunciate on 2/3 channels less than 5 psig.
- C. Incorrect. FWPT TRIP alarms will annunciate. Plausible because BRG OIL LO P alarm will not annunciate.
- D. Correct. Both pumps will trip due to suction pressure being less than 235 for > 30 seconds. The BRG OIL LO P alarm will only annunciate with p<5 on 2/3 channels.

REFERENCES

1. OP/3/A/6103/008, Alarm Response Guide 3SA-08, Windows A3, A6, & B5, Rev. 015.
2. Lesson Plan CF-FPT, Main Feedwater Pump Turbines, Rev. 14a.
3. Lesson Plan, CF-FDW, Feedwater System, Rev. 14.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9		
					Answer:	D C C D D A D D B A	Scramble Range:	A - D
Tier:		2			Group:			1
Key Word:		FWP MFWP MFW TRIP			Cog Level:			C/A 3.1
Source:		N			Exam:			OC2006-301
Test:		R			Author/Reviewer:			MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

19. 059AK2.01 001

The following events and actions occur:

- TBS pumps are running
- 1RAI-54 (TBS) alarms
- AP/1/A/1700/018, Abnormal Release of Radioactivity, has just been entered

Per AP/1/A/1700/018, which one of the following correctly describes the automatic or procedurally directed actions for TBS pumps and other radioactive releases that may be in progress?

- A✓ TBS pumps will automatically trip.
All other LWRs must be stopped. Any GWRs may continue.
- B. TBS pumps will automatically trip.
All other LWRs and GWRs must be stopped.
- C. TBS pumps will not automatically trip. Their breakers must be manually opened and white tags hung.
All other LWRs must be stopped. Any GWRs may continue.
- D. TBS pumps will not automatically trip. Their breakers must be manually opened and white tags hung.
All other LWRs and GWRs must be stopped.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Accidental Liquid Radwaste Rel. / 9

Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following: Radioactive-liquid monitors.

K/A MATCH ANALYSIS

RIA-54 would not be an expected alarm. Therefore, upon an unexpected radioactive contaminant situation in the TBS, the TBS pumps will receive a trip signal from RIA-54. This question tests the applicant's knowledge of this interrelation between the RIA and the tripping of the TBS pumps.

ANSWER CHOICE ANALYSIS

A. Correct. See referenced lesson plan and AP. The pumps will trip on RIA-54 alarm and only the LWRs must be stopped.

B. Incorrect. Plausible because it is reasonable to think that maybe both GWRs and LWRs are required to be stopped.

C. Incorrect. Plausible that the pumps will not auto trip because the AP gives instruction to manually open the breakers.

D. Incorrect. See above distractor analyses.

REFERENCES

1. Lesson Plan RAD-RIA, Radiation Indicating Alarms, Rev 08a.
2. AP/1/A/1700/018, Abnormal Release of Radioactivity, Rev. 14.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: A D A D A A A D B A	Scramble Range: A - D
Tier:	I		Group:	2
Key Word:	RIA-54 TBS PUMPS		Cog Level:	MEM 2.7
Source:	N		Exam:	OC2006-301
Test:	R		Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

20. 060AA1.01 001

The following Unit 1 conditions exist:

- 1RIA-13 (Waste Disposal Control Area Monitor) ALERT LED annunciates.

Which one of the following correctly describes the indications that the operators will observe in the control room?

- A. The associated computer point turns red.
AREA MONITOR RADIATION HIGH annunciates.
- B. The associated computer point turns red.
AREA MONITOR RADIATION HIGH does not annunciate.
- C. The associated computer point does not turn red.
AREA MONITOR RADIATION HIGH annunciates.
- D. The associated computer point does not turn red.
AREA MONITOR RADIATION HIGH does not annunciate.

UTILITY NEEDS TO SUPPLY REFERENCES TO SUPPORT QUESTION.

THIS QUESTION SHOULD WORK, BUT I DO NOT HAVE ENOUGH INFORMATION TO DETERMINE WHICH ANSWER IS CORRECT. I MAY NEED TO CHANGE red TO yellow, BASED ON WHAT THE UTILITY TELLS ME AFTER THEY RUN IT ON SIMULATOR.

K/A

Accidental Gaseous Radwaste Rel. / 9

Ability to operate and / or monitor the following as they apply to the Accidental Gaseous Radwaste: Area radiation monitors.

K/A MATCH ANALYSIS

The accidental release is indicated by the Area Rad Monitor. Applicants must have knowledge of the inputs to their indications in order to have the ability to effectively monitor.

ANSWER CHOICE ANALYSIS

- A. One of these answers is correct. Utility needs to supply reference material.
- B.
- C.
- D.

REFERENCES

1. Lesson Plan RAD-RIA, Radiation Indicating Alarms, Rev. 08a.
2. PT/0/A/0230/001, Rev. 141.
3. OP/1/A/6101/008, Alarm Response Guide 1SA-08; Window A-9; AREA MONITOR RADIATION HIGH, Rev. 16.
4. OP/1/A/6101/008, Alarm Response Guide 1SA-08; Window B-9; PROCESS MONITOR RADIATION HIGH, Rev. 16.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer:

Scramble Range: A - D

Tier: 1

Group: 2

Key Word: AREA RADIATION

Cog Level: MEM 2.8

Source: N

Exam: OC2006-301

Test: R

Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

21. 061A1.05 001

After a 200 day production run the following Unit 2 conditions are present:

- A reactor trip has just occurred
- The 'A' Motor Driven EFW Pump (MDEFW) Recirc Control Valve has failed open
- Steam Generator Pressures in both SGs are approximately 1000 psig
- The Turbine Driven EFW (TDEFW) Pump is running
- FDW-315 and FDW-316 are full open due to an indicated low SG level in both SGs

Which one of the following correctly states the observable changes that will occur on the EFW flow transmitters and correctly states the pump flow condition with respect to maximum design flow? (Assume no operator actions)

- A. The 'A' MDEFW Pump amps will lower. 'A' Pump runout conditions will occur if the TDEFW Pump trips with the plant in this condition.
- B. The 'A' MDEFW Pump amps will remain approximately constant. 'A' Pump runout conditions will occur if the TDEFW Pump trips with the plant in this condition.
- C. The 'A' MDEFW Pump amps will rise. 'A' Pump runout conditions will occur.
- D. The 'A' MDEFW Pump amps will rise. 'A' Pump runout conditions will not occur.

K/A

Auxiliary/Emergency Feedwater

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: AFW flow/motor amps.

K/A MATCH ANALYSIS

AFW flow will change with a failure in the recirc line. The applicant must be able to correctly predict the change in EFW flow, hence pump amps, when the recirc fails. This is requisite knowledge to correctly monitor AFW. Pump runout is a design consideration that is being tested. If the TDEFW pump were not running and SG pressures were < 800 #, then runout could become a concern.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Flow thru the pump will rise and amps will rise. Plausible because applicant may not think that the recirc valve would have much of an impact on amps. Pump runout could occur if TDEFW pump trips and SG pressures lower.
- B. Incorrect. See analysis for 'A'.
- C. Incorrect. See analysis for 'A' and 'D'.
- D. Correct. According to the lesson plan, the 'A' SG will not get robbed of flow with the TDEFWP running. Also according to the lesson plan, the pump flow will not approach runout conditions with a SG pressure above 800 psig.

REFERENCES

1. Lesson Plan CF-EF, Emergency Feedwater, Rev. 21.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D C B C B A B C C D Scramble Range: A - D
Tier: 2 Group: 1
Key Word: EFW PUMP EFWP AFW Cog Level: C/A 3.6
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

22. 061A3.03 001

The following Unit 3 conditions exist following operation at 100% power:

- Operators are running the plant back due Main Feedwater problems
- The Moore 353 Hand/Auto Control Stations are in their normal configuration
- All EFW Pumps in normal alignment
- All RCPs are running
- 'A' MFW Pump Discharge Pressure = 770 psig
- 'B' MFW Pump Discharge Pressure = 755 psig
- 'A' SG Level drops to 20 inches for 35 seconds on two XSUR channels
- 'B' SG Level drops to 15 inches for 30 seconds on one XSUR channel
- Primary power is lost to the FDW-315 Moore 353 Hand/Auto Control Station
- Operators have just completed IMAs following a reactor trip

Which one of the following correctly states the EFW pump status and SG level control status?

- A. All three EFW Pumps will be running. SG level will be controlled at 30 inches XSUR for both SGs.
- B. All three EFW Pumps will be running. SG level will be controlled at 30 inches XSUR for the 'B' SG, but not for the 'A' SG.
- C. Both Motor Driven EFW Pumps will be running and the Turbine Driven EFW Pump will be off. SG level will be controlled at 30 inches XSUR for both SGs.
- D. Both Motor Driven EFW Pumps will be running and the Turbine Driven EFW Pump will be off. SG level will be controlled at 30 inches XSUR for the 'B' SG, but not for the 'A' SG.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Auxiliary/Emergency Feedwater

Ability to monitor automatic operation of the AFW, including: AFW S/G level control on automatic start.

K/A MATCH ANALYSIS

Applicant must have knowledge of auto AFW operation to know which pumps auto start and how the level controllers respond to the given plant conditions.

ANSWER CHOICE ANALYSIS

A. Correct. AMSAC will start all three EFWPs when both trains of FW reach 770 psig. Also, when primary power is lost to the Moore controller, the power supply will automatically swap to the backup. Therefore, both SGs will be controlled at 30 inches XSUR because RCPs are running.

B. Incorrect. As stated above, the 'A' SG will also be controlled at 30 inches. Plausible if applicant does not know how controller responds to power failure.

C. Incorrect. All three EFW pumps will start on AMSAC signal. Plausible because low SG levels will only start the MDEFWPs and the second part of the answer choice is correct.

D. Incorrect. When primary power is lost to the Moore controller, the power supply will automatically swap to the backup and allow control at 30 inches for both SGs. Plausible if applicant does not know how controller responds to power failure.

REFERENCES

1. Lesson Plan Feedwater System, Rev. 14.
2. Lesson Plan CF-EF, Emergency Feedwater, Rev. 21.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A C D B B B C A B D	Scramble Range: A - D
Tier:		2			Group:		1
Key Word:		EFW PUMP EFWP AFW			Cog Level:		C/A 3.9
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

23. 062A2.07 001

The following Oconee conditions exist:

- Unit 1 is at 100 MWe
- An operator inadvertently opened the electrical disconnect feeding Startup Transformer CT-1

Which one of the following correctly describes the plant response and operator required actions?

- A✓ The reactor trips.
AP-11, Recovery From Loss of Offsite Power, shall be utilized.
- B. The reactor does not trip.
AP-11, Recovery From Loss of Offsite Power, shall be utilized. Use of OP/1/A/1107/004, Operation of the Vital Bus, Computer, ICS, and Auxiliary Inverters is not required.
- C. The reactor trips.
EOP Enclosure 5.38, Restoration of Power, shall be utilized.
- D. The reactor does not trip.
AP-11, Recovery From Loss of Offsite Power, shall be utilized in conjunction with OP/1/A/1107/004, Operation of the Vital Bus, Computer, ICS, and Auxiliary Inverters.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

AC Electrical Distribution

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of opening a disconnect under load.

K/A MATCH ANALYSIS

Consequences of opening an MOD underload (CT-4 S/U XFRM FEED) is that it trips the reactor.

ANSWER CHOICE ANALYSIS

- A. Correct. The reactor will trip because the SU transformer is being used when the generator is putting out only 100 MWe. They do not swap power supplies until ~200 MWe. AP-11 would be used because power automatically is restored.
- B. Incorrect. The reactor will trip.
- C. Incorrect. The reactor will trip, but EOP Enclosure 5.38 would only be used if power did not automatically come back. Enc 5.38 would be needed only when power must be manually restored.
- D. Incorrect. The reactor does trip.

Distractors are plausible because Enc. 5.38 would be used if power did not automatically restore and the OP is used in conjunction with the AP, but in answer choice D - the reactor trip portion is incorrect.

REFERENCES

- 1. AP/1/A/1700/011, Recovery From Loss of Power, Rev. 38.
- 2. EOP Enclosure 5.38, Rev. 34.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: A D A A B B B C D A	Scramble Range: A - D
Tier:	2		Group:		
Key Word:	OPENING DISCONNECT		Cog Level:	MEM 3.0	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

1
MEM 3.0
OC2006-301
MAB/RFA
CIA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

24. 062A4.03 001

Operators are preparing to parallel KHU-1 to the grid. The operator notes the following indications:

- Keowee 1 Line Volts = 13.8 kV
- Keowee 1 Output Volts = 12.2 kV
- Grid Frequency = 60 cycles
- Keowee Frequency = 58 cycles

Based on the above conditions, which one of the following correctly describes the synchroscope indication and trip signals to ACB 1 and 2?

- A. The synchroscope will be rotating in the clockwise direction. ~~ACB 1 and 2 will not~~ receive a trip signal as a direct result of the line voltage differential.
- B. The synchroscope will be rotating in the clockwise direction. After 5 seconds ACB 1 and 2 will receive a trip signal as a result of the line voltage differential.
- C. The synchroscope will be rotating in the counterclockwise direction. ~~ACB 1 and 2~~ will not receive a trip signal as a direct result of the line voltage differential.
- D✓ The synchroscope will be rotating in the counterclockwise direction. After 5 seconds ACB 1 and 2 will receive a trip signal as a result of the line voltage differential.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

UTILITY NEEDS TO VERIFY THAT VOLTAGES GIVEN IN THE STEM WILL ACTUALLY CAUSE THE BREAKER TRIP SIGNAL TO BE GENERATED.

K/A

AC Electrical Distribution

Ability to manually operate and/or monitor in the control room: Synchroscope, including an understanding of running and incoming voltages.

K/A MATCH ANALYSIS

Question requires knowledge of incoming and running voltages and synch scope indication.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Synch scope would rotate in CCW direction. ACB 1 and 2 would actually trip as a result of Voltage being > 10% lower than normal (13.8 Kv).
- B. Incorrect. Synch scope would rotate in CCW direction. ACB 1 and 2 would actually trip as a result of Voltage being > 10% lower than normal (13.8 Kv).
- C. Incorrect. Out of tolerance circuit protection will trip ACB 1/2 after 5 seconds because the voltage is more than 10% below normal.
- D. Correct. Keowee frequency is lower than grid so synchscope will be spinning backwards (CCW). Out of tolerance circuit protection will trip ACB 1/2 after 5 seconds because the voltage is more than 10% below normal.

Plausibility is based on memorizing the ACB auto trip feature and correctly calculating less than 10% normal voltage. Also, plausibility is hinged on the applicant knowing how the synch scope will respond to the frequency differential.

REFERENCES

1. Lesson Plan EL-KHG, Keowee Hydro Generators, Rev. 15.
2. OP/0/A/1106/019, Keowee Hydro At Ocone, Rev. 72.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: D A C A A D B C B C	Scramble Range: A - D
Tier:	2		Group:	1	
Key Word:	SYNCH SCOPE KEOWEE		Cog Level:	C/A 2.8	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

25. 063K2.01 001

Unit 3 is operating at 100% power when the following occurs:

- Electrical buses 3DIA and 3KVIA immediately de-energize due to 3ADA #2 isolating due to a diode circuit failure.

Which one of the following correctly states the effect on the turbine and RCPs?

- A. The main turbine trips due to a loss of 24 VDC which deenergizes the pilot solenoids and repositions the master trip solenoid. RCP 3A1 and 3B1 do not trip.
- B. The main turbine trips due to a loss of 24 VDC which deenergizes the pilot solenoids and repositions the master trip solenoid. RCP 3A1 and 3B1 trip.
- C. The main turbine trips due to a loss of 125 VDC to EHC which trips the turbine by energizing the 24 VDC trip bus. RCP 3A1 and 3B1 do not trip.
- D✓ The main turbine trips due to a loss of 125 VDC to EHC which trips the turbine by energizing the 24 VDC trip bus. RCP 3A1 and 3B1 trip.

K/A

DC Electrical Distribution

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

K/A MATCH ANALYSIS

Loss of the DC bus has an effect on the turbine by causing it to trip via EHC losing power. Therefore, the applicant must know that the EHC loses power with a loss of DCA bus and how that loss of power affects the plant.

ANSWER CHOICE ANALYSIS

- A. Incorrect. See 'B' and 'C' below.
- B. Incorrect. Plausible because 24 VDC is stated as being lost in this instance, whereas the correct answer states that the 24 VDC trip bus is energized. See Lesson Plan STG-EHC page 20 of 69 (top of page) for background information to support plausibility.
- C. Incorrect. Plausible because 2 Unit 1 RCPs would trip.
- D. Correct. The loss of DCA bus causes a loss of DIA which causes a loss of power to EHC (see EL-DCD page 27 of 51). This event occurred at Oconee and is explained on page 45 of 51. Unit 3 differs slightly from Unit 1 wrt RCPs tripping. Unit 3 RCPs will trip on a loss of DCA. Lesson plan STG-EHC, Page 20 of 69 discusses EHC trips on loss of 125 VDC.

REFERENCES

1. Lesson Plan STG-EHC, Electrohydraulic Turbine Control, Rev. 12.
2. Lesson Plan EL-DCD, DC Power Distribution, Rev. 11c.
3. Oconee Electrical Exam Bank Question 45, EL021201.

MCS Time: 1 Points: 1.00

Version: 0 1 2 3 4 5 6 7 8 9

Answer: DCDAADCCAA

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	2	Group:	1
Key Word:	EHC LOSS OF DC LOADS	Cog Level:	C/A 2.9
Source:	M	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 064A1.03 001

- Operators are performing PT/0/A/0620/009, Keowee Hydro Operation
- Operators are using KHU-1 and supplying power through CT-4
- CT-4 has a precaution not to exceed 22.4 MVA

Which one of the following correctly describes how the operators can monitor to ensure that the MVA limit is not exceeded?

- A ✓ Ensure that the CT-4 incoming line meter on SY Mimic Board is indicating less than 830 amps.
- B. Ensure that the CT-4 incoming line meter on 1AB1 is indicating less than 835 amps.
- C. Ensure that the MWs and MVs on incoming line meter on SY Mimic Board are reading less than 14.
- D. Ensure that the MWs and MVs on CT-4 MW/MV meter on 1AB1 are reading less than 15.

K/A

Emergency Diesel Generator

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: Operating voltages, currents, and temperatures.

K/A MATCH ANALYSIS

CT-4 is the feed from the KHU to the plant via the "underground". There is a design limit of 22.4 MVA, which is monitored as described in the correct answer. Therefore, the question is testing knowledge of the monitoring of design limits associated with the KHU.

ANSWER CHOICE ANALYSIS

- A. Correct. See referenced lesson plan Page 28 of 34 and referenced PT page 3 of 7.
- B. Incorrect. Plausible because 835 amps is the number given in the lesson plan, although the procedure P&L states 830 amps.
- C. Incorrect. Plausible because the limit (14) is correct, but the location of where to monitor it is incorrect.
- D. Incorrect. Plausible because the location of where to monitor for MW and MVs is correct, but the limit (15) is incorrect.

REFERENCES

1. PT/0/A/0620/009, Keowee Hydro Operation, Rev. 035.
2. Lesson Plan EL-KHG, Keowee Hydro Generators, Rev. 15.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D C D A D A B C A

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	2	Group:	1
Key Word:	KEOWEE CT-4 LIMITS	Cog Level:	MEM 3.2
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. 065AA1.05 001

Unit 1 initial conditions:

- 100% power
- Instrument Air Pressure lowering
- Operators entered AP/1/A/1700/022, Loss of Instrument Air

Current conditions:

- FDW Pump Δ P OAC alarms actuate

Which one of the following correctly describes the actions required by AP/1/A/1700/022, based on the provided plant conditions?

- A. Commence a plant shutdown. If at any time two or more CRD temperatures are > 180 °F, then trip the reactor.
- B. Commence a plant shutdown. If at any time SG level approaches main FDW pump trip criteria, then trip the reactor.
- C. Manually trip the reactor. Manually trip both main FDW pumps.
- D. Manually trip the reactor. Manual trip of both main FDW pumps is not needed because each pump will trip on high SG level.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Loss of Instrument Air / 8

Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air:
RPS

K/A MATCH ANALYSIS

Question tests knowledge of when to trip the reactor during a loss of IA event. Therefore, the question tests knowledge of the ability to operate the RPS, via tripping reactor, when a loss of instrument air occurs.

ANSWER CHOICE ANALYSIS

A. Incorrect. See "B" analysis below.

B. Incorrect. AP requires reactor to be tripped when FDW is not controllable. The OAC alarm actuates at about 30 psig, well below the ~70 psig where FDW valves stop responding to control signals. Therefore, the reactor must be tripped at this point - actually the reactor should probably have been tripped well before this point. Plausible because the applicants need to know when the OAC alarm actuates. Also plausible because the second piece of the answer choice is correct.

C. Correct. See referenced SAEL and Page 3 of the AP. The OAC alarm provided in the stem will annunciate at about 30 psig IA header pressure. This is well below the point where instrument air is able to control FW valves. Therefore, the AP requires that the reactor be tripped and the MFDW pumps to be tripped.

D. Incorrect. AP requires MFDW pumps to be tripped immediately after the reactor is tripped. Plausible because the MFDW pumps will auto trip on high SG level.

REFERENCES

1. AP/1/A/1700/022, Loss of Instrument Air, Rev. 021.
2. Lesson Plan SSS-IA, Instrument Air System, Rev. 16.
3. Simulator Guide, SAE-L 035, Loss of Instrument Air, Rev. 8.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	Answer: C C A A A D A B D C	Scramble Range: A - D
Tier:	1		Group:	1	
Key Word:	LOSS OF AIR IA INSTR		Cog Level:	C/A 3.3	
Source:	N		Exam:	OC2006-301	
Test:	R		Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

3. 072K5.01 001

The following unit 1 conditions exist:

- Power is 15% and slowly increasing to 100%
- The 'A' steam generator has a small tube leak which is not growing (size is constant)
- A fuel cladding failure has just occurred in the reactor and is growing in size

Which one of the following correctly describes radiation monitoring of the main steam lines in the presence of the above plant conditions?

- A. RIA-16 and 17 (Main Steam Line Monitors) indication will continue to rise.
- B. RIA-59 and 60 (N-16 monitors) will indicate a constant valid leak size as power is raised.
- C. RIA-59 and 60 (N-16 monitors) tube leak size will match the tube leak size of RIA-40 (CSAE Offgas) during the entire power increase.
- D. RIA-59 and 60 (N-16 monitors) tube leak size will match the tube leak size of RIA-40 (CSAE Offgas) once power is raised 5%.

K/A

Area Radiation Monitoring (ARM) System

Knowledge of the operational implications of the following concepts as they apply to the ARM System: Radiation theory, including sources, types, units, and effects.

K/A MATCH ANALYSIS

The applicant must have knowledge of the theory of how the various rad monitors work to detect the SGTL. RIA-16 and 17 are Area Monitors which are sensitive to all radiation, even that from a fuel failure, so they will respond as the fuel leak keeps getting bigger, whereas the N-16s will not. Therefore theory, types, sources, and effects of Area Monitors are all being tested (almost all aspects of K/A).

ANSWER CHOICE ANALYSIS

- A. Correct. Page 35 of 48 of referenced lesson plan states that RIA-16 and 17 will respond to all activity, even a change in RCS activity, which the stem provides with a degrading fuel failure.
- B. Incorrect. From 15% to 20% the OAC will display an invalid leakrate.
- C. Incorrect. RIA-40 will be affected by the fuel failure, whereas N-16s will not.
- D. Incorrect. RIA-40 will be affected by the fuel failure, whereas N-16s will not.

Plausibility is based on knowing how these detectors will respond and under what conditions they will provide valid indication.

REFERENCES

1. Lesson Plan RAD-RIA, Radiation Indicating Alarms, Rev. 08a.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A C B A D A B D B D Scramble Range: A - D
Tier: 2 Group: 2
Key Word: RIA AREA RAD MONITOR Cog Level: C/A 2.7
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

4. 073A1.01 001

The following Unit 1 conditions exist:

- Reactor Building Monitor RIA-49 (Normal Gas) indicates in the middle of its indicating range and the indication is steadily rising.

Which one of the following correctly describes the process radiation monitor response as a result of the RIA-49 indication continuing to rise?

- A. RIA-49A (High Gas) will indicate zero until RIA-49 switchover criteria is met. After switchover RIA-49A output will control the LWD-2 (RB Normal Sump Isolation) interlock.
- B. RIA-49A (High Gas) will indicate zero until RIA-49 switchover criteria is met. After switchover RIA-49 output will control the LWD-2 (RB Normal Sump Isolation) interlock.
- C. RIA-49A (High Gas) will track with RIA-49 until switchover criteria is met. After switchover RIA-49A output will control the LWD-2 (RB Normal Sump Isolation) interlock.
- D. RIA-49A (High Gas) will track with RIA-49 until switchover criteria is met. After switchover RIA-49 output will control the LWD-2 (RB Normal Sump Isolation) interlock.

K/A

Process Radiation Monitoring

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including: Radiation levels.

K/A MATCH ANALYSIS

Radiation levels are rising and about to exceed the limit which will cause RB sump auto isolation. PRM indication between RIA-49 and 49A will change as the rad levels continue to go up. Knowledge of how these indications change is necessary in order to correctly answer the question.

ANSWER CHOICE ANALYSIS

- A. Correct. See lesson plan.
- B. Incorrect. RIA-49 will indicate zero after switchover criteria is met.
- C. Incorrect. RIA-49A does not track with RIA-49.
- D. Incorrect. RIA-49 will indicate zero after switchover criteria is met.

Plausibility is based on knowing how these PRMs will respond to increasing rad levels and how the control auto close features receive their input signal when the PRM limit is reached.

REFERENCES

1. Lesson Plan RAD-RIA, Radiation Indicating Alarms, Rev. 08a.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B A C A A D A D B Scramble Range: A - D
Tier: 2 Group: 1
Key Word: RIA-49 PRM RADIATION Cog Level: MEM 3.2
Source: N Exam: OC2006-301
Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

5. 076K1.08 001

Unit 1 is in normal decay heat removal mode with 5700 gpm LPSW flow through the operating LPI Cooler. In order to raise the RCS cooldown rate, the operator begins raising LPSW flow.

Which one of the following correctly states how cooldown rate is affected by continuing to raise LPSW flow?

- A. RCS cooldown rate can be increased until LPSW flow through the LPI Cooler reaches 5900 gpm, at which time installed travel stops prevent the LPSW flow control valves from opening any further.
- B. RCS cooldown rate can be increased until LPSW flow through the LPI Cooler reaches 6000 gpm, at which time installed travel stops prevent the LPSW flow control valves from opening any further.
- C. RCS cooldown rate can be increased until LPSW flow to the LPI coolers reaches 5900 gpm, at which time LPSW flow automatically runs back to 5200 gpm.
- D. RCS cooldown rate can be increased until LPSW flow to the LPI coolers reaches 6000 gpm, at which time LPSW flow automatically runs back to 5200 gpm.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Service Water

Knowledge of the physical connections and/or cause-effect relationships between the SWS and the following systems: RHR system.

K/A MATCH ANALYSIS

The LPSW flow control valves will automatically reduce LPSW flow through the LPI Cooler to prevent exceeding the LPI cooler shell design flow. Therefore, the question requires the applicant to have knowledge of LPI Cooler constraints associated with attempting to raise LPSW flow to raise RCS cooldown rate.

ANSWER CHOICE ANALYSIS

A. Incorrect. Travel stops prevent exceeding operability limit of 7500 gpm (see page 15 of Lesson Plan SSS-LPW). Plausible because travel stops do exist and 5900 gpm is associated with the auto runback.

B. Incorrect. Travel stops prevent exceeding operability limit of 7500 gpm (see page 15 of Lesson Plan SSS-LPW). Plausible because travel stops do exist and 6000 gpm is associated with design flow limit.

C. Correct. See OP/1/A/1104/004B Precaution and Limitation 2.15 and Lesson Plan SSS-LPW, Pages 14 and 15.

D. Incorrect. Auto runback will occur at 5900 gpm. Plausible because shell design flow is 6000 gpm.

REFERENCES

1. Lesson Plan SSS-LPW, Low Pressure Service Water, Rev. 16.
2. OP/1/A/1104/004B, LPI System Fill and Startup, Rev. 15.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C B A A C B C B B B	Scramble Range: A - D
Tier:		2			Group:		1
Key Word:		LPI RHR DHR LPSW SWS			Cog Level:		MEM 3.5
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

6. 078K3.02 001

The following Unit 4 conditions exist:

- Unit 1 is in Mode 4
- Instrument Air Pressure = 0 psig

Which one of the following correctly states which instrument will continue to function on the complete loss of instrument air?

- A. LPI DISCH HDR PRESS (A&B)
- B. FWP DISCH LINE PRESS
- C. DECAY HEAT LINE PRESS
- D. CC TOTAL FLOW

I stated that instrument air press = 0 to prevent any confusion of losing inst air and then having the header supplied by service air. Mode 4 was mentioned because feedwater and dhr could both be in service on a cooldown, which may add more plausibility to distractors.

K/A

Instrument Air

Knowledge of the effect that a loss or malfunction of the IAS will have on the following:
Systems having pneumatic valves and controls.

K/A MATCH ANALYSIS

The CCW system has pneumatic valves and controls. The applicant must have knowledge of CCW instrumentation that is fed by instrument air. The effect on the CCW System is that it does not lose indication when instrument air goes to zero because it is backed up by aux instrument air. The question was written 'as is' to keep it memory level. The consequences of losing CCW flow is that the CCW standby pumps will start on low flow.

ANSWER CHOICE ANALYSIS

- A. Incorrect.
- B. Incorrect.
- C. Incorrect.
- D. Correct. See AP/1/A/1700/022, Enclosure 5.3.

Plausibility of distractors is based on the fact that all of those instruments are fed by Inst Air. Distractors are incorrect because they are not backed up by AIA.

REFERENCES

1. AP/1/A/1700/022, Loss of Instrument Air, Rev. 21.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D B B D D A B D A A

Scramble Range: A - D

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

Tier: 2
Key Word: INSTRUMENT AIR IAS
Source: N
Test: R

Group: 1
Cog Level: MEM 3.4
Exam: OC2006-301
Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

7. 079A2.01 001

The following Unit 2 conditions exist:

Initial Conditions

- The Primary Instrument Air Compressor is electrically and mechanically isolated for maintenance
- All other compressed air components are properly aligned

Current conditions:

- Instrument Air Pressure is 80 psig and decreasing slowly (approximately one pound per minute)
- Station Air Pressure is 100 psig and stable
- The Control Room Supervisor has just entered AP/2/A/1700/022, Loss of Instrument Air

Which one of the following correctly describes the next procedurally required actions?

- A. Immediately dispatch an operator to perform Enclosure 5.4 (Emergency Start of the Diesel Air Compressor). Immediately trip the Reactor and then trip all Main FDW pumps.
- B. Immediately dispatch an operator to perform Enclosure 5.4 (Emergency Start of the Diesel Air Compressor). Do not trip the Reactor.
- C. Do not immediately dispatch an operator to perform Enclosure 5.4 (Emergency Start of the Diesel Air Compressor). Immediately trip the Reactor and then trip all Main FDW pumps.
- D. Do not immediately dispatch an operator to perform Enclosure 5.4 (Emergency Start of the Diesel Air Compressor). Do not trip the Reactor.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Station Air

Ability to (a) predict the impacts of the following malfunctions or operations on the SAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Cross-connection with IAS.

K/A MATCH ANALYSIS

SAS P is 100 psig and IA P is 80 psig. Therefore SA-141 (SA to IA) has failed to open at 85 psig in the IA system. The question then requires the applicant to have knowledge of what procedural actions to take. Performing Enc 5.4 will provide direction to open the bypass around SA-141, thus helping to mitigate the problem.

ANSWER CHOICE ANALYSIS

A. Incorrect. No rx trip is required. Plausible because Encl 5.4 performance is required and if IA pressure reaches 70 psig, then MFW Reg valves may start to fail as-is, which could present a rx trip condition.

B. Correct. Entry conditions for the AOP are met. The IA step has them dispatch an operator to do Enc 5.4. A note above the step states that Enc 5.4 should be done even if the Diesel Air Comp are running due to needed valve alignments. One of the valves that this enclosure directs to open is the bypass around SA-141. Also, Encl 5.2 states that MFW control valves may begin to fail as is at about 70 psig, which would be a rx trip criteria. Current IA pressure is 80 psig, which is not a reason to trip, especially when station air will soon be available to help maintain IA pressure.

C. Incorrect. Diesel Air Comp have started based on plant conditions, but the note in the AP states that important valve alignments will be accomplished with the performance of Encl 5.4. No rx trip is required. Plausible because the Diesel Air Comp are running and there is rx trip criteria is IA pressure continues to decrease.

D. Incorrect. Diesel Air Comp have started based on plant conditions, but the note in the AP states that important valve alignments will be accomplished with the performance of Encl 5.4. Plausible because the Diesel Air Comp have started and a rx trip is not required.

REFERENCES

1. AP/2/A/1700/022, Loss of Instrument Air, Rev. 031.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	B B A C B A B C B A	Scramble Range: A - D
Tier:		2			Group:		2
Key Word:		STATION AIR SAS IAS			Cog Level:		C/A 2.9
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

8. 103K1.02.001

Unit 1 Reactor Building Purge is in operation.

Which one of the following correctly states the condition that will initiate automatic closure of Containment Purge System Isolation Valves PR-1 through PR-6?

- A✓ Reactor Building Pressure rising to 3.5 psig.
- B. RIA-45 HIGH Alarm actuates.
- C. ES Channel 1 inadvertently actuates.
- D. ES Channel 2 inadvertently actuates.

K/A

Containment

Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: Containment Isolation / Containment Integrity.

K/A MATCH ANALYSIS

Applicant must have knowledge of how containment system internal pressure rise will affect closure of containment isolation valves.

ANSWER CHOICE ANALYSIS

- A. Correct. See lesson plan PNS-RBP, Page 17 of 21.
- B. Incorrect. See lesson plan PNS-RBP, Page 18 of 21.
- C. Incorrect. ES Channel 1 closes only PR-1 and 6. See lesson plan PNS-RBP, Page 17 of 21.
- D. Incorrect. ES Channel 2 closes only PR-2, 3, 4, and 5. See lesson plan PNS-RBP, Page 17 of 21.

REFERENCES

1. Oconee PNS Exam Bank Question 312, PNS160701.
2. Lesson Plan IC-ES, Engineered Safeguards, Rev. 13a.
3. Lesson Plan PNS-RBP, Reactor Building Purge System, Rev. 09a.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A B D D D C B D B A	Scramble Range: A - D
Tier:		2			Group:		1
Key Word:		CIS CONTAINMENT ISOL			Cog Level:		MEM 3.9
Source:		B			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

9. BW/A04AK1.1 001

Initial conditions at 14:45 hrs:

- Unit 1 Reactor Power = 100%
- Unit 2 Reactor Power = 25% (Turbine Generator on-line waiting for Dispatcher)
- Unit 3 Reactor Power = 100%

Conditions at 15:00 hrs:

- MACHINE GAS TEMP HIGH received for all three units
- Total loss of Unit 1 and 2 RCW system

Which one of the following correctly describes the minimum actions to be taken to mitigate the given plant conditions?

- A. All three reactors are required to be immediately tripped.
- B. Unit 1 reactor is required to be immediately tripped. Unit 2 and 3 may remain on-line.
- C. Unit 1 reactor and Unit 2 main turbine are required to be immediately tripped. Unit 3 may remain on-line.
- D✓ Unit 1 and 3 reactors and Unit 2 main turbine are required to be immediately tripped.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Turbine Trip / 4

Knowledge of the operational implications of the following concepts as they apply to the (Turbine Trip): Components, capacity, and function of emergency systems.

K/A MATCH ANALYSIS

Tripping the turbine above 28% power has operational implications on the RPS (emergency system). In other words, the function of the RPS (an emergency system) to automatically trip the turbine when above 28% is being tested. Turbine trip vs. Rx Trip is based on heat removal capacity available when the secondary side is taken offline. A turbine trip will function to create a rx trip signal if power is above 28%, which is why Unit 2 turbine is tripped and the other two units require a rx trip.

ANSWER CHOICE ANALYSIS

A. Incorrect.

B. Incorrect.

C. Incorrect.

D. Correct. See explanation in attached Bank Question. Also see attached figure which shows that Unit 1 and 2 RCW system supplies Unit 3 secondary loads. Thus losing RCW to Unit 1 and 2 will affect all three units. Having reactor power above 28% requires tripping of reactor on Units 1 and 3, whereas tripping of the main turbine is allowable on Unit 2.

REFERENCES

1. Oconee Bank Question #16, SSS061901.
2. OP/1/A/6101/003, Alarm Response Guide 1SA-03, Rev. 032.
3. OP/2/A/6101/003, Alarm Response Guide 1SA-03, Rev. 023.
4. OP/3/A/6101/003, Alarm Response Guide 1SA-03, Rev. 025.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	D C C C C A D B C C	Scramble Range: A - D
Tier:		I			Group:		2
Key Word:		ALTEREX / GENERATOR			Cog Level:		C/A 3.0
Source:		B			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

1. BW/A06AK3.2 001

Unit 2 initial conditions:

- Reactor power = 100%
- 2C HPI Pump is OOS

Current conditions:

- AP/08, Loss of Control Room, is in progress
- The following indications are observed on the ASDP:
 - Turbine header pressure = 820 psi and slowly decreasing
 - TBV's demand is 0% and stable
 - RCS T Hot = 559 °F and slowly increasing
 - RCS pressure = 2285 psig and slowly increasing
 - Pzr level = 200 inches and slowly increasing
 - SG SU levels = 14 inches and slowly decreasing
 - SU valves demand = 100%

Which one of the following correctly describes the required action in accordance with AP/08 and the reasons for the action?

- A. Activate the Standby Shutdown Facility because of abnormal post trip conditions.
- B. Activate the Standby Shutdown Facility because when Forced HPI Cooling is initiated it will be degraded.
- C. Take manual control of HP-120 and adjust Pzr level because it is outside of the desired band.
- D. Take manual control of the TBVs to reduce RCS temperature and pressure because they are higher than expected.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Shutdown Outside Control Room

Knowledge of the reasons for the following responses as they apply to the (Shutdown Outside Control Room): Normal, abnormal and emergency operating procedures associated with (Shutdown Outside Control Room).

K/A MATCH ANALYSIS

The reasons for activating the Standby Shutdown Facility, AP actions, are being tested.

ANSWER CHOICE ANALYSIS

A. Correct. Post trip conditions are not being maintained. Activating the SSF is required to maintain the Plant in Mode 3. See Step 4.19 of AP/08.

B. Incorrect. Loss of 1C HPIP does not constitute "degraded HPI". HPI would be degraded in HPI Forced Cooling Mode with the 1C HPIP off and 1HP-409 failed. Plausible because activation of the SSF is required if in Forced HPI Cooling and HPI is degraded.

C. Incorrect. Pzr level is currently in the desired band. Plausible because these are correct actions to take if outside of the desired band. See AP/08, Step 4.32.

D. Incorrect. The only direction given in AP/08 for adjusting TBVs is to maintain Turbine Header Pressure at about 1010 psig. Current THP is 820 psig and the TBV should be closed. Plausible because under more normal circumstances, opening the TBV would be a means of cooling the RCS. In this instance, due to loss of feed, the SGs are virtually empty and have no energy removing capability.

REFERENCES

1. AP/1/A/1700/008, Loss of Control Room, Rev. 011.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:		Scramble Range: A - D
Tier:		1			Group:		2
Key Word:		SSF STANDBY SHUTDOWN			Cog Level:		C/A 3.8
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		OCONEE/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

11. BW/E02EA2.1 001

The following conditions exist on Unit 1:

- The reactor tripped a few minutes ago and the BOP is currently performing a Symptom Check
- 'A' SG Feedwater Line break develops downstream of FW-32, located between the check valve and containment
- 'A' SG Pressure = 500 psig and rapidly decreasing
- 'B' SG Pressure = 800 psig and slowly decreasing
- EFW to both SG did not automatically actuate
- EOP Rules have not yet been performed

Which one of the following correctly states which procedure should be performed in accordance with OMP 1-18 (Implementation Standard During Abnormal and Emergency Events) Symptom Check Guidelines, and actions that are directed by those procedures?

- A. Ensure Rule 3, Loss of Main or Emergency Feedwater, is implemented. Select OFF for both digital channels on AFIS on AFIS HEADER A.
- B. Ensure Rule 3, Loss of Main or Emergency Feedwater, is implemented. Depress CH. 1 INIT and CH. 2 INIT for AFIS HEADER A.
- C. Ensure Rule 5, Main Steam Line Break, is implemented. Select OFF for both digital channels on AFIS on AFIS HEADER A.
- D. Ensure Rule 5, Main Steam Line Break, is implemented. Depress CH. 1 INIT and CH. 2 INIT for AFIS HEADER A.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Reactor Trip - Stabilization - Recovery / 1

Ability to determine and interpret the following as they apply to the (Vital System Status Verification): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

K/A MATCH ANALYSIS

Question tests knowledge of parameters required to be analyzed during Symptom Checks. These parameters are entry conditions to EOP Rules. Applicant must analyze plant conditions and determine which Rule to implement and which actions are associated with that rule.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Rule 3 criteria per OMP 1-18 have not been met. OMP 1-18 states that there needs to be a loss of Emergency and Main Feed to enter Rule 3. Plausible because the actions are in accordance with Rule 3 and entry into Rule 3 is plausible because there is a Main Feed Water break and EFW has yet to be established.
- B. Incorrect. Rule 3 criteria per OMP 1-18 have not been met. OMP 1-18 states that there needs to be a loss of Emergency and Main Feed to enter Rule 3. Entry into Rule 3 is plausible because there is a Main Feed Water break and EFW has yet to be established.
- C. Incorrect. The stated actions are from Rule 3.
- D. Correct. Uncontrolled SG Depress on the 'A' SG has occurred, as indicated by SA Step 4.21 (SG P < 550 psig). Therefore Rule 5 entry criteria is met. Step 1 of Rule 5 contains the actions listed in this answer choice.

REFERENCES

- 1. OMP 1-18, Implementation Standard During Abnormal and Emergency Events, Rev. 024.
- 2. EP/1/A/1800/001 L, EOP - Rules and Appendix, Rev. 034.
- 3. EP/1/A/1800/001 L, EOP - Subsequent Actions, Rev. 034.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	D B C C B A C C D D	Scramble Range: A - D
Tier:		1			Group:		1
Key Word:		FEEDWATER LINE BREAK			Cog Level:		C/A 2.5
Source:		N			Exam:		OC2006-301
Test:		R			Author/Reviewer:		MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. BW/E04EK3.4 001

Unit 1 conditions are as follows:

- Operators are progressing through the LOHT Tab of the EOPs
- HPI forced cooling criteria have been verified as met

Operators are currently at the LOHT step where they are verifying SSF-ASW availability.

Which one of the following correctly explains the reason for verifying SSF-ASW availability in the LOHT Tab?

SSF-ASW availability is being verified because ...

- A. it is preferred to use ASW over using HPI Forced Cooling to preserve RB conditions.
- B. it is preferred to use ASW over using EFDW from another unit because there is no Tech Spec to ensure that another unit's EFDW will be available.
- C. HPI is not available even though the HPI Forced Cooling criteria have been met.
- D. SG level can be established using ASW while ensuring that excessive RCS cooldown does not occur.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4
Knowledge of the reasons for the following responses as they apply to the (Inadequate Heat Transfer): RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.

K/A MATCH ANALYSIS

Knowledge of the reasons for performing steps in the LOHT Tab are being tested. EOPs are required by the facility license.

ANSWER CHOICE ANALYSIS

- A. Incorrect. HPI Forced Cooling is preferred as stated in the lesson plan and supported by the fact that this option appears before the ASW option in the EOPs. Plausible because it is sensible to think that keeping water in the SGs may be preferable to HPI forced cooling.
- B. Incorrect. EFDW from another unit is preferred. Plausible because TS do not have requirements for EFDW feed to another unit's SGs.
- C. Correct. The only way to get to this point in the procedure is if all other sources of cooling the core and providing a heat sink have been exhausted. The applicant does not need to memorize SA steps to arrive at the answer. The applicant does have to know what his priorities are for choosing sources of water to put in the generator and when HPI Forced Cooling should be performed.
- D. Incorrect. The caution statement in Enc 5.8 states that excessive RCS cooldown will occur if SG level is established with ASW. This is because SGs will be completely empty at this point - essentially at atm pressure. Therefore, saturation temperature for the SGs will be about 212F. Temperatures this low will be much lower than those of the RCS, thus leading to excessive cooldown.

REFERENCES

1. EP/1/A/1800/001 E, Loss of Heat Transfer Tab, Rev. 034.
2. EP/1/A/1800/001 M, Enclosure 5.8, Rev. 034.
3. Lesson Plan, EAP-LOHT, Rev. 12.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: C D D D D C C A A A Scramble Range: A - D

Tier:	1	Group:	1
Key Word:	LOHT ASW HPI COOLING	Cog Level:	MEM 3.5
Source:	N	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

1. BW/E05EA2.2 001

The Unit 1 operators are preparing to establish trickle feed in accordance with the EHT Tab with the following plant conditions:

- Both SGs are faulted and have blown dry
- 1TD and 1 TE 4160 V buses are de-energized
- Both SG faults have been identified as not being detrimental to personnel or equipment

Which one of the following correctly states how trickle feed should be established in accordance with the EHT Tab of the EOPs?

- A. Establish trickle feed to the 'A' SG with the MDEFDW Pump.
- B. Establish trickle feed to the 'B' SG with the MDEFDW Pump.
- C✓ Establish trickle feed to one SG with the TDEFDW Pump.
- D. Establish trickle feed to both SGs with the TDEFDW Pump.

K/A

Steam Line Rupture - Excessive Heat Transfer / 4

Ability to determine and interpret the following as they apply to the (Excessive Heat Transfer): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

K/A MATCH ANALYSIS

Question tests knowledge of trickle feed in the EHT Tab of the EOPs. The EOPs are required by the facility license and the question is testing knowledge that allows for compliance with the EOPs.

ANSWER CHOICE ANALYSIS

- A. Incorrect. No power to MDEFDW Pump. Plausible because applicant must decide whether 1TC 4160 volt bus feeds one of the EFDW Pumps. This contains reasonable plausibility because they have buses 1TC, 1TD, and 1TE to choose from.
- B. Incorrect. No power to MDEFDW Pump. See above for plausibility.
- C. Correct. Buses 1TD and 1TE supply power to the MDEFDW Pumps, therefore the only pump available is the TDEFDW Pump. Procedure direction is to trickle feed only one SG.
- D. Incorrect. Procedure direction is to trickle feed only one SG.

REFERENCES

1. EP/1/A/1800/001 F, EOP - EHT, Rev. 034.
2. Lesson Plan EAP-EHT, Excessive Heat Transfer, Rev. 14.
3. Lesson Plan CF-EF, Emergency Feedwater, Rev. 21.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: C D C C C A A C B C Scramble Range: A - D

Tier: 1

Group: 1

Key Word: EHT TRICKLE FEED

Cog Level: C/A 3.6

Source: N

Exam: OC2006-301

Test: R

Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

14. BW/E08EK3.2 001

The following Unit 1 conditions exist:

- LOCA occurred 9 hours ago
- LOCA CD is in progress
- Operators are performing steps to:
 - Close CFT outlets
 - Open 1LP-1, 1LP-2, and 1LP-105

Which one of the following correctly describes the reason for performing these actions?

A. CFTs are isolated to prevent raising the boron concentration in the core.

1LP-1, 1LP-2, and 1LP-105 are opened to create sufficient flow through the core to prevent any further increase in boric acid concentration in the core.

B. CFTs are isolated to prevent adding nitrogen to the core.

1LP-1, 1LP-2, and 1LP-105 are opened to create sufficient flow through the core to prevent any further increase in boric acid concentration in the core.

C. CFTs are isolated to prevent raising the boron concentration in the core.

1LP-1, 1LP-2, and 1LP-105 are opened to prevent any further increase in boric acid concentration in the emergency sump.

D. CFTs are isolated to prevent adding nitrogen to the core.

1LP-1, 1LP-2, and 1LP-105 are opened to prevent any further increase in boric acid concentration in the emergency sump.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

LOCA Cooldown - Depress. / 4

Knowledge of the reasons for the following responses as they apply to the (LOCA Cooldown):
Normal, abnormal and emergency operating procedures associated with (LOCA Cooldown).

K/A MATCH ANALYSIS

Applicant must have knowledge of reasons for performing actions to isolate CFTs and align for boron dilution, which are actions in the LOCA Cooldown procedure.

ANSWER CHOICE ANALYSIS

A. Incorrect. Plausible because the second part of the choice is correct and the reason for the first part, although incorrect, is similar to the reason for the second choice. Therefore, it appears that both of these actions might be performed to accomplish the same thing.

B. Correct. See Page 31 and 32 of reference.

C. Incorrect. Plausible because the concern is with boron concentration being too high, although this is not why CFTs are isolated and the concern is in the core, not the sump. The sump is actually seeing a boron concentration decrease due to boil off.

D. Incorrect. Plausible because the first part is correct and the second part deals with preventing boron concentration increase, but the concern is with the core and not the sump. The sump in this situation would actually be decreasing in boron concentration because the boron is accumulating in the core as water boils off.

REFERENCES

1. Oconee Nuclear Station Emergency Operating Procedure Reference Document, Rev. 0.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: B A C B C A D C D C	Scramble Range: A - D
Tier:	1		Group:	2
Key Word:	CFT BORON DILUTION		Cog Level:	MEM 3.0
Source:	N		Exam:	OC2006-301
Test:	R		Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

15. BW/E13EK1.2 001

The following Unit 1 conditions exist:

- SBLOCA in progress
- Core SCM = 0 °F
- All RCPs tripped
- All EFDWPs are inoperable
- '1A' Main FDWP is operating
- '1A' OTSG pressure = 630 psig and stable
- '1B' OTSG pressure = 705 psig and stable
- Rx Bldg pressure = 10 psig and slowly increasing
- Rx Bldg dome temperature = 200 °F and stable

Which one of the following correctly describes the required SG level per Rule 7?

- A. 'A' XSUR = 320"; 'B' XSUR = 315"
- B. 'A' XSUR = 315"; 'B' XSUR = 310"
- C. 50% Operating Range (acc)
- D. 95% Operating Range (acc)

K/A

EOP Rules and Enclosures

Knowledge of the operational implications of the following concepts as they apply to the (EOP Rules): Normal, abnormal and emergency operating procedures associated with (EOP Rules).

K/A MATCH ANALYSIS

Operational implications are being tested because with given plant conditions a higher steam generator level is required by Rule 7. The SG level is needed to ensure the SGs will be able to act in a boiler-condenser mode of heat transfer.

ANSWER CHOICE ANALYSIS

- A. Incorrect: Uses EFDW/XSUR table 5, wrong RB temp column (>200 to 250). Table 5 not used with MFDW feeding.
- B. Incorrect: Uses EFDW/XSUR table 5, correct values if using EFDW. Table 5 not used with MFDW feeding.
- C. Incorrect: 50% used if SCM > 0
- D. Correct: EOP Rule 7, SG Feed Control SG levels are raised to 95% Operating Range (acc) if using Main FWP's when EFWP's are not available. This is the LOSCM setpoint level with Main FWP's. XSUR levels are only used with EFDW.

REFERENCES

1. EP/1/A/1800/001, Emergency Operating Procedure - Rule 7, Rev. 34.
2. Oconee Emergency and Abnormal Procedure Bank Question # 101, EAP060903.
3. Oconee Nuclear Station Emergency Operating Procedure Reference Document, Rev. 0.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

16. G2.1.2 001

Initial conditions at 04:00 hrs:

- Units 1, 2, and 3 are at 100% reactor power
- All Units are at minimum station staffing for ROs
- Unit 1 BOP leaves the Control Room for the station canteen

Current conditions at 04:02 hrs:

- Loss of Offsite Power occurs on Units 1 and 2
- Both Unit 1 and 2 SROs direct activation of SSF for each Unit

Which one of the following correctly describes, in accordance with OMP 2-01 (Duties and Responsibilities of On-Shift Operations Personnel), which operator should perform the SSF AP Subsequent Actions in the Unit 1 and 2 Control Rooms AND which operator should perform the most time limiting SSF actions in the Unit 1 and 2 Control Rooms until Unit 1 BOP arrives at the SSF?

- A. The Unit 1 OATC should perform the SSF AP Subsequent Actions in the Unit 1 Control Room and perform the most time limiting Unit 1 SSF actions until Unit 1 BOP arrives at the SSF.
The Unit 2 BOP should perform the SSF AP Subsequent Actions in the Unit 2 Control Room and perform the most time limiting SSF actions until Unit 1 BOP arrives at the SSF.
- B. The Unit 1 OATC should perform the SSF AP Subsequent Actions in the Unit 1 Control Room.
The Unit 2 BOP should perform the SSF AP Subsequent Actions in the Unit 2 Control Room
The Unit 2 BOP should perform the most time limiting SSF actions for both Units until Unit 1 BOP arrives at the SSF.
- C. The Unit 1 OATC should perform the most time limiting SSF actions for Unit 1 until Unit 1 BOP arrives at the SSF.
The Unit 2 BOP should perform the most time limiting SSF actions for Unit 2 until Unit 1 BOP arrives at the SSF.
The Unit 2 BOP should perform the SSF AP Subsequent Actions in both the Unit 1 and 2 Control Rooms.
- D. The Unit 2 BOP should perform the SSF AP Subsequent Actions in Unit 1 and 2 Control Rooms.
The Unit 2 BOP should perform the most time limiting SSF actions in Unit 1 and 2 Control Rooms until Unit 1 BOP arrives at the SSF.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Knowledge of operator responsibilities during all modes of plant operation.

K/A MATCH ANALYSIS

Question tests RO responsibilities as stated in the OMPs.

ANSWER CHOICE ANALYSIS

D. Correct. See Attachment D of OMP 2-01.

A, B, C. Incorrect. See Attachment D of OMP 2-01. They are plausible due to the memory nature of the question.

REFERENCES

1. OMP 2-01, Duties and Responsibilities of On-Shift Operations Personnel, Rev. 65.
2. Oconee Admin Bank Question 65, ADM040503.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	D B B C D C A C A C	Scramble Range: A - D
Tier:		3			Group:		
Key Word:		RESPONSIBILITY DUTY			Cog Level:	MEM 3.0	
Source:		B			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

17. G2.1.22 001

The following Unit 2 conditions exist:

- The reactor has just tripped from a full power / all rods fully withdrawn condition
- One control rod did not trip (one rod remained fully withdrawn)
- All other systems worked according to design

Which one of the following correctly describes the reactor mode when all rods (except the one that did not insert) have fully inserted?

- A. Mode 1 (Power Operation)
- B. Mode 2 (Startup)
- C. Mode 3 (Hot Standby)
- D. Mode 4 (Hot Shutdown)

K/A

Ability to determine Mode of Operation.

K/A MATCH ANALYSIS

Applicant must have Tech Spec knowledge of reactor mode in order to arrive at the answer.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Decay heat is not taken into account iaw Tech Spec Table 1.1-1. Plausible because immediately after reactor trip decay heat is high enough to produce more than 5% power, but Keff should be less than 0.99.
- B. Incorrect. See "A" above.
- C. Correct because Tave is > 250F and per Tech Spec Def of SDM, the control rods are required to instantaneously shutdown the reactor by the SDM required by the COLR, excluding decay heat (Tech Spec Table 1.1-1, Note 'a').
- D. Incorrect because Tave is greater than 250F. Not quite as plausible as "A" and "B", but the name (Hot Shutdown) adds a little plausibility because the RCS is still at Hot, No Load Conditions.

REFERENCES

1. ONEI-0400-51, Oconee Unit 2 COLR, Miscellaneous Setpoints, Page 5 of 33, Rev. 25.
2. Oconee Technical Specifications Section 1.1, Definitions: SDM Definition & Table 1.1-1.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C A D B B A B D B B	Scramble Range: A - D
Tier:		3			Group:		
Key Word:		MODE			Cog Level:	MEM 2.8	
Source:		N			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

18. G2.1.30 001

The following Unit 1 conditions exist:

- The unit is in Mode 5
- The equipment hatch is installed
- Mini-Purge is in operation
- Main Purge is unavailable

The crew has been instructed to remove the equipment hatch. Which one of the following correctly describes OP/1/A/1102/014, RB Purge System, Limits and Precautions that are applicable prior to opening the hatch?

- A✓ Containment should be vented to the vent stack AND secure the mini purge fan from its panel in the Purge Exhaust Room.
- B. Containment should be vented to the vent stack AND secure the mini purge fan from its panel in the Control Room.
- C. Containment should not be vented to the vent stack AND secure the mini purge fan from its panel in the Purge Exhaust Room.
- D. Containment should not be vented to the vent stack AND secure the mini purge fan from its panel in the Control Room.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Ability to locate and operate components, including local controls.

K/A MATCH ANALYSIS

The mini purge fan only has local controls in the purge exhaust room. The main purge fan only has controls in the control room. Therefore, the applicant must have knowledge of the location of the mini purge fan controls in order to correctly answer the question.

ANSWER CHOICE ANALYSIS

A. Correct. See OP/1/A/1102/014, Page 2 of 4, Limits and Precautions 2.4. Also see lesson plan PNS-RBP, page 11 of 21.

B. Incorrect. Mini purge fan cannot be controlled from control room. Plausible because main purge fan can be controlled from control room.

C. Incorrect. Containment should be vented when main purge not available. Plausible because even though main purge is not available, mini purge is available and the location of the mini purge fan controls is correct.

D. Incorrect. Containment should be vented when main purge not available. Plausible because even though main purge is not available, mini purge is available. Also plausible because even though mini purge fan cannot be controlled from control room, the main exhaust fan can be controlled from control room.

REFERENCES

1. Lesson Plan PNS-RBP, Reactor Building Purge System, Rev. 09a.
2. OP/1/A/1102/014, RB Purge System, Rev. 021.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9		
					Answer:	A D C C D B A A B B	Scramble Range:	A - D
Tier:		3			Group:			
Key Word:		RB PURGE LOCAL			Cog Level:	MEM 3.9		
Source:		N			Exam:	OC2006-301		
Test:		R			Author/Reviewer:	MAB/RFA		

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

19. G2.2.12 001

The following conditions exist on Unit 1:

- Present Date/Time = 02DEC at 2100 hours
- Unit has been in Mode 5 for 10 days
- RCS Loops "dropped"
- LPI in purification alignment of normal DHR
- RO discovers that SR 3.4.8.1, Verify required DHR loop is in operation, was last performed at 2100 hours on 01DEC.
- The RO notes that SR 3.4.8.1 is required to be performed every 12 hours in the current plant conditions.

Which one of the following correctly states the actions required by Tech Specs?

- A. SR 3.4.8.1 is required to be performed prior to 03DEC at 0900 hours.
- B. SR 3.4.8.1 is required to be performed prior to 03DEC at 1200 hours.
- C. SR 3.4.8.1 is required to be performed prior to 03DEC at 2100 hours.
- D. The operating DHR is required to be declared inoperable on 02DEC at 1200 hours until the surveillance is satisfactorily completed.

K/A

Knowledge of surveillance procedures.

K/A MATCH ANALYSIS

Applicant must have generic knowledge wrt TS SR to arrive at the correct answer.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Plausible because time is 12 hours from present time.
- B. Incorrect. Plausible because time is 15 hours from present time (25% grace).
- C. Correct. Surveillance must be performed 24 hours from discovery iaw SR 3.0.3.
- D. Incorrect. Surveillance must be performed, but loop does not need to immediately be declared inoperable. Plausible because date/time is 15 hours from last performance of test (12 hours plus 25%).

REFERENCES

1. Oconee Admin Bank Question 17, ADM010501.
2. Tech Spec SR 3.0.3.
3. Tech Spec LCO 3.4.8, RCS Loops - Mode 5, Loops Not Filled.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: CDCADACDAB

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	3	Group:	
Key Word:	TS SURVEILANCE	Cog Level:	C/A 3.0
Source:	B	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

20. G2.2.13 001

Unit 1 is at 100% power and maintenance has just been completed on an LPI pump repair. The motor and the pump are currently uncoupled. Maintenance has requested Operations support to perform rotational checks on the pump motor prior to coupling. (MORT Tags were not used)

Which one of the following correctly describes the requirements for who is responsible for evaluating a tag lift and which group can temporarily lift the tags in accordance with NSD-500, Red Tags/Configuration Control Tags?

- A. The OCG Supervisor and the Work Group Supervisor both must approved a tag lift. Tags can then be temporarily lifted by the Work Group.
- B. The OCG Supervisor and the Work Group Supervisor both must approved a tag lift. Tags must then be temporarily lifted by the OCG.
- C. Only the Work Group Supervisor must approve the temporary tag lift. Tags can then be temporarily lifted by the Work Group.
- D. Only the Work Group Supervisor must approve the temporary tag lift. Tags must then be temporarily lifted by the OCG.

K/A

Knowledge of tagging and clearance procedures.

K/A MATCH ANALYSIS

Question requires applicants to have knowledge of the tagging process.

ANSWER CHOICE ANALYSIS

A. Incorrect. Maintenance personnel are not considered "authorized employees" per NSD-500. Plausible because it would appear to be safe for the work group to remove and rehang a tag while the motor is bumped. When MORT tags are used, then Maintenance would be allowed to perform motor equipment operations.

B. Correct. Per NSD-500, the Work Group Supv must approve the tag lift and document in the Safety Tagging II program, then the OCG Supv can approve and fill out appropriate paperwork. Also per NSD-500, an authorized person may only perform tagout activities and this person must be a member of the OCG.

C. Incorrect. See above.

D. Incorrect. See above.

REFERENCES

1. NSD-500, Red Tags/Configuration Control Tags, Rev. 21.
2. Oconee Administrative Bank Question 125, ADM060906

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: B B B B B D C C A

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier:	3	Group:	
Key Word:	TAGOUT TAGGING CLEAR	Cog Level:	MEM 3.6
Source:	M	Exam:	OC2006-301
Test:	R	Author/Reviewer:	MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

21. G2.3.1 001

Which one of the following correctly defines a HIGH RADIATION AREA and a VERY HIGH RADIATION AREA, in accordance with 10 CFR: 20?

A✓ A High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent of 0.1 rem in 1 hour at 30 centimeters from the radiation source.

A Very High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 1 meter from the source.

B. A High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent of 0.1 rem in 1 hour at 1 meter from the radiation source.

A Very High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 1 meter from the source.

C. A High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent of 0.1 rem in 1 hour at 30 centimeters from the radiation source.

A Very High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 30 centimeters from the source.

D. A High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent of 0.1 rem in 1 hour at 1 meter from the radiation source.

A Very High Radiation Area is an area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 30 centimeters from the source.

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Knowledge of 10 CFR: 20 and related facility radiation control requirements.

K/A MATCH ANALYSIS

Requires knowledge of 10 CFR: 20 radiation limits.

ANSWER CHOICE ANALYSIS

See definitions in 10 CFR: 20 to support correct answer. Distractors are plausible primarily due to the question being memory level and the iteration on the 1 meter and 30 centimeters, which both have specific meaning in the CFR definitions.

REFERENCES

1. 10 CFR: 20, Definitions Section.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A A D A D B D C D C	Scramble Range: A - D
Tier:		3			Group:		
Key Word:		DOSE LIMITS			Cog Level:	MEM 2.6	
Source:		N			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

22. G2.3.10 001

Work in a radiation area must be performed. The following conditions exist:

- The date is January 1, 2006.
- A point source is present and emits 50 mrem/hr at 1 foot.
- The air has a Derived Air Concentration (DAC) of 10.
- Each worker's Annual Dose Target is 30 mrem.

The following teams are available to perform the work in the designated manner:

<u>TEAM</u>	<u>WORKING CONDITIONS</u>
I.	Two workers using hand tools can perform the work in one hour at a distance of two feet wearing no respirator.
II.	Three workers using remote tools can perform the work in two hours at a distance of six feet wearing no respirator.
III.	Two workers using hand tools can perform the work in four hours at a distance of two feet wearing a respirator with a protection factor of 50.
IV.	Three workers using remote tools can perform the work in 15 hours at a distance of six feet wearing a respirator with a protection factor of 50.

Which one of the following choices correctly designates the team that can perform the work with the least amount of collective dose, without needing any additional approvals?

- A. Team I
- B. Team II
- C. Team III
- D Team IV

QUESTIONS REPORT
for Ocone 2006-301 Rev 0

K/A

Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

K/A MATCH ANALYSIS

The Radiation Policy Manual states that each individual's annual dose target is treated as if it were a limit. To exceed the individual dose target, the individual's Section Manager must approve and make the change in the HP computer software. Therefore, an individual is only authorized to go up to his target. The applicant must know that the target is treated as if it were a limit, otherwise a different (incorrect) answer will be chosen. Also, the question requires that the individual know how to calculate which method will provide the lowest accumulated dose (reducing exposure).

ANSWER CHOICE ANALYSIS

- A. Incorrect. The total team dose is the the lowest, but the individual dose is above the target. If the applicant does not know that the target is treated as a limit, then this would be a correct answer.
- B. Incorrect. Plausible because the external dose is the lowest. If an applicant does not know how to employ the respirator protection factor, then the applicant could arrive at this as a correct answer.
- C. Incorrect. Plausible because the internal does is the lowest. If an applicant does not know how to correctly calculate external dose, then the applicant could arrive at this as as a correct answer.
- D. Correct. Each individual's dose is 28.3 mrem, which is less than the 30 mrem target for each person. This method of performing the work is not the lowest collective dose, but it is the lowest collective dose that does not require any of the individuals to get approval to go beyond the target.

Sample Calc for correct answer:

$$[(3 \text{ men})(15 \text{ hours})(50 \text{ mrem/hr})(1/6 \text{ feet})^2] + [(10 \text{ DAC})(1/50)(3 \text{ men})(15 \text{ hrs})(2.5 \text{ mrem/hr})]$$

$$= 62.5 \text{ mrem} + 22.5 \text{ mrem} = 85.0 \text{ mrem}$$

TEAM	EXT. DOSE	INT. DOSE	TOTAL DOSE	NO. OF MEN	IND. DOSE
I.	25	50	75	2	37.5
II.	8.3	150	158.3	3	52.7
III.	100	4	104	2	52.0
IV.	62.5	22.5	85	3	28.3

REFERENCES

1. Radiation Protection Policy Manual, Policy II-01, Section 3.4.1.2.
2. Surry 2003-301, G2.3.2

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
 Answer: D A C D C B C B B D Scramble Range: A - D
 Tier: 3 Group:
 Key Word: DOSE LIMITS Cog Level: C/A 2.9
 Source: M Exam: OC2006-301
 Test: R Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

23. G2.3.4 001

An operator began work at Oconee in July 2005. The current date is June 2006. The operator has the following Oconee dose history (TEDE):

- Year 2005 = 3000 mrem
- Year 2006 = 1427 mrem (Accumulated through June 2006)

The worker is directed to perform a job with an estimated dose of 1156 mrem. The work is not considered a Planned Special Exposure and no emergency situation exists.

Which one of the following correctly states the required approval needed prior to beginning the work?

- A. Section Manager only
- B. Radiation Protection Manager only
- C. Section Manager and Radiation Protection Manager
- D. NRC

K/A

Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

K/A MATCH ANALYSIS

Question test knowledge of plant admin requirements and what level of approval is required to perform the work due to exceeding authorized limits.

ANSWER CHOICE ANALYSIS

- A. Incorrect. Section Mgr is responsible for dose targets under 2 rem.
- B. Incorrect. The Section Mrg also needs to approve the exposure. Plausible because the Rad Pro Mgr's approval is required.
- C. Correct. Rad Pro Policy Manual, Policy II-01, Section 3.4.1.2.B, states that Dose received between 2 rem and 4.5 rem in a year requires the approval of the Rad Pro Mgr and the Section Mgr. $1427 \text{ mrem} + 1156 \text{ mrem} = 2583 \text{ mrem}$, which is between 2 rem and 4.5 mrem.
- D. Incorrect. If the previous year's dose is added, then the total exceeds 5 rem, which is above the 10 CFR:20 limits. This may lead an applicant to believe that the NRC must approve the dose.

REFERENCES

1. Radiation Protection Policy Manual, Policy II-01, Section 3.4.1.2.B, Page 4 of 8, Rev. 0.
2. Vogtle 2005-301 Question, G2.3.1.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: C D D C A C C A B C

Scramble Range: A - D

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

Tier: 3
Key Word: DOSE LIMITS
Source: M
Test: R

Group:
Cog Level: C/A 2.5
Exam: OC2006-301
Author/Reviewer: MAB/RFA

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

24. G2.4.16 001

The following events have occurred on Unit 1:

- A loss of CCW and loss of RCP seal injection have occurred
- The OATC manually tripped the reactor
- When the OATC pushed the reactor trip pushbuttons an SI occurred and SCM decreased to zero

Which one of the following correctly describes the priority of actions required to be taken by the OATC and BOP given the above conditions?

- A. BOP: Perform EOP Symptom Check followed by AP Immediate Manual Action Steps.
OATC: Perform EOP Immediate Manual Actions followed by Rule 2.
- B. BOP: Perform EOP Symptom Check followed by AP Immediate Manual Action Steps.
OATC: Perform EOP Immediate Manual Actions followed by EOP Subsequent Steps, leaving Rule 2 unattended until the BOP can perform it.
- C. BOP: Perform AP Immediate Manual Action Steps followed by EOP Symptom Check.
OATC: Perform EOP Immediate Manual Actions followed by Rule 2.
- D. BOP: Perform AP Immediate Manual Action Steps followed by EOP Symptom Check.
OATC: Perform EOP Immediate Manual Actions followed by EOP Subsequent Steps, leaving Rule 2 unattended until the BOP can perform it.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

K/A

Knowledge of EOP implementation hierarchy and coordination with other support procedures.

K/A MATCH ANALYSIS

Knowledge prioritization of AP and EOP immediate actions is required to answer the question correctly.

ANSWER CHOICE ANALYSIS

- A. Incorrect because the BOP is required to perform the AP IMAs prior to symptom checks. Plausible because typically EOP actions have priority over AP actions.
- B. Incorrect because the BOP is required to perform the AP IMAs prior to symptom checks. Plausible because typically EOP actions have priority over AP actions.
- C. Correct. OMP 1-18 Section 5.2 states that the BOP shall perform AP IMAs prior to performing symptom checks. EOP IMAs take priority over everything else per OMP 1-18 Section 5.2.
- D. Incorrect because the OATC may perform Rule 2 with a loss of SCM when the BOP is occupied. OMP 1-18, Section 5.2 states that EOP Symptoms shall have priority over all EOP actions except IMAs. Plausible because Rule 2 would normally be performed by the BOP.

REFERENCES

1. OMP 1-18, Implementation Standard During Abnormal and Emergency Events, Rev 24.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C A A C B C A C C C	Scramble Range: A - D
Tier:		3			Group:		
Key Word:		PROCEDURE HIERARCHY			Cog Level:	MEM 3.0	
Source:		N			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	MAB/RFA	

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

25. G2.4.35 001

Unit 3 plant conditions:
- ATWS is in progress

Which one of the following will result in a reactor trip?

An NEO performs the following actions:

- A✓ Opens Unit 3's CRD Normal Power Supply Breaker located on the 3x9 in Unit 3's Equipment Room
-AND-
Opens Unit 3's CRD Alternate Power Supply Breaker located on the 2x2 in Unit 2's Turbine Building 3rd floor.
- B. Opens Unit 3's CRD Normal Power Supply Breaker located on the 3x9 in Unit 3's Cable Room
-OR-
Opens Unit 3's CRD Alternate Power Supply Breaker located on the 2x2 in Unit 2's Turbine Building 3rd floor.
- C. Opens Unit 3's CRD Normal Power Supply Breaker located on the 3x9 in Unit 3's Equipment Room
-AND-
Opens Unit 3's CRD Alternate Power Supply Breaker located on the 2x1 in Unit 2's Turbine Building 3rd floor.
- D. Opens Unit 3's CRD Normal Power Supply Breaker located on the 3x9 in Unit 3's Cable Room
-OR-
Opens Unit 3's CRD Alternate Power Supply Breaker located on the 2x1 in Unit 2's Turbine Building 3rd floor.

QUESTIONS REPORT
for Oconee 2006-301 Rev 0

QUESTION WAS SUPPLIED BY UTILITY AND THEY HAVE VERIFIED SPECIFICS OF EQUIPMENT LOCATION.

K/A

Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.

K/A MATCH ANALYSIS

Question requires knowledge of equipment required to be manipulated to cause a rx trip (system implications) and the location of that equipment (geography).

A reactor trip requires BOTH the normal power supply breaker located on the 3x9 in the Unit 3's Equipment Room AND the CRD Alternate Supply Breaker located on the 2x2 in the Unit 2's Turbine Building 3rd floor to be opened.

ANSWER CHOICE ANALYSIS

A. Correct. A rx trip requires BOTH the Normal Power Supply Breaker located on the 3x9 in the Unit 3's Equipment Room AND the CRD Alternate Power Supply Breaker located on the 2x2 in the Unit 2's Turbine Building 3rd Floor to be opened.

B. Incorrect. The 3x9 is not located in the Cable Spreading Room and both breakers are required to cause a rx trip. Plausible because other CRD breakers that are opened when the rx fails to trip are in the Cable Room. They are Opened on a Loss of Control Room.

C. Incorrect. Answer is correct with the exception of Unit 3's CRD Alternate Power Supply Breaker located on the 2x2 not the 2x1. Plausible because Unit 1's Alternate breaker is located on the 2x1.

D. Incorrect. Both parts are incorrect. 3x9 is not in the Cable Room and both breakers are required to cause a reactor trip. Plausible because other CRD breakers that are opened when the reactor fails to trip are in the Cable Room. They are opened on a Loss of Control Room. Also Plausible because Unit 3's CRD Alternate Power Supply Breaker located on the 2x2 not the 2x1.

REFERENCES

1. EP/3/A/1800/003 L, EOP - Rules & Appendix, Rev. 034.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A B B C D D C D C A	Scramble Range: A - D
Tier:		3			Group:		
Key Word:		ATWS GEOGRAPHY			Cog Level:	MEM 3.3	
Source:		N			Exam:	OC2006-301	
Test:		R			Author/Reviewer:	OCONEE/RFA	