

Draft Submittal

**OCONEE JUNE 2003 EXAM
50-269/2003-301**

JUNE 16 - 27, 2003

1. Reactor Operator Written Exam
*SENIOR REACTOR WRITTEN EXAM
& OUTLINE*

Facility: Oconee		Date of Exam: 2003																	
Tier	Group	RO K/A Category Points											SRO-Only Points						
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	K	A	A 2	G *	Total	
1. Emergency & Abnormal Plant Evolutions	1	3 4	2	3 4				2	6 4				2	18	1		4 5	2	7 6 7
	2	1 2	2 1	2				1 2	2 1				1	9 18			3	2	5
	Tier Totals	4 8	4 8	5 8				3 4	8 5				3	27	1		7 8	4	12 12
2. Plant Systems	1	3 2	3 4	5 4	2	3	2	2 3	2	2	3	1	28			2	2	4	
	2	2		1	2			1 2	1 2	1	1	1	10			1	1	2	
	Tier Totals	5 4	3 4	6 5	4	3	2	3	4 3	3	4	2	38			3	3	6	
3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1	2	3	4	7	
				2		2		1		5		3	1	1	2				

- Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling.
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system or evolution unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
- 6.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals for each system and category. Enter the group and tier totals for each category in the table above; summarize all the SRO-only knowledge and non-A2 ability categories in the columns labeled "K" and "A." Use duplicate pages for RO and SRO-only exams.
- h. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
- i. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1		02					Knowledge of interrelationship between vital system status and Facility's heat removal system.	4.2/4.2	1
000008 Pressurizer Vapor Space Accident / 3					22 _R		RO SRO ONLY - Ability to determine and interpret Vapor Space as they apply to the consequences of RCS pressure loss.	3.8/4.2	1
000009 Small Break LOCA / 3	01		2		15	2.1.31	Actions contained in EOP Knowledge of Natural Circulation SRO ONLY RCS Parameters Ability to locate control room switches, controls and indications.	4.2/4.7 3.3/3.4 4.2/3.9	2 1 1
000011 Large Break LOCA / 3	01				39 _S		ADDITIONAL Core Cooling Knowledge of operational implications of LBLOCA on Natural Circulation	4.3/4.7 4.1/4.4	1 1
000015/17 RCP Malfunctions / 4					10		Ability to determine and interpret the loss of cooling water as it applies to RCP malfunctions	3.7/3.7	1
000022 Loss of Rx Coolant Makeup / 2	03						Loss of RC effects on PZR level	3.0/3.4	1
000025 Loss of RHR System / 4			01 _S				Knowledge of the reasons for shift to alternate flow path as it applies to Loss of RHR.	3.1/3.4	1
000026 Loss of Component Cooling Water / 8						2.4.24	GEN 2.4.24 Knowledge of loss of cooling water procedures	3.3/3.7	1
000027 Pressurizer Pressure Control System Malfunction / 3	01					2.1.12	Definition of saturated as it applies to PZR malfunction; SRO ONLY Gen 2.1.12 Ability to apply TS	3.1/3.4 2.9/4.0	1 1
000029 ATWS / 1			12		09 _R		Actions contained in EOPs for ATWS SRO ONLY Reactor Trip/turbine trip as it applies to ATWS	4.4/4.7 4.4/4.5	1 1
000038 Steam Gen Tube Rupture/3				19			MFV as it applies to SGTR	3.4/3.4	1
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4					01		Selection of procedures associated with Excessive heat transfer	3.0/4.2	1
000054 (CE/E06) Loss of Main Feedwater / 4			03				KA moved from K2 because of importance factors	3.8/4.2	1
000055 Station Blackout / 6					1		SRO ONLY Existing valve position on loss of instrument air associated with SOB	3.4/3.7	1
000056 Loss of Off-site Power / 6					47		Proper operation of EDG load sequencer	3.8/3.9	1
000057 Loss of Vital AC Inst. Bus / 6					06	2.1.8	Manual control of components SRO ONLY Coordinate Activities outside the CR	3.5/3.5 3.8/3.6	1 1
000058 Loss of DC Power / 6					03		SRO ONLY DC Loads lost	3.5/3.9	1
000062 Loss of Nuclear Svc Water / 4				07			Flow rates to components furnished by NSW	2.9/3.0	1
000065 Loss of Instrument Air / 8									
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		2	3				Heat removal systems associated with inadequate heat transfer Manipulation of controls associated with inadequate heat transfer	4.2/4.2 4.2/3.8	2
K/A Category Totals:	1	2	1	2	4/5	2/2	Group Point Total:		18/17

3

8
4
3/15/5
6/4

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E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1									
000003 Dropped Control Rod / 1						2.4.1	Ad SRO ONLY EOP entry conditions	4.3/4.6	1
000005 Inoperable/Stuck Control Rod / 1									
000024 Emergency Boration / 1									
000028 Pressurizer Level Malfunction / 2	<i>01</i>	<i>02</i>			01		<i>5.9.5.0.3 / 0.6.0.2.5</i> PZR Reference leak SRO ONLY PZR Level Indications	<i>2.6/2.9</i> 2.9/3.4 3.4/3.6	1
000032 Loss of Source Range NI / 7									
000033 Loss of Intermediate Range NI / 7					<i>11</i>		Loss of compensating voltage	3.1/3.4	<i>1</i>
000036 (BW/A08) Fuel Handling Accident / 8					<i>02</i>		<i>fuel handling incident</i>	<i>3.4/4.1</i>	
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4					02		SRO ONLY Conditions Requiring reactor or Turbine Trip	3.9/4.1	1
000059 Accidental Liquid RadWaste Rel. / 9			01				Termination of radioactive release	3.5/3.9	1
000060 Accidental Gaseous Radwaste Rel. / 9									
000061 ARM System Alarms / 7	01						ARM detector limitations	2.5/2.9	1
000067 Plant Fire On-site / 9-8			04			2.4.27	Actions contained in EOPs for plant fires Knowledge of fire in the plant procedures	3.3/4.1 3.0/3.5	1 1
000068 (BW/A06) Control Room Evac. / 8									
000074 (W/E06&E07) Inad. Core Cooling / 4									
000076 High Reactor Coolant Activity / 9									
BW/A01 Plant Runback / 1				2			Operating behavior characteristics of the facility associated with Runback	3.2/3.5	1
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4					02		Adherence to appropriate procedures and operational limits	<i>3.2/3.5</i> 3.2/3.5	1
BW/A05 Emergency Diesel Actuation / 6		01					Control and safety systems, including instrumentation and interlocks	4.0/3.8	1
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooledown - Depress. / 4						2.4.18	Knowledge of EOP Basis	2.7/3.6	1
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4									
BW/E13&E14 EOP Rules and Enclosures					01		EOP Rules - facility conditions and selection of appropriate procedure	3.4/4.0	1
K/A Category Point Totals:	<i>2</i>	<i>1</i>	2	1	<i>2/3</i> 2/3	1/2	Group Point Total:		9/5

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
Reactor Coolant Pump					04				02			RCP Shutdown effect on Secondary Parameter RCP Motor current	3.2/3.5 2.6/2.5	2
004 Chemical and Volume Control		02									2.4.11	MUP power supply SRO ONLY - Knowledge of abnormal condition procedures	2.9/3.1 3.4/3.6	1 1
005 Residual Heat Removal			07									Refueling	3.2/3.6	1
006 Emergency Core Cooling										05	2.1.7	ECCS Flowpath SRO ONLY - ECCS - Ability to evaluate plant performance	3.9/3.8 3.7/4.4	1 1
007 Pressurizer Relief/Quench Tank	03											connection to RCS	3.0/3.2	1
008 Component Cooling Water			02					01		01		Loss of CW to CCS loss of cww pump indications and controls	2.9/3.1 3.3/3.6 3.3/3.1	2
010 Pressurizer Pressure Control		01										PZR Heaters	3.0/3.4	1
012 Reactor Protection					01	04						DNB Bypass Block Circuits	3.3/3.8 3.3/3.6	2
013 Engineered Safety Features Actuation			03				06					Containment BWST Level	4.3/4.7 3.6/3.9	2
022 Containment Cooling							04					Cooling Water Flow	3.2/3.3	1
Condenser												N/A		
025 Containment Spray			01								2.1.27	CCS malfunction System Purpose	3.9/4.1 2.8/2.9	2
039 Main and Reheat Steam	02				01							ADV Water Hammer	3.3/3.3 2.9/3.1	2
056 Condensate								04				Predict the impact of the loss of cond pump	2.6/2.8	1
059 Main Feedwater							3					MFV Power Restrictions	2.7/2.9	1
061 Auxiliary/Emergency Feedwater						01			01			malfunction of EPV controller AFW start-up	2.5/2.8 4.2/4.2	2
062 AC Electrical Distribution				02				10				Circuit Breakers switching power supplies	2.5/2.7 3.0/3.3	2
063 DC Electrical Distribution		01								01		System Loads Major breakers and control power fuses	2.6/2.8 2.8/3.1	2
064 Emergency Diesel Generator				03								Governor Valve operation	2.5/3.0	1
076 Service Water								01				SRO ONLY Impact of the loss of SWS	3.5/3.7	1
078 Instrument Air	04		02									Containment air systems Cooling water to compressor	3.1/3.4 2.6/2.9	2
K/A Category Point Totals:	3	3	1	2	3	2	2	2/2	2	3	2 1/2	Group Point Total:		28/4

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
001 Control Rod Drive								13				SRO ONLY Control rod drive system response to an ATWS	4.4/4.6	1
002 Reactor Coolant														
011 Pressurizer Level Control			02									Pressurizer level failure effects on the RCS	3.5/3.7	1
014 Rod Position Indication							02					RPIS Control 3.2/3.6		
015 Nuclear Instrumentation											2.1.32	SRO ONLY explain precautions and limitations	3.4/3.8	1
016 Non-nuclear Instrumentation								01				detector failure	3.0/3.1	1
017 In-core Temperature Monitor														
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge	01											purge system	3.0/3.1	1
033 Spent Fuel Pool Cooling														
Fuel Handling Equipment											2 2.1.27	Knowledge of refueling process System Purpose	2.8/2.9 2.8/3.5	1
Steam Generator										05		Level control to enhance Natural Circulation	3.8/4.0	1
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator														
055 Condenser Air Removal									03			diversion of CARS	2.5/2.7	1
068 Liquid Radwaste														
071 Waste Gas Disposal				01								Pressure capability of WGDT	2.6/3.0	1
072 Area Radiation Monitoring														
075 Circulating Water	01											physical connection to SWS	2.5/2.5	1
079 Station Air								01				Cross Connect with IAS	2.8/3.2	1
086 Fire Protection				03								Location of fires	3.1/3.7	1
K/A Category Point Totals:	2		1	2			/	2/1 1	1	1	1/1	Group Point Total:		10/2

ES-401

Generic Knowledge and Abilities Outline (Tier 3)

Form ES-401-3

Facility:

Date of Exam:

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.6	Ability to supervise and assume management roles during plant transients and upset conditions. SRO ONLY			4.4	1
	2.1.11	Knowledge of 1 hour TS action statements. SRO ONLY			3.8	1
	2.1.14	Knowledge of system status criteria requiring notification of plant personnel. SRO ONLY			3.0	1
	2.1.27	Knowledge of system purpose or function. RO ONLY	2.8	1		
	2.1.32	Ability to explain and apply all system limitations and precautions. RO ONLY	3.4	1		
	Subtotal			2		3
2. Equipment Control	2.2.17	Knowledge of procedures for managing maintenance activities during power operation. SRO ONLY			3.5	1
	2.2.2	Ability to manipulate control consoles as required to operate between shutdown and power operations. RO ONLY	4.0	1		
	2.2.12	Knowledge of surveillance procedures. RO ONLY	3.0	1		
	Subtotal			2		1
3. Radiation Control	2.3.3	Knowledge of SRO responsibilities for auxiliary systems outside the control room. SRO ONLY			2.9	1
	2.3.2	Knowledge of facility ALARA program. RO ONLY	2.5	1		
	Subtotal			1		1
4. Emergency Procedures / Plan	2.4.6	Knowledge of symptom based EOP strategies. SRO ONLY	3.1		4.0	1
	2.4.41	Knowledge of EAL thresholds and classification. SRO ONLY			4.1	1
	2.4.3	Ability to identify post accident instrumentation. RO ONLY	3.5	1		
	2.4.7	Knowledge of event based EOP strategies. RO ONLY	3.1	1	3.8	
	2.4.12	Knowledge of general operating crew responsibilities during emergency operations. RO ONLY	3.4	1		
	2.4.23	Knowledge of the basis for prioritizing emergency procedure implementation during emergency operation. RO ONLY	2.8	1		
	2.4.25	Knowledge of fire protection procedures. RO ONLY	2.9	1		
	Subtotal			5		2
Tier 3 Point Total				10		7

Initial Submittal to ONS

Unit 1 plant conditions:

- Reactor power = 50%
- ICS is in AUTOMATIC

Which one of the following events will require the operating crew to enter the EOP?

- A. Steam Generator Tube Leak of 13 gpm.
- B. Inadvertent ES Channels 1, 3 and 5 actuation.
- C. "A" SG level is 43% and "B" SG level is 37%. Both are stable in the operating range
- D. Control Rods 1 and 5 in Group 3 drop into the core, actuating the in-limit for both rods.

BANK Answer 161

- A. Incorrect - SGTLEOP entry is 25 gpm.
- B. Incorrect - Inadvertent ES action is not an EOP entry.
- C. Incorrect - SG level that causes EOP entry is < 15 inches on the SU Level.
- D. Correct - 2 CR drop into the core requires a manual reactor trip and entry into the EOP.

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

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

Tier: 1

Group: 2

Keyword: DROP ROD

Cog level: M 4.3/4.6

Source: BANK 2003

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

From a 100% FP condition, which one of the following describes the expected response of pressurizer level to a Small Break in the STEAM SPACE of the pressurizer (PZR)? (Assume no operator actions are taken and HPI stabilizes RCS pressure slightly higher than secondary system pressure.)

PZR level initially:

- A. increases rapidly, then slowly increases until the PZR is completely filled by HPI.
- B. decreases and drops off scale low during depressurization until HPI initiates, then level returns on scale during repressurization.
- C. decreases slowly, then decreases more rapidly when a reactor trip occurs, then returns on scale during repressurization with HPI.
- D. increases, then decreases when a reactor trip occurs, then completely fills after the RCS hot leg flashes.

1992/01/25

REFERENCE

OP-OC-TA-AT, Section E.5, pg 14, EO 1.b.5 & SRO Objective 1.b.5

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: STEAM SPACE

Cog level: C/A 3.8/4.2

Source: BANK 1992/01/25

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

A Small Break LOCA has occurred inside containment. Which one of the following describes the status of the SG XSUR level indication?

The indicated level will be:

- A. LOWER than actual, a correction factor based on REACTOR BUILDING temperature must be applied.
- B. ✓ HIGHER than actual, a correction factor based on REACTOR BUILDING temperature must be applied.
- C. LOWER than actual, a correction factor based on REACTOR COOLANT SYSTEM temperature must be applied.
- D. HIGHER than actual, a correction factor based on REACTOR COOLANT SYSTEM temperature must be applied.

*REFERENCE

OP-OC-EAP-E25, Revision 05, page 11; LRO 7, LSO 7

Oconee bank EAP-74 (fully modified)

(3.8/4.0) #116

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: SBLOCA

Cog level: C/A 4.2/3.9

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

- SB LOCA has occurred due to a Seismic event
- Inspections reveal some minor damage to HPI components and piping
- EOP Enclosure 5.1, ES Actuation has been performed
- EOP Enclosure 5.12, ECCS Suction Swap to RBES is in progress
- EOP Enclosure 5.37, Isolation of the HPI Pump Recirc has been completed
- 1LP-19 and 1LP-20 (1A & 1B RX BLDG SUCTION) are OPEN
- 1LP-21 and 1LP-22 (1A & 1B LPI BWST SUCTION) are CLOSED
- 1LP-16 (1B LPI TO HPI & RBS) FAILED CLOSED
- RCS pressure is 1700 psig as read on ICCM indication
- 1HP-410 (1HP-26 BYPASS) was inadvertently opened and remains open
- 1HP-120 (RC VOLUME CONTROL) is closed

Which one of the following sets of flowrates meets acceptable HPI flow for the above conditions? (Assume zero seal injection flow)

- | | |
|---------------------|---------|
| A. "A" HPI HDR Flow | 270 gpm |
| "B" HPI HDR Flow | 165 gpm |
| "A" Crossover Flow | 200 gpm |
| "B" Crossover Flow | 0 gpm |
| RCS Makeup Flow | 0 gpm |
| | |
| B. "A" HPI HDR Flow | 379 gpm |
| "B" HPI HDR Flow | 374 gpm |
| "A" Crossover Flow | 0 gpm |
| "B" Crossover Flow | 0 gpm |
| RCS Makeup Flow | 30 gpm |
| | |
| C. "A" HPI HDR Flow | 440 gpm |
| "B" HPI HDR Flow | 0 gpm |
| "A" Crossover Flow | 0 gpm |
| "B" Crossover Flow | 317 gpm |
| RCS Makeup Flow | 30 gpm |
| | |
| D. "A" HPI HDR Flow | 140 gpm |
| "B" HPI HDR Flow | 360 gpm |
| "A" Crossover Flow | 245 gpm |
| "B" Crossover Flow | 0 gpm |
| RCS Makeup Flow | 0 gpm |

- A. INCORRECT: total HPI flow is less than 750 gpm (635) but the flow from the "C" HPIP is less than 170 gpm. Encl 5.12 closed the HPIP minimum recirc valves (completion of encl.5.37) so the pump must have at least 170 gpm flow.
- B. INCORRECT: flow is limited to less than 750 gpm total HPI flow with only one LPI/HPI header operable when suction is from the RBES. The 30 gpm flow that shows on RCS Makeup flow should not be indicated as HP-120 is closed (possible leak flow due to seismic damage)
- C. INCORRECT: total HPI flow is 757 gpm (plus the 30 gpm possible damage flow)
- D. CORRECT: total HPI flow is 745 gpm.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: D B D B B D D D D C	Scramble Range: A - D
Tier:	1		Group:	I
Keyword:	SBLOCA		Cog level:	C/A 3.3/3.4
Source:	M		Exam:	OC03301
Test:	S		Author/Reviewer:	LSM/RFA

A small break LOCA has occurred. Plant conditions are as follows:

- RCPs have been tripped due to a loss of subcooling margin.
- Primary to secondary heat transfer has been lost.
- RCPs are to be bumped.

Which one of the following is the advantage of bumping an RCP in the loop with the highest hot leg level?

- A. ✓ to improve the chances of recoupling and establish natural circulation.
- B. to allow more HPI flow to enter and refill the RCS.
- C. to increase RCS pressure and allow RCS level to recover.
- D. to reduce of the water hammer induced in the RCS piping and establish natural circulation.

Oconee Lesson Plan OP-OC-EAP-E22, pg 20 Obj. R14 based on 1992/01/20 bank question

A. Correct Answer

B. Incorrect. This will increase pressure and decrease HPI flow

C. Incorrect. RC Pump bumps are no longer used to collapse voids due to the reactivity concerns associated with sweeping the voids through the core.

D. While this will help establish natural circulation, water hammer is not the reason for the bumping.

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

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

Tier: 1

Group: 1

Keyword: SBLOCA

Cog level: C/A 4.2/4.7

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

The following plant conditions exist:

- RCS Leak = 200 gpm
- RCP's unavailable
- Reflux boiling is occurring

Which one of the following describes the method of post cooldown long term decay heat removal provided by the EOPs ?

- A. ✓ Initiate Natural Circulation Cooldown and ensure one LPI train in High Pressure Mode and one LPI train in ECCS alignment with suction from the RBES.
- B. Initiate Natural Circulation Cooldown and ensure one LPI train in series Mode and one LPI train in ECCS alignment with suction from the RBES.
- C. Start one RCP and ensure one LPI train in High Pressure Mode and one LPI train in ECCS alignment with suction from the RBES.
- D. Start one RCP and ensure one LPI train in series Mode and one LPI train in ECCS alignment with suction from the RBES.

Based on Bank Question 204
EAP130701

A. Correct. The LOCA Cooldown section of the EOP will align on LPI train in the High Pressure Mode while leaving the other in its ECCS alignment with suction on the RBES.

B. Incorrect. Series mode would require use of both LPI Coolers. One train remains aligned to the RBES to provide for replacement of water lost out of the break.

C. Actions are correct except an RCP is not used

D. Series mode would require use of both LPI Coolers. One train remains aligned to the RBES to provide for replacement of water lost out of the break. and an RCP is not used.

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

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

Tier: 1

Group: 1

Keyword: NATURAL CIRC

Cog level: C/A 4.1/4.4

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 3 is operating at 100 % power.

You observe the following temperatures slowly rising on the 3A RCP.

Upper oil cooler
Motor stator coolers
Lower oil pot

All other temperatures and vibration reading do not significantly change.

Assume no operator actions. Which one of the following has caused the RCP temperature to increase, and what actions will you take?

- A. Loss of Seal Injection to the 3A pump and secure the RCP.
- B. Letdown has isolated and trip the reactor.
- C. Loss of LPSW to the 3A pump and secure the RCP.
- D. Loss of CCW to the 3A pump and trip the reactor.

REACTOR COOLANT PUMP MOTOR (PNS-CPM) LESSON PLAN

PNS-CPMr11a

C. LPSW provides cooling to:

- 1. Upper oil cooler
- 2. Motor stator coolers
- 3.

Lower oil pot

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: RCP

Cog level: C/A 3.7/3.7

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM?RFA

Unit 1 plant conditions:

- Reactor power = 100%
- A leak occurs on the "1A" HPI Injection header
- 1RIA-32 is in alarm
- 1B HPI pump is available

Which one of the following describes how the Pressurizer level will be procedurally controlled while in this condition?

By adjusting:

- A. ✓ letdown flow and starting 1B HPIP with flow through 1HP-409 (1HP-27 Bypass).
- B. letdown flow and starting 1B HPIP with flow through 1HP-410 (1HP-26 Bypass).
- C. seal injection flow and starting 1C HPIP with flow through 1HP-409 (1HP-27 Bypass).
- D. seal injection flow and starting 1C HPIP with flow through 1HP-410 (1HP-26 Bypass).

Answer 142

A

A. Correct- Step 4.140 has the operator ensure 1B HPI pump is operating and go to step 4.146 which instructs the operator to adjust letdown and throttle 1HP-409 to makeup to the RCS.

B. Incorrect- Seal injection is not adjusted and 1HP-410 is not used since the leak is on the 1A injection header.

C. Incorrect- Seal injection is not adjusted and the 1C pump will not be used since 1B HPI pump is available.

D. Incorrect- Seal injection is not adjusted and the 1C pump will not be used since 1B HPI pump is available. 1HP-410 will not be used since the leak is on the 1A injection header.

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: LOSS OF RC MAKEUP

Cog level: C/A 3.0/3.4

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

INITIAL CONDITIONS:

Time = 0200

A Turbine Building Flood is in progress

The reactor was manually tripped

Main and Emergency FDW is unavailable

The SSF and Station ASW is unavailable

CURRENT CONDITIONS:

Time = 0400

HPI Forced Cooling is in progress per Rule 4 (Initiation of HPI Forced Cooling)

The TSC desires to throttle HPI for long term DHR

Which one of the following is correct?

- A. Throttle HPI in both headers to 100 gpm/header.
- B. Throttle HPI in both headers to maintain ALL SCMs > 0 F.
- C. Isolate flow in one HPI header and throttle remaining header to 200 gpm.
- D. Isolate flow in one HPI header and throttle remaining header to maintain ALL SCMs > 0 F.

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Attachment: Page 27 of 29 of TBF

- A. Incorrect, one HPI header is isolated.
- B. Incorrect, one HPI header is isolated.
- C. Correct, Isolate flow in one HPI header and throttle remaining header to 200 gpm per curve.
- D. Incorrect, Isolate flow in one HPI header and throttle remaining header to 200 gpm per curve. SCM may be lost.

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

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

Tier: 1

Group: 1

Keyword: LOSS OF RHR

Cog level: C/A 3.1/3.4

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 2 is operating at 11% power, when the Standby CC pump auto starts.

Total CC flow is 575 gpm and is slowly decreasing.

1HP-5 closes.

All RCP seal return valves remain open.

CRD Stator Temperatures are ~ 155F.

Which one of the following are required Immediate Manual Actions?

A. Enter AP/1/A/1700/020
Do NOT Trip the Reactor
STOP ALL RCPs
Initiate AP/25

B. Enter AP/25
Trip the Reactor
Stop all RCPs
Enter AP/1/A/1700/20

C. Enter AP/1/A/1700/020
Do NOT Trip the Reactor
Do NOT stop all RCPs
Do NOT Initiate AP/25

D. Enter AP/1/A/1700/020
Trip the Reactor
Do NOT stop all RCPs
Do NOT Initiate AP/25

3.1 __ IAAT both of the following are lost:

- CC to RCPs
- RCP seal injection

THEN perform the following:

- A. __ Trip Rx.
- B. __ Stop all RCPs.
- C. __ Initiate AP/25 (SSF EOP).

NOTE

If CRD stator cooling is lost, stator temperatures will reach 180...F in ~4 minutes.

3.2 __ IAAT at least two CRD stator temperatures greater than 180...F,
THEN trip Rx.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: C C A A A D C C D	Scramble Range: A - D
Tier:	1		Group:	1
Keyword:	CCW		Cog level:	C/A 3.3/3.7
Source:	NEW		Exam:	OC03301
Test:	R		Author/Reviewer:	LSM/RFA

Unit 1 plant conditions:

- A Unit shutdown was performed following a sudden pressurizer level drop.
- LPI Cooler Outlet temperature = 175° F.
- RCS Low Range Cooldown pressure = 250 psig.
- Pressurizer level = 120 inches.
- All RCP's are off.
- NO outstanding prior Technical Specification CONDITIONS at this time.

Investigations indicate that the level drop may have been due to a pressurizer level instrument malfunction. The OSM has requested that you consider the possibility of increasing pressurizer level to 260 inches to facilitate trouble shooting the instrument.

Which one of the following is correct?

- A. Pressurizer level can be increased to 260" with no additional requirements because the PORV is operable.
- B. Pressurizer level can be increased to 260" because an LTOP operator is already established.
- C. Pressurizer level can be increased to 260" if an LTOP operator is established.
- D. Technical Specifications will not allow pressurizer level > 220" at this time.

Answer 125

REFERENCE ALLOWED - 1108/01 LR CD curve and LTOP logic diagram

A. Incorrect. Although the PORV is operable, admin controls require pressurizer level <220" unless an LTOP operator is established.

B. Incorrect. Since the unit is in NO Tech Spec conditions, an LTOP operator is not already established.

C. Correct. An LTOP operator is allowed to replace any of the admin controls in Train 2 of LTOP (see TS 3.4.12 bases).

D. Incorrect See above.

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

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

Tier: 1

Group: 1

Keyword: TECH SPEC

Cog level: C/A 2.9/4.0

Source: M

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

12. 000027AK1.01 001/1/1/PRESSURIZER/M 3.1/3.4/M/OC03301/R/LSM/RFA

Which one of the following is correct, following a failure of the Channel "A" Pressurizer Temperature RTD to a minimum value?

PZR Level #1 will _____, PZR Saturation Pressure will _____.

- A. increase / increase
- B. decrease / decrease
- C. increase / decrease
- D. decrease / increase

Answer 409

B

A. Incorrect, failed RTD provides 0 output => low temperature indication. Loss of temp compensation will decrease indicated level. Indicated temp decreases to the saturation program and this will decrease the saturated pressure for that temperature.

B. Correct, The RTD fails LOW; decreasing both operator indications.

C. Incorrect, same as A for PZR level

D. Incorrect, same as A for Sat temperature

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

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

Tier: 1

Group: 1

Keyword: PRESSURIZER

Cog level: M 3.1/3.4

Source: M

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

13. 000028AA2.01 001/1/2/PZR/C/A 3.4/3.6/M 1992/01/20/OC03301/S/LSM/RFA

The reactor is operating normally at 100% power with Pressurizer Level Instrument #1 selected for control.

Which one of the following describes the resulting plant conditions when a "Data Link Failure" is indicated on ICCM Train "A"?

- A. ✓ PZR level goes to zero, HP-120 fully opens, and PZR level High/Low statalarms actuate.
- B. PZR level goes full scale, HP-120 fully closes, and PZR level High/Low statalarms are inoperable.
- C. SASS selects the alternate PZR level signal, HP-120 throttles as demanded by the good level signal, and PZR level High/Low statalarms are inoperable.
- D. SASS selects the alternate PZR level signal, HP-120 throttles as demanded by the good level signal, and PZR level High/Low statalarms are operable.

OP-OC-PNS-PZR

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

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

Tier: 1

Group: 2

Keyword: PZR

Cog level: C/A 3.4/3.6

Source: M 1992/01/20

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

14. 000028AK1.01 001/1/2/PZR/C/A 2.8/3.1/M 1992/01/20/OC03301/R/LSM/RFA

Plant conditions on Unit 2 are as follows:

- Reactor trip from 100% power.
- Loss of pressurizer level control has occurred.
- Pressurizer level is 398 inches slowly increasing on all indicators.
- RCS pressure is stable.

Which one of the following describes the response of RCS pressure and the reason for this response when PZR level increases to full scale?

- A. ✓ RCS pressure remains stable because the PZR level instrument reference leg does NOT tap off the true top of the PZR
- B. RCS pressure remains stable because the PZR level instrument variable leg does NOT tap off the true bottom of the PZR
- C. RCS pressure rapidly increases because the PZR level instrument reference leg taps off the true top of the PZR
- D. RCS pressure rapidly increases because the PZR level instrument variable leg taps off the true bottom of the PZR

Oconee Lesson Plan OP-OC-PNS-PZR

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

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

Scramble Range: A - D

Tier: 1

Group: 2

Keyword: PZR

Cog level: C/A 2.8/3.1

Source: M 1992/01/20

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

15. 000029EA2.09 001/1/1/ATWS/C/A 4.4/4.5/NEW/OC03301/S/LSM/RFA

Which one of the following describes the procedural bases for limiting OTSG levels to less than 85% Operating Range during an ATWS event from 100% power?

- A.✓ Main FDW pumps would trip on high SG level, resulting in the inability of FDW to match power production.
- B. The steam lines would be filled with water resulting in MS line failure.
- C. The steam generator shell would be filled solid resulting in an excessive primary cooldown.
- D. Excessive negative reactivity would be added, due to the increase in heat transfer, causing a power excursion.

OP-OC-EAP-E26,

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: ATWS

Cog level: C/A 4.4/4.5

Source: NEW

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

16. 000029EK3.12 001/1/1/ATWS/M 4.4/4.8/NEW/OC03301/R/LSM/RFA

Which one of the following is the reason that EP/3/A/1800/01 Section 506, Unanticipated Nuclear Power Production, directs operators to trip the main turbine if it has not already tripped?

To:

- A. prevent the chance of an overcooling event adding additional reactivity to the core.
- B. allow heatup of the RCS enabling moderator temperature and doppler coefficients to reduce reactor power.
- C. prevent motorizing the main generator.
- D. prevent the loss of pressurizer level due to AMSAC activation.

OP-OC-EAP-E26

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	B A D B C A C B A A	Scramble Range: A - D
Tier:		1			Group:		1
Keyword:		ATWS			Cog level:		M 4.4/4.8
Source:		NEW			Exam:		OC03301
Test:		R			Author/Reviewer:		LSM/RFA

17. 000033AA2.11 001/1/2/INTERMEDIATE RANGE/M 3.1/3.4/BANK 1990/07/06/OC03301/R/LSM/RFA

Which one of the following describes the effect of a loss of compensating voltage on the Intermediate Range Nuclear Instrumentation indication?

Results in:

- A. a higher gamma induced current from the inner chamber.
- B.✓ an indicated neutron level higher than actual.
- C. a greater indicated startup rate.
- D. a decrease in the amount of overlap between nuclear instruments.

Ocone: Lesson Plan, "Nuclear Instrumentation,"

OP-OC-IC-NI,

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

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

Tier: 1

Group: 2

Keyword: INTERMEDIATE RANGE

Cog level: M 3.1/3.4

Source: BANK 1990/07/06

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

18. 000038EA1.19 001/1/1/SGTR/C/A 3.4/3.4/NEW/OC03301/R/LSM/RFA

The following plant conditions exist:

- o A tube rupture is in progress in OTSG "A".
- o RCS pressure is 1700 psig.
- o RCS temperature is 540 degrees F.
- o OTSG "A" operating range level is 89% (~280 inches XSUR).
- o The operator is steaming OTSG "A" and OTSG "B".
- o All RCPs are tripped.

Which one of the following is the reason for increasing the steaming rate for OTSG "A"?

- A. To prevent a trip of the MFDW pumps.
- B. To maintain a 100 degrees F. per hour RCS cooldown rate with BOTH OTSGs.
- C. To prevent OTSG "A" from filling and lifting a MSRV.
- D. To maintain Tube-to-Shell delta T within 50 degrees F.

OP-OC-EAP-E24, EP/1/A/1800/01

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

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

Tier: 1

Group: 1

Keyword: SGTR

Cog level: C/A 3.4/3.4

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

The following plant conditions exist:

- o Unit 1 reactor has tripped.
- o Core subcooling margin indicates ZERO (0) degrees F.
- o "A" OTSG pressure is 800 psig and decreasing.
- o "B" OTSG pressure is stable.
- o RCS Tc is 535 degrees F. and decreasing.
- o RCS pressure is decreasing.
- o Pressurizer level is ZERO (0) inches.

Which one of the following procedures should be used to mitigate these abnormal RCS indications?

EP/2/A/1800/001 Attachment:

- A. G, Steam Generator Tube Rupture.
- B. I, Loss of Coolant Accident
- C. E, Loss of heat Transfer
- D. ☒ F, Excessive Heat Transfer

Oconee Procedure Index

(o Core subcooling margin indicates ZERO (0) degrees F.). This bullet implies that the instrument is failed based on other indications.

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

Answer: DCDDABCCDD Scramble Range: A - D

Tier:	1	Group:	1
Keyword:	EXCESSIVE HEAT TRANS	Cog level:	C/A 3.1/4.2
Source:	NEW	Exam:	OC03301
Test:	R	Author/Reviewer:	LSM/RFA

Unit 1 conditions:

INITIAL CONDITIONS:

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

CURRENT CONDITIONS:

- Reactor tripped
- Reactor power = 1% and decreasing
- RCS pressure = 1850 psig and decreasing
- Condenser vacuum = 19 inches and decreasing
- 1A2 RCP tripped

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

- A. Low RCS pressure.
- B. Power to flow imbalance.
- C. Main turbine anticipatory trip.
- D. Loss of feedwater anticipatory trip.

Answer 423

D

- A. Incorrect - RCS pressure > 1810 psig.
- B. Incorrect - Rx power < min. flux/flow/imb trip setpoint.
- C. Incorrect - Rx power < 27.75% and decreasing, turb. anticipatory trip bypassed.
- D. Correct - Operating MFDWP tripped on low vacuum.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9
			Answer: D C C B B A A A C C Scramble Range: A - D
Tier:	1		Group: 2
Keyword:	COND VACUUM		Cog level: C/A 3.9/4.1
Source:	BANK 2003		Exam: OC03301
Test:	S		Author/Reviewer: LSM/RFA

Procedure AP/O/A/1700/19, " Loss of Main Feedwater ", requires that FDW-315 and 316 controllers [EFW control valves] have their manual loader output matched with the automatic output AND placed in MANUAL prior to resetting a Main Feedwater Pump.

Which one of the following is the reason that this action is necessary prior to resetting a main FDWP?

- A. FDW 315/316 automatically close when a main FDWP is reset if their controllers are in "AUTO".
- B. the main FDWP is interlocked and will not restart if FDW 315/316 controllers are in "AUTO".
- C. the main FDWP is interlocked and will not restart. FDW 315/316 automatically go to full open.
- D. FDW 315/316 automatically go to full open when a main FDWP is reset if their controllers are in "AUTO".

Based on material in a question asked in 1990/07/06

a. WHY is this action necessary prior to resetting a main FDWP? [1.0]

a. FDW 315/316 automatically close when a main FDWP is reset if their controllers are in "AUTO"

b. WHAT undesirable consequence(s) is this requirement protecting against?

b. Loss of feedwater injection to the S/G's.

Ocone: EP/O/A/1700/14; OP-OC-SPS-SY-EF, pp. 66 and 68, L.O. 4.n.

3.5/3.7

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: FEEDWATER

Cog level: M 3.8/4.1

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

22. 000055EA2.01 001/1/1/BLACKOUT/C/A 3.4/3.7/NEW/OC03301/S/LSM/RFA

Following a station blackout, the crew enters AP/1/A/1700/11. Shortly after entry in to AP/1/A/1700/11 the Turbine Bypass Valves cycle on and off. Which one of the follow has caused this to occur?

- A. Condenser Hotwell Level cycling at the High setpoint.
- B.✓ Low CCW flow as a result of gravity flow only.
- C. Main Steam Relief Valves unable to relieve OTSG Pressure.
- D. Oscillating RCS Pressure and Natural Circulation due to cycling of the PORV.

Solution - B

Low gravity flow caused by the loss of valve position and control of the CCW system which results in a lowering of condenser vacuum, which has in turn caused the Turbine Bypass Valves to cycle on and off.

Reference -

Following a station blackout AP/1/A/1700/11 informs the operator that the Turbine Bypass Valves may cycle on and off at the 7 inch Hg condenser vacuum low limit. Low CCW flow as a result of gravity flow only.

Oconee AP-11

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: B A C D D C D B D C	Scramble Range: A - D
Tier:	1		Group:	1
Keyword:	BLACKOUT		Cog level:	C/A 3.4/3.7
Source:	NEW		Exam:	OC03301
Test:	S		Author/Reviewer:	LSM/RFA

Unit 1 plant conditions:

A LOCA has decreased RCS pressure to 1500 psig.

A loss of power has caused both Keowee Units to emergency start.

MFBs have been re-energized through CT-4.

Which one of the following sets of actions is required to reset the load shed signals?

The operator must:

- A. reset "ES Channels 1 & 2" and secure both Keowee Units.
- B. energize the startup source and push the load shed reset pushbuttons.
- C. ✓ depress "Manual" on the Load Shed ES modules and simultaneously depress the reset push buttons for the MFB monitor panels load shed circuit.
- D. restore an offsite power source to the 230 KV "Yellow Bus" and reset both the Keowee Emergency Start signals in Unit 1 and 2 control room.

bank 327

A. Incorrect, securing Keowee units not required

B. Incorrect, no loadshed reset buttons. There are Keowee reset buttons

C. Correct, depress "Manual" on the Load Shed ES modules and simultaneously depress reset push buttons for MFB monitor panels load shed circuit.

D. Incorrect, will not reset loadshed

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

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

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: LOSP

Cog level: M 3.8/3.9

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

24. 000057 GEN 2.1.8 001/1/1/INSTRUMENT/C/A 3.7/4.4/NEW/OC03301/S/LSM/RFA

Vital inverter 3DIA tripped. The repairs are complete and it is ready to be returned to service. Currently, regulated AC power from Panelboard 3KRA is supplying the load. DC power to the inverter has been isolated. RPS Channel testing is also due during your shift.

You have been instructed to restart the Vital Bus Inverters.

You have just directed the closure of breaker #33 on the 3DIA DC Panelboard.

The RO pressed the PRECHARGE SWITCH pushbutton.

The PRECHARGE Light illuminates.

Which one of the following actions should be directed next?

Close the:

- A. AC INPUT circuit breaker and verify that the input filter capacitors discharge.
- B. DC INPUT circuit breaker and verify that the input filter capacitors discharge.
- C. AC INPUT circuit breaker and verify that the INVERTER OUTPUT volt meter increases to 120 Volts.
- D. DC INPUT circuit breaker and verify that the INVERTER OUTPUT volt meter increases to 120 Volts.

op/3/a/1107/004

2.2 Press the PRECHARGE SWITCH pushbutton until the PRECHARGE Light comes on.

2.3 Close the DC INPUT circuit breaker and verify INVERTER OUTPUT volt meter increases to 120 Volts.

2.4 Close the INVERTER OUTPUT circuit breaker.

2.5 Verify the IN SYNC light is on.

2.6 Position the MANUAL BYPASS SWITCH to the "NORMAL SOURCE" position.

2.7 Verify the following indications:

· INVERTER OUTPUT volt meter » 120 Volts.

· Inverter Output frequency meter » 60 Hz.

· INVERTER OUTPUT amp meter increases and stabilizes to match SYSTEM OUTPUT amp meter.

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

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

Tier: 1

Group: 1

Keyword: INSTRUMENT

Cog level: C/A 3.7/4.4

Source: NEW

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

25. 000057AA106 001/1/1/LOSS OF AC POWER/M 3.5/3.5/BANK 1991/07/24/OC03301/R/LSM/RFA

Which one of the following actions are to be performed from the Auxiliary Shutdown Panel upon a loss of 1KI bus per AP/1/A/1700/23, "Loss of 1KI Bus"?

- A. Bypass Turbine Stop Valve controls.
- B. Control RCS volume with HP-120 (RC Volume Control).
- C. Control RCS pressure with Pressurizer Heater Bank Two.
- D. Bypass 1KI Inverter.

AP/1/A/1700/23

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

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

Tier: 1

Group: 1

Keyword: LOSS OF AC POWER

Cog level: M 3.5/3.5

Source: BANK 1991/07/24

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Plant conditions:

- 1015 on 04/30/01 the "125 VDC Ground Trouble" stat alarm was received.
- 1215 on 04/30/01 bus to ground voltage measurements were taken.
- 1415 on 04/30/01 The Units' DC systems were separated using OP/0/A/1107/08, Isolation of DC Systems Between Units after gaining OSM concurrence.
- 1730 on 04/30/01 the ground has been determined to exist on Unit 2
- Ground magnitude = 2.8V (~525 Ohms).

Which one of the following is correct?

- A. The ground detector is inoperable on Unit 1, 2, & 3.
- B. Both Unit 2 and Unit 3 DC systems are functional, but not operable.
- C. Unit 2 is required to initiate efforts to locate the ground by 1015 on 05/02/01.
- D. Unit 3 is required to measure ground and bus voltage by 0215 on 05/01/01.

- A. Incorrect- The ground detector is operable on unit 1. Buses to ground voltages were taken prior to the separation of the buses. A ground locating effort located the ground on Unit 2 so the ground detector is operable because a hard ground existed.
- B. Incorrect- the TS definition of functional does not apply in this case.
- C. Correct- With the magnitude of the ground at 2.8 volts, condition D requires that efforts to locate the ground be initiated 48 hours from the receipt of the continuous ground alarm.
- D. Incorrect. Unit 3 is required to measure ground and bus voltage by 0300 on 05/01/01. This is the 12 hours allowed by condition B with the continuous ground alarm present.

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

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

Tier:	1	Group:	1
Keyword:	DC POWER	Cog level:	C/A 3.5/3.9
Source:	M	Exam:	OC03301
Test:	S	Author/Reviewer:	LSM/RFA

27. 000059AK3.01 001/1/2/RAD RELEASE/M 2.7/2.8/NEW/OC03301/R/LSM/RFA

Both a GWR and an LWR are in progress. IRIA-35 has just alarmed.

Which one of the following are your required actions?

- A. Terminate both the GWR and LWR.
- B. Terminate the GWR only.
- C. Terminate the LWR only.
- D. Continue both releases until a confirmatory sample indicates the alarm is valid.

Per AP/1/A/1700/018 Section 4C

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 1
Keyword: RAD RELEASE
Source: NEW
Test: R

Group: 2
Cog level: M 2.7/2.8
Exam: OC03301
Author/Reviewer: LSM/RFA

28. 000061K1.01 001/1/2/ARM/M 2.5/2.9/BANK 2003/OC03301/R/LSM/RFA

Which one of the following Radiation Monitors is potentially unreliable under accident conditions?

- A.✓ RIA- 4, Reactor Building Hatch Area Radiation Monitor.
- B. RIA-56, High Range Stack Radiation Monitor.
- C. RIA-57, High Range Containment Radiation Monitor.
- D. RIA-58, High Range Containment Radiation Monitor.

bank 2003 question 791

A. Correct - RIA-4 is not totally EQ.

B, C, D. Incorrect - RIAs are used during accident conditions

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

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

Tier: 1

Group: 2

Keyword: ARM

Cog level: M 2.5/2.9

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

29. 000062AA1.07 001/1/1/SERVICE WATER/C/A 2.9/3.0/NEW/OC03301/R/LSM/RFA

During a walkdown of the fire headers you are informed that the 2HPSW-14 (Fire Hdr. 'B' Turbine Room Tie) has been found in the failed open position.

Which one of the following is the consequence, if any, of this failure?

- A. All "M" header systems inoperable.
- B.✓ All "M" header systems are operable.
- C. The fire header is capable of supplying Unit 3 fire loads only.
- D. EWST level indication cannot accurately be determined.

High Pressure Service Water

1. Purpose

To describe proper method for operating HPSW System for Unit 1, 2, and Unit 3.

2. Limits And Precautions

2.1 2HPSW-14 (Fire Hdr. 'B' Turbine Room Tie) should remain open.

- Closing this valve will make all "M" header systems inoperable.
- Due to piping size and length, 3HPSW-453 (AB/2 F1 Fire Prot. Hdr. Sup. from 'M' Line Hdr. at Unit #3) cannot supply all "M" header loads.
- Contact System Engineer to determine which "M" headers are operable.

2.2 3HPSW-14 (Fire Hdr. 'B' Turbine Room Tie) should remain open.

- With 3HPSW-14 closed, all other "M" line header loads are operable, as long as 2HPSW-14 and 3HPSW-453 are open.

2.3 With both 2HPSW-14 (Fire Hdr. 'B' Turbine Room Tie) and 3HPSW-14 (Fire Hdr. 'B' Turbine Room Tie) closed, all isolated sprinklers and hose stations will be inoperable.

{6: Plant Sign}

- 3HPSW-453 is capable of supplying Unit 3 loads only, if 3HPSW-14 (Fire Hdr. 'B' Turbine Room Tie) is closed.

- Contact System Engineer to determine header operability if any question arises.

2.4 Control Room EWST level indication is not accurate at very low levels.

- At zero feet indicated level, there is still approximately 13' left in tank.
- If EWST is isolated for repair or inspection inside tank, prior to releasing red tags for work, maintenance should be informed to pump remaining water from EWST as per MP/0/B/1800/121 (ELEVATED WATER STORAGE TANK CIVIL INSPECTION).{4}

2.5 HPSW Pumps A & B have a minimum flow requirement of 1450 gpm.

2.6 Normal system leakage is approximately 200 gpm.

2.7 If altitude valve closes while an HPSW pump is still running, pump will be deadheaded.

OP/0/A/1104/011

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2.8 During normal operation, deadheading is prevented by automatic controls that stop HPSW pumps upon full level in EWST (approximately 90,000 gallons), before altitude valve closes. {3} {7: Plant sign}

2.9 Do not operate an HPSW pump with altitude valve isolated, unless provisions have been made to ensure pump will not be operated below its minimum flow. {3}

2.10 The BASE HPSW Pump starts at 70,000 Gal. EWST Level, the STBY HPSW Pump starts at 60,000 Gal. EWST Level, at 90,000 Gal. A & B HPSW Pumps will STOP.

{7: Plant sign}

2.11 Whenever an HPSW pump starts, operators should ensure that it automatically stops when EWST is full (approximately 90,000 gallons). {3} {7: Plant sign}

2.12 SLC 16.9.7 Bases assumes the "A" HPSW Pump is in STDBY and the "B" HPSW Pump is in BASE. If required to place the HPSW pumps in any other configuration refer to appropriate enclosure. {5}

2.13 HPSW Pump(s) can operate with the Altitude Valve closed and no additional system flow for = 15 minutes.

NOTE: Starting duty recommendations are to extend the life of the motor however, they may be exceeded during an emergency.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A C A C A B C C C Scramble Range: A - D
Tier: 1 Group: 1
Keyword: SERVICE WATER Cog level: C/A 2.9/3.0
Source: NEW Exam: OC03301
Test: R Author/Reviewer: LSM/RFA

30. 000067 GEN 2.4.27 001/1/2/FIRE/M 3.0/3.5/NEW/OC03301/S/LSM/RFA

A fire near the control room door has rendered the control room unsafe. The decision has been made to enter AP/1/A/1700/08, Loss of Control Room. Which one of the following actions are taken before transitioning out of AP/1/A/1700/08?

- A. ✓ Dispatch an operator to locally close 1-FDW-315.
- B. Dispatch an operator to locally open 1-HP-24.
- C. Verify both Keowee Units emergency started.
- D. Verify at least one Keowee Unit emergency started.

AP/1/A/1700/008

- A. Correct
- B. & C . Actions taken only if the control room is abandoned for reasons other than fire.
- D. This is not an action taken in AP/1/A/1700/008

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: A A A B C B A C D C	Scramble Range: A - D
Tier:	1		Group:	2
Keyword:	FIRE		Cog level:	M 3.0/3.5
Source:	NEW		Exam:	OC03301
Test:	S		Author/Reviewer:	LSM/RFA

31. 000067AK3.04 001/1/2/PLANT FIRE/M 3.3/4.1/BANK 2003/OC03301/R/LSM/RFA

The following conditions exist:

- A fire occurred that destroyed equipment, normal power supplies, controls, and cabling.
- Pumps required for plant shutdown cannot be operated from their normal power supply.

Which one of the following is correct?

I&E will align power to required Appendix R pumps from:

- A. CT-5 through the Appendix R Switchgear.
- B. CT-5 through motor starters on the back of the Appendix R Portable Valve Control Panel.
- C. CT-4 through the Appendix R Switchgear.
- D. CT-4 through motor starters on the back of the Appendix R Portable Valve Control Panel.

Bank 238

A Incorrect. Power to Appendix R Pumps and controls is supplied via CT-4 (Keowee underground feeder) through the Appendix R Switchgear.

B Incorrect. Power to Appendix R Pumps and controls is supplied via CT-4 (Keowee underground feeder) through the Appendix R Switchgear.

C Correct. Power to Appendix R Pumps and controls is supplied via CT-4 (Keowee underground feeder) through the Appendix R Switchgear.

D Incorrect. Power to Appendix R Pumps and controls is supplied via CT-4 (Keowee underground feeder) through the Appendix R Switchgear. Power is not through motor starters on the back of the Appendix R Portable Valve Control Panel.

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

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

Tier: 1

Group: 2

Keyword: PLANT FIRE

Cog level: M 3.3/4.1

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

The following conditions exist for unit 1:

AMSAC/DSS Ch 1 AND Ch 2 enabled.

"Sy Max" Programmable Controllers 'Run' lights On and 'Halt' lights Off for Ch 1 & Ch 2.

Which one of the following is correct per SLC 16.7.2?

- A. At 2450 psig, the inability of control rods to respond to a DSS signal constitutes inoperability of the DSS system.
- B.✓ At 2450 psig, the inability of control rods to respond to a DSS signal does NOT constitute inoperability of the DSS system.
- C. At 1900 psig, the inability of control rods to respond to a DSS signal constitutes inoperability of the DSS system.
- D. At 1900 psig, the inability of control rods to respond to a DSS signal does NOT constitute inoperability of the DSS system.

C. Diverse Scram System - The system is designed to automatically drop the control rods in Groups 5,6&7 and any rods that are on the Aux. Power Supply AND raises the Turbine Bypass Valve setpoint WHEN RCS pressure reaches 2450 psig.

1. (Obj. R21,22,23) Selected Licensee Commitment 16.7.2 - applies when the reactor is critical (Mode 1 and Mode 2, when $K_{eff} \geq 1.0$)
 - a) If one or both channels is inoperable, restore to service within 7 days or file a report to the NRC within the next 30 days.
 - b) Surveillance
 - 1) Perform channel Logic Test at least once every 184 days.
 - 2) Perform complete DSS Actuation Test from input sensors through output relays at least every refueling outage. (18 months)
 2. PT/600/1 Periodic Instrument Surveillance
 - a) Guidance for Normal Status
 - 1) DSS not actuated (statalarms & computer alarms)
 - 2) AMSAC/DSS Ch 1&2 not bypassed (comp. alarms and lights on UB1)
 - 3) AMSAC/DSS Enabled (light on UB1)
 - 4) AMSAC/DSS UPS Ch 1&2 Normal (Uninterruptible Power Supply) Computer points
 - 5) "Sy Max" Programmable Controllers Ch 1&2 'Run' lights On AND 'Halt' lights Off.
 - b) (Obj. R20) Guidance for determining operability.
 - 1) Surveillance requirements met (SLC 16.7.2).
 - 2) AMSAC/DSS Ch 1 AND Ch 2 enabled.
 - 3) All AMSAC/DSS circuitry functional and properly calibrated.
 - 4) "Sy Max" Programmable Controllers 'Run' lights On and 'Halt' lights Off for Ch 1 & Ch 2.
- NOTE: Inability of control rods to respond to a DSS signal doesn't constitute inoperability of DSS system. This is governed by SLC 16.7.2, Anticipated Transients Without Scram.
- 5) If any channel is inoperable or generates an invalid trip signal, bypass BOTH AMSAC/DSS channels.
 - If the reactor is critical, declare system inoperable and take appropriate actions.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9
			Answer: B B B A B A C C A D Scramble Range: A - D
Tier:	2		Group: 2
Keyword:	CRD		Cog level: C/A 4.4/4.6
Source:	NEW		Exam: OC03301
Test:	S		Author/Reviewer: LSM/RFA

33. 003 K5.04 001/2/1/RCP/M 3.1/3.5/NEW/OC03301/R/LSM/RFA

Unit 2 is implementing OP/1/A/11102/10. During 2/0 RCP operation, an RCP is stopped and then later returned to service. Which one of the following is the reason for this action?

- A. To allow a more rapid cooldown to place DHR in service sooner.
- B. To allow an electrical train to be taken out of service.
- C. To minimize the possibility of inadvertent power increases.
- D. To allow the RHR trains to be cross connected.

PIP 0-2-1374

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

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

Tier: 2

Group: 1

Keyword: RCP

Cog level: M 3.1/3.5

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

34. 003A3.02 001/2/1/RCP MOTOR/M 2.6/2.5/NEW/OC03301/R/LSM/RFA

The transducers that are feed (from the voltage and current) from the three phases of the RC Pump Switchgear read as follows:

RCP 1A1 - 18 mv

RCP 1A2 - 15 mv

RCP 1B1 - 16 mv

RCP 1B2 - 16 mv

Which one of the following describe the required manual action or the expected automatic actions?

- A. 1A1 should be tripped manually.
- B. 1A1 should trip automatically.
- C. 1B1 and 1B2 should trip automatically.
- D. There are no required manual or automatic actions.

pns-cpmr11a

Voltage and current from the three phases of the RC Pump Switchgear feed a transducer. At 100% power, the output from this transducer results in an 18 millivolt signal. If this signal drops to 25% below the 18 millivolts, a signal is sent to Reactor Protective System that the RC Pump is tripped (there is one RC Pump Power Monitor for each of the 4 RCPs).

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

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

Tier: 2

Group: 1

Keyword: RCP MOTOR

Cog level: M 2.6/2.5

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

You are the Senior Reactor Operator on Unit 1.

Plant conditions:

The SSF has been activated.

The Reactor Coolant Makeup (RCMU) pump OVERRIDE switch has been positioned to OVERRIDE.

The RCMU pump Suction valve (SF-82) fails closed.

You have dispatched an RO, in accordance with _____, to the SSF to start the D/G and supply Unit 1 RCP seal flow with the RCMU pump. Which one of the following describes the RCMU pump response to an attempted start?

The RCMU Pump:

- A. ✓ will start and continue to run.
- B. will start but will trip on lube oil pressure.
- C. will start but will trip on low discharge flowrate.
- D. interlock will prevent the pump from starting.

NEED PROCEDURE NUMBER FROM FACILITY

- A. Correct The RCMU Pump will start regardless of Suction Valve position.
- B. Incorrect. The Low Lube Oil Press trip is bypassed when Override is used.
- C. Incorrect. The Low Discharge Flowrate trip is bypassed when Override is used.
- D. Incorrect. The RCMU Pump will start regardless of Suction Valve position.

(Ref: NRC #081). The only interlock associated with the Override Switch is HP-398

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

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

Scramble Range: A - D

Tier: 2

Group: 1

Keyword: MAKEUP

Cog level: C/A 2.5/4.0

Source: M

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

The AUTO/MANUAL Transfer switch associated with ACBs 5 & 7/6 & 8 is in AUTO.

Which one of the following would provide power to the makeup pump busses if the Underground breaker is closed?

- A. CX transformer.
- B. either the 1X or 2X 600V transformer.
- C. the 1X 600V transformer only.
- D. the 2X 600V Transformer only.

solution - a

this is the normal alignment

B. Emergency Power

1. With the AUTO/MANUAL Transfer switch associated with ACBs 5 & 7/6 & 8 in AUTO, the auxiliary switchgears are in a normal power alignment. The Normal Power alignment being determined by the position of the Underground breaker. If the underground breaker is CLOSED, then the Normal power is from CX transformer. If the underground breaker is OPEN, then the Normal power is from the units respective 600V transformer (either 1X or 2X). During a loss of power to a unit's 600V switchgear, a 6 second timer starts. If power is restored to the Normal source within this 6 seconds, the timer resets and no breaker action occurs. When the 6 second timer times out, the Normal power supply breaker OPENS and a 30 second timer starts. If power comes back to the Normal source during this 30 seconds, then the normal breaker will CLOSE back in. If the 30 second timer times out, and there is power available on the Alternate source, then the alternate breaker will close in. This breaker stays closed until manually opened, unless this Alternate source loses power and the Normal source has regained power. If this occurs, the alternate breaker opens after a six (6) second timer times out. If this occurs and there is power available on the Normal source, then the normal breaker closes in immediately. If all of these actions have occurred and the unit is back on its Normal power source, then the timers are all reset and the transfer scheme is ready to begin again.

2. With the transfer switch in MAN, no automatic transfers will occur. If power is lost to either units 600V Auxiliary LC, manual action must be taken by the operator to restore power per AP/0/A/2000/002, Keowee Hydro Station - Emergency Start. If power is not restored to the 600V switchgears 1X &/or 2X, then two independent sets of batteries will supply control power to operate the units. Operation in this mode is limited to " 1 hour.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9
			Answer: A B D C D C B A D C Scramble Range: A - D
Tier:	2		Group: 1
Keyword:	MUP		Cog level: M 2.9/3.1
Source:	NEW		Exam: OC03301
Test:	R		Author/Reviewer: LSM/RFA

The following conditions exist on Unit 3:

The Reactor Vessel Head is removed.
The Fuel Transfer Canal is flooded.

There is a thunderstorm in the area when you receive the following alarms:

"LP DECAY HEAT LOOP A FLOW LOW" stationalarm (1SA-03/A-8)
"LP DECAY HEAT LOOP B FLOW LOW" stationalarm (1SA-03/A-9)
"LP INJECTION PUMP A DIFF PRESS LOW" stationalarm (1SA-01/C-12)
"LP INJECTION PUMP B DIFF PRESS LOW" stationalarm (1SA-01/D-12)
"LP INJECTION PUMP C DIFF PRESS LOW" stationalarm (1SA-01/E-12)
"LPI HDR 1A INJECTION FLOW" LO alarm (O1A1310)
"LPI HDR 1B INJECTION FLOW" LO alarm (O1A1311)
"LPSW HEADER A/B PRESS LOW" stationalarm (1SA-09/A-9)
"LPI COOLER 1A LPSW FLOW" LO alarm (O1A2124)
"LPI COOLER 1B LPSW FLOW" LO alarm (O1A2125).

Which one of the following describes what has happened?

- A. Only one LPI pump has tripped.
- B. All LPI Pumps have tripped only.
- C. all LPSW pumps have tripped only.
- D. There are no LPI or LPSW pumps currently running.

solution: C both an LPI and LPSW pump have tripped

1. Purpose

This case provides the necessary actions to mitigate a loss of decay heat removal with the Reactor Vessel Head removed and the Fuel Transfer Canal (FTC) flooded. This case also provides actions to take in the event of loss of water level in the FTC.

2. Symptoms

2.1 LPI pump(s) tripped:

- ❖ "LP DECAY HEAT LOOP A FLOW LOW" stationalarm (1SA-03/A-8)
- ❖ "LP DECAY HEAT LOOP B FLOW LOW" stationalarm (1SA-03/A-9)
- ❖ "LP INJECTION PUMP A DIFF PRESS LOW" stationalarm (1SA-01/C-12)
- ❖ "LP INJECTION PUMP B DIFF PRESS LOW" stationalarm (1SA-01/D-12)
- ❖ "LP INJECTION PUMP C DIFF PRESS LOW" stationalarm (1SA-01/E-12)
- ❖ "LPI HDR 1A INJECTION FLOW" LO alarm (O1A1310)
- ❖ "LPI HDR 1B INJECTION FLOW" LO alarm (O1A1311).

2.2 Loss of LPSW flow to cooler(s):

- ❖ "LPSW HEADER A/B PRESS LOW" stationalarm (1SA-09/A-9)
- ❖ "LPI COOLER 1A LPSW FLOW" LO alarm (O1A2124)
- ❖ "LPI COOLER 1B LPSW FLOW" LO alarm (O1A2125).

2.3 LPI temperature increasing:

- ❖ "LP INJECTION PUMP SUCTION TEMP HIGH HEADER AEA" stationalarm (1SA-03/B-8)
- ❖ "LP INJECTION PUMP SUCTION TEMP HIGH HEADER AEB" stationalarm (1SA-03/B-9)
- ❖ "LP DECAY HEAT EXCH TEMP HIGH" stationalarm (1SA-03/E-9)
- ❖ "LPI COLD SHUTDOWN TEMP HIGH" stationalarm (1SA-05/E-10)
- ❖ "LPI DHR / RBES A SUCTION HDR TEMP" HI alarm (O1A1322)
- ❖ "LPI RBES B SUCTION HDR TEMP" HI alarm (O1A1323).

2.4 Loss of RCS/FTC inventory:

- ❖ "RB REACTOR BLDG. NORM SUMP LEVEL HIGH/LOW" stationalarm (1SA-09/A-6)
- ❖ "SF SFP LEVEL HIGH/LOW" stationalarm (1SA-09/A-5)
- ❖ "SF POOL LEVEL" LO alarm (O1D1064)
- ❖ Decreasing level in the Spent Fuel Pool
- ❖ Decreasing Level in the Fuel Transfer Canal
- ❖ Decreasing Level in the Pressurizer
- ❖ Increasing Level in RBNS
- ❖ Water spilling in the Auxiliary Building
- ❖ 1RIA-3 (Fuel Transfer Canal Wall) alarm
- ❖ 1RIA-6 (Spent Fuel Pool) alarm.

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

Answer: DCADBBABABC

Scramble Range: A - D

Tier: 2
Keyword: DHR
Source: NEW
Test: R

Group: 1
Cog level: C/A 3.2/3.6
Exam: OC03301
Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

- SB LOCA has occurred
- EOP Enclosure 5.12, ECCS Suction Swap to RBES is in progress
- 1LP-19 & 1LP-20 (1A & 1B RX BLDG SUCTION) are OPEN
- 1LP-21 & 1LP-22 (1A & 1B LPI BWST SUCTION) are OPEN
- BWST level has STOPPED decreasing with continued HPI injection flow

Which one of the following is correct concerning the current BWST level trend?

- A. The constant BWST level trend is not expected and LPI pump(s) must be secured to prevent overheating.
- B. The constant BWST level trend is not expected and LPI pump(s) must be secured to prevent hydrogen gas binding.
- C. The constant BWST level trend is expected and LPI pump(s) suction flow is currently from RBES only.
- D. The constant BWST level trend is expected and LPI pump(s) suction flow is still from the BWST but is below the flow instrument tap.

- A. Incorrect: suction is from the RBES, LPI pump operation may continue.
- B. Incorrect: 30 minutes is allowed while pumping against a shutoff head. This is not the case (LPI/HPI piggyback is aligned). Suction is the concern and RBES is providing suction at this time.
- C. Correct: with both RBES and BWST suction valves open and BWST level not decreasing, then suction is from the RBES only. RB(P) could also be high causing flow to be from the RBES
- D. Incorrect: With BWST level not decreasing, this indicates no inventory being used from BWST.

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MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9
			Answer: C A D A C B B C D B Scramble Range: A - D
Tier:	2		Group: 1
Keyword:	ECCS		Cog level: C/A 3.7/4.4
Source:	M 2003		Exam: OC03301
Test:	S		Author/Reviewer: LSM/RFA

You are performing EOP Enclosure 5.1. At step 13 you find that both BWST suction valves (1HP-24 and 1HP-25) are closed.

You then perform the following step:

IF both BWST suction valves (1HP-24 and 1HP-25) are closed,
THEN perform the following:

A. Ensure the following are open:

- 1LP-6
- 1LP-7
- 1LP-9
- 1LP-10
- 1LP-15
- 1LP-16

B. Start 1A or 1B LPI Pump.

C. Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (Unit 1 LPI Hatch area).

Which one of the following describes what these steps have accomplished?

A. Cross tied the HPI and LPI pump suction.

B. Cross tied the HPI and LPI pump discharge.

C. aligned HPI system discharge to the LPI pump suction.

D. aligned LPI system discharge to the HPI pump suction.

GO TO Step 13.

A. If RCS is saturated, Rule #2 will be performed as a higher priority. Rule #2 will perform the same actions as steps 10 through 13 below for HPI flow verification. Therefore the RNO skips HPI verification.

B. If RCS is subcooled, HPI verification will be performed here.

1.2 Ensure the following are open:

- 1HP-24
- 1HP-25

RNO:

(OBJ R10) IF both BWST suction valves

(1HP-24 and 1HP-25) are closed,

THEN perform the following:

A. Ensure the following are open:

- 1LP-6
- 1LP-7
- 1LP-9
- 1LP-10
- 1LP-15
- 1LP-16

B. Start 1A or 1B LPI Pump.

C. Dispatch an operator to open 1HP?363 (Letdown Line To LPI Pump Suction Block)
(Unit 1 LPI Hatch area).

The steps above will align LPI system discharge to the HPI pump suction.

Suction can be supplied to the HPI Pumps through 1LP-15 and 1LP-16 after passing through the LPI Coolers. This flowpath would involve the LPI Pumps taking suction from the BWST..

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

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

Tier: 2

Group: 1

Keyword: ECCS

Cog level: C/A 3.9/3.8

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

40. 007K1.03 001/2/1/QUENCH TANK/M 3.0/3.2/NEW/OC03301/R/LSM/RFA

The level of the Reactor Coolant Quench Tank is slowly rising. Which one of the following could have caused this to occur?

- A. Core flood tank relief valves.
- B. LPI suction relief valves.
- C. Reactor high point vents.
- D.✓ RCP seal leakage.

A, b, and c not connected to quench tank

OP-OC-PNS-CPS

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 2

Group: 1

Keyword: QUENCH TANK

Cog level: M 3.0/3.2

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

You are the OATC for unit 1. Unit 1 is at 73% power.

CCW flow slowly drops to 500 gpm.
CC to 2 RCPs auto isolates.
1-HP-5 remains open.
RCP seal return valves remain open.

Which one of the following are the correct actions to respond to this event?

Enter AP/1/A/1700/020 and:

- A. Trip the reactor and stop the affected RCPs.
- B. Trip the reactor and go to 2/0 RCP operation.
- C. Trip the reactor, stop all RCPs, and enter AP/25.
- D. Open 1CC-7, ICC-8 and start the standby CCW pump.

AP/1/A/1700/020 pages 1 and 2

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

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

Tier: 2

Group: 1

Keyword: CCS

Cog level: C/A 3.3/3.6

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

I&E is performing testing during a refueling outage. The I&E technician inadvertently presses the green "CC Interlock button" located in System Logic Cabinet No. 3 in the cable room. Which one of the following is the consequence of pressing this button?

- A. CC-7 and 8 will no longer close on actuation of ES Channels 5 and 6 respectively.
- B. Letdown cooler CC inlet valve CC-1 (CC-2) may now be opened after the letdown cooler inlet valve HP-1 (HP-2) is opened.
- C. A reactor coolant pump can now be started if CC flow is less than 575 GPM.
- D. CRDs can now be energized without component cooling water.

1.1 (OBJ R15) Interlocks Associated With the CC System

- A. If in AUTO, the standby CC Pump starts at 575 GPM flow.
 - B. If de-energized, the CRDs cannot be energized if CC flow is less than 138 GPM to the CRDs.
 - C. A reactor coolant pump cannot be started if CC flow is less than 575 GPM. Low CC flow will not affect a running RCP.
 - D. Letdown cooler CC inlet valve CC-1 (CC-2) must be open before letdown cooler inlet valve HP-1 (HP-2) will open.
 - E. CC-7 and 8 close on actuation of ES Channels 5 and 6 (respectively)
- If CC-7 or CC-8 goes closed, the CC pumps will trip and automatically restart when CC-7 and CC-8 are reopened.

A. (OBJ R16) The component cooling system must be in operation for any of the following conditions:

- 1. Control rod drives energized. There is an interlock to prevent the CRDs from being energized without component cooling water, but will not de-energize the drive upon loss of cooling water.

Prevents thermal damage to the CRD stators

Instructor note:

This interlock can be overridden by pressing green "CC Interlock button" located in System Logic Cabinet No. 3 in the cable room to allow I&E testing of CRDs during unit outage.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9
			Answer: D B D A C C B D D A Scramble Range: A - D
Tier:	2		Group: 1
Keyword:	CCW		Cog level: C/A 3.3/3.1
Source:	NEW		Exam: OC03301
Test:	R		Author/Reviewer: LSM/RFA

Which one of the following describes how the pressurizer heaters for each unit are normally supplied?

They are supplied from:

- A. safety related motor control centers. The pressurizer heaters are divided among three 4160 volt ES buses.
- B. non-safety related motor control centers. The pressurizer heaters are divided among two 4160 volt ES buses such that the loss of one entire 4160 volt bus.
- C. non-safety related motor control centers. The pressurizer heaters are divided among three 4160 volt ES buses.
- D. Safety related motor control centers. The pressurizer heaters are divided among two 4160 volt ES buses such that the loss of one entire 4160 volt bus.

Solution - C

The pressurizer heaters for each unit are normally supplied from non-safety related motor control centers (MCCs) XH, XI, XJ, and XK. The pressurizer heaters are divided among the three 4160 volt ES buses such that the loss of one entire 4160 volt bus will not preclude the capability to supply sufficient pressurizer heaters to maintain natural circulation in MODE 3.

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

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

Scramble Range: A - D

Tier: 2

Group: I

Keyword: PZR PRESSURE

Cog level: M 3.0/3.4

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Which one of the following statements describes the plant response to a pressurizer level channel (controlling channel) failing LOW? (ASSUME no operator action taken and the reactor is at 100% power).

HP-120:

- A. OPENS, actual Pzr level increases and RCS pressure increases.
- B. CLOSES, actual Pzr level decreases and RCS pressure decreases.
- C. CLOSES, actual Pzr level decreases and pressurizer heaters turn off.
- D. OPENS, actual Pzr level decreases and RCS pressure decreases.

OP-OC-PNS-PZR,

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 2

Group: 2

Keyword: PZR LEVEL

Cog level: C/A 3.5/3.7

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

- A Group 6/Rod 4 dropped into the core.
- An ICS runback was completed.
- Reactor power imbalance has become excessive.
- I&E has lowered the RPS setpoints for the Flux/Flow/Imbalance trip.

Which one of the following describes core limit(s) that will be protected by reducing the RPS setpoint?

- A. Fuel Centerline Temperature only.
- B. Fuel Centerline Temperature and DNBR.
- C. Excessive core operating pressures and DNBR.
- D. Excessive core operating temperatures and pressures.

Bank Question 427

- A. Incorrect - Fuel Centerline temperature alone is not the only restrictive core operating limit
- B. Correct - Fuel Centerline temperature and DNBR are concerns when the flux/flow/imbalance trip is reduced. And is the basis for the trip setpoint
- C. Incorrect- pressure is not contained in the basis for the resetting of the trip setpoint.
- D. Incorrect- the basis for the trip is temperature however it is fuel centerline temperature. Pressure is not part of the basis.

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

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

Tier: 2

Group: 1

Keyword: RPS

Cog level: M 3.3/3.8

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 1 is operating at 91% power when the OATC inadvertently places the S/D Bypass Key switch to "Bypass"? Which one of the following will occur?

- A. The Unit will continue to operate at 91%. However, the low pressure trip, the variable low pressure trip, the flux/flow - imbalance trip, and the power/RCPs trip normally associated with the RPS will be bypassed.
- B. The Unit will run back to 74%. The low pressure trip, the variable low pressure trip, the flux/flow - imbalance trip, and the power/RCPs trip normally associated with the RPS will be bypassed.
- C. The unit will trip on high reactor pressure.
- D. At 75% power, the bypass interlock switch is bypassed.

Solution C

In addition to bypassing the four trip parameters above, the "Bypass" position automatically inserts a high RCS pressure trip set point of 1720 psig, so that the plant cannot be operated normally with portions of the RPS in S/D Bypass.

- A. Protective Functions Bypasses
 - 1. (OBJ R5) Shutdown Bypass
 - a) Certain segments of the RPS protective functions for a channel can be bypassed with a key-switch located in that channel's RPS cabinet (A2, B2, C2, or D2). (OC-IC-RPS-8)
 - b) (OBJ R5.1) Bypass function is to provide capability to perform CRD testing, zero power physics testing, and startup procedures. It provides the capability to reset the CRD breakers when the plant is shut down. (Pull Group 1 to 50%).
 - c) (OBJ R5.2) During startup the RCS pressure is low and only one or two RCPs, at times, are operating. This would keep RPS tripped. (OBJ R5.2)
 - a) Positioning S/D Bypass Key switch to "Bypass" bypasses the Low Pressure Trip, the variable low pressure trip, the flux/flow - imbalance trip, and the power/RCPs trip normally associated with the RPS.
 - b) In addition to bypassing the four trip parameters above, the "Bypass" position automatically inserts a high RCS pressure trip set point of 1720 psig, so that the plant cannot be operated normally with portions of the RPS in S/D Bypass.
 - 1) While the normal high pressure trip of 2355 psig is not electrically bypassed it is basically nonfunctional because RPS will trip before the setpoint can be reached. The setpoint of 1720 psig is selected for the new high pressure trip so that the plant must first be shutdown, using normal procedures, before S/D Bypass can be initiated; 1720 psig is below the normal low pressure trip of 1800 psig, so that the plant must first be maneuvered past the normal low pressure trip point before going to S/D bypass. 1710 psig is the actual setpoint used for conservatism.

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

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

Scramble Range: A - D

Tier: 2
Keyword: RPS
Source: NEW
Test: R

Group: 1
Cog level: C/A 3.3/3.6
Exam: OC03301
Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

- All SCMs = 0°F
- RCS Temperature = 456°F and stable
- BWST level = 11.5' and is slowly decreasing
- ES 1-8 actuated
- OTSG levels are being maintained at LOSCM Setpoint
- Turbine Bypass Valves are in AUTOMATIC

Which one of the following describes the current plant condition?

The OSTGs _____. The _____ is the water source to the RCS.

- A. ✓ can not remove heat / BWST
- B. can not remove heat / RBES
- C. are removing heat / BWST
- D. are removing heat / RBES

Solution : A. Based on Bank 2003 question 202

A) Correct . SGs can not be removing heat with the TBV's in auto, SG pressure would be greater than or equal to RCS pressure since TBV's are controlling at setpoint +125 and minimum setpoint is 600 psig. BWST suction swap to RBES is in progress, but RBES valves are not opened until 9' therefore even if LP-15 and 16 have been opened, suction source remains the BWST.

B) wrong water source

C. SGs can not be removing heat with the TBV's in auto,

D) SGs can not be removing heat with the TBV's in auto, wrong water source

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

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

Scramble Range: A - D

Tier: 2

Group: 1

Keyword: BWST/ESFAS

Cog level: C/A 3.6/3.9

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

A LOCA concurrent with a loss of some control board indications has occurred on Unit 2. The STA calculates the RCS and containment pressure. He reports that RCS pressure ~ 100 psia and containment pressure ~ 20 psia. The STA also notes that RB spray has not actuated. Which one of the following describes the actions that should be taken and the basis for this decision?

- A.✓ No action should be taken, this is below the ES setpoint for RBS.
- B. RBS should be actuated, this is below the actuation pressure assumed in the UFSAR.
- C. RBS should be actuated, this is above the actuation pressure assumed in the UFSAR.
- D. This is above the actuation pressure assumed in the UFSAR. Containment should be vented, then the RBS should be initiated.

The UFSAR assumes that RBS is actuated at 30 psig. The actual ES setpoint is 10 psig. The 20-psi difference between the safety analysis assumption and the plant setpoint is ample to account for instrument uncertainty.

The purpose of the Reactor Building Spray initiation is to protect the Reactor Building by removing heat from the RB via the LPI system decay heat coolers.

In addition, the RBS system can help provide protection while not actually removing heat from the RB.

The RBS system can be configured in many different ways while being used. The RBS can be aligned to spray cool water from the BWST into the RB atmosphere. As the spray condenses steam in the RB, the energy formerly in the steam is transferred to the liquid entering the RB sump. The water in the sump is not cooled until the LPI system is realigned to pass water through the LPI decay heat coolers. Current station procedures allow the water from the sump to be sprayed back into the RB without being cooled. As with the injection mode of operation, this mode will condense steam but will not remove heat from the RB. However, the condensation of steam by the spray will work to decrease the internal pressure of the RB by reducing the partial pressure of the steam. In this manner, the RB spray will help protect the RB integrity without actually providing RB cooling.

The UFSAR assumes that RBS is actuated at 30 psig. The actual ES setpoint is 10 psig. The 20-psi difference between the safety analysis assumption and the plant setpoint is ample to account for instrument uncertainty.

The UFSAR states that a 2.4-second ESFAS delay is assumed for Reactor Building Spray actuation.

T. S. basis for the 4 psi and 15 psi setpoints is to establish a setting which would be reached immediately in the event of a DBA, cover the entire spectrum of break sizes, and yet be far enough above normal operation pressures to prevent spurious initiation.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A A C C B A D D B D	Scramble Range: A - D
Tier:		2			Group:		1
Keyword:		ESF			Cog level:		C/A 4.3/4.7
Source:		NEW			Exam:		OC03301
Test:		R			Author/Reviewer:		LSM/RFA

Unit 2 plant conditions:

- Unit power escalation are in progress.
- Reactor power = 15% and is increasing.
- OP/1102/01, Controlling Procedure for Unit Startup is in progress.

Which one of the following describes the MAXIMUM NI calibration error allowed per Limits and Precautions of the controlling procedure?

NIs SHALL be maintained within the range of ___% conservative to ___% non-conservative.

- A. ✓ 10, 4
- B. 4, 10
- C. 2, 2
- D. 2, 1

Bank question 95 CP010302 (SRO ONLY)

- A. Correct - L/P #17 describes MAX NI error during power maneuvering 10/4
- B. Incorrect - correct numbers swapped
- C. Incorrect - Steady state power operation limits
- D. Incorrect - Steady state calibration limits

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: A C C C D B B C A A	Scramble Range: A - D
Tier:	2		Group:	2
Keyword:	NI		Cog level:	M 3.4/3.8
Source:	M 2003		Exam:	OC03301
Test:	S		Author/Reviewer:	LSM/RFA

Plant conditions on Unit 1 are as follows:

- The SASS Channel for Th loop B is in AUTOMATIC.
- The selected Th signal for loop B slowly increases until a mismatch of 4% with the nonselected signal has occurred.

Which one of the following describes the operation that places the "good" Th loop B signal in operation?

- A. SASS remains in AUTO and automatically selects the "good" signal.
- B. SASS remains in AUTO initiating a mismatch alarm and the operator selects the good signal with the normal select switch.
- C. SASS trips to manual and the operator must position the key switch to the "good" signal with the normal select switch on 1UB1.
- D. SASS trips to manual and the operator must position the toggle switch to the "good" signal in RPS Cabinet E.

Oconee Lesson Plan OP-OC-IC-RCI, pg 52-54 and Fig OP-OC-IC-RCI,

Temperature Indications

Obj. R11, R12, R36, R37, R38, R39

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

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

Tier:	2	Group:	2
Keyword:	NNIS	Cog level:	C/A 3.0/3.1
Source:	M 1992/01/20	Exam:	OC03301
Test:	R	Author/Reviewer:	LSM/RFA

51. 022A1.04 001/2/1/CCS/M 3.2/3.3/NEW/OC03301/R/LSM/RFA

Unit 3 is operating at 100% rated power when the Component Cooling Water Containment Return valve (CC-8) fails closed:

Which one of the following is the correct IMMEDIATE operator action and WHEN the operator should perform the action?

- A. Trip the reactor when the pressurizer low level alarm is received.
- B. Trip individual RCPs when motor stator temperature exceeds 185 deg F.
- C. Trip the reactor when two CRD stator temperatures exceed 180 deg F.
- D. Trip the individual RCPs when their respective thermal barrier temperature exceeds 225 deg F.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	C B C B A B C A B A	Scramble Range: A - D
Tier:		2			Group:		1
Keyword:		CCS			Cog level:		M 3.2/3.3
Source:		NEW			Exam:		OC03301
Test:		R			Author/Reviewer:		LSM/RFA

Which one of the following describes the purpose of the Reactor Building Spray System?

- A. Removes sensible AND latent heat from the containment atmosphere, entrains fission product iodine and decreases radiation levels in containment.
- B. Removes ONLY latent heat from the containment atmosphere, entrains fission product iodine, and decreases radiation levels in containment.
- C. Removes sensible AND latent heat from the containment atmosphere and entrains fission product iodine.
- D. Removes ONLY sensible heat from the containment atmosphere and entrains fission product iodine.

(decrease radiation levels in containment) is wrong. It may pull contaminants that give off radiation out of the atmosphere, but it redeposits it in the sump.

(Obj R1)Purposes of the Reactor Building Spray (RBS) System

The Reactor Bldg. Spray system has no function during normal plant operation.

When actuated by high Reactor Building (RB) pressure, the system provides two major functions:

Removes sensible and latent heat from the containment atmosphere.

Operation of the RBS System also serves to entrain fission product iodine (released into the RB during a LOCA) into the spray water, thereby reducing possible iodine leakage to the environment (to meet 10CFR100 criteria concerning offsite dose limits).

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

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

Tier: 2

Group: 1

Keyword: CCS

Cog level: M 2.8/2.9

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 2 is operating at 100 % power when an ESG RB pressure analog channel fails upscale. An instrument technician is dispatched to investigate. The technician goes to the wrong cabinet and causes an additional ESG RB pressure analog channel to fail upscale.

Assume no operator action, which one of the following will occur?

Both RBS pumps start and:

- A. BS-1 remains closed and BS-2 opens.
LP-21 supplies RBS pumps from BWST, LP-22 remains closed.
- B. ✓ BS-1 and BS-2 open.
LP-21 and LP-22 supply RBS pumps from BWST.
- C. BS-1 opens and BS-2 remains closed.
LP-21 supplies RBS pumps from BWST, LP-22 remains closed.
- D. BS-1 and BS-2 remain closed.
LP-21 and LP-22 do NOT supply RBS pumps from BWST.

(Obj R6) ES Mode (Channels 7 and 8)

Setpoint

The RBS System automatically actuates if two of the three ESG RB pressure analog channels reach 10 psig.

The TS required setpoint is < 15 psig RB pressure.

The following actions occur if the RBS System actuates:

Both RBS pumps start.

BS-1 and BS-2 open.

LP-21 and LP-22 supply RBS pumps from BWST.

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

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

Scramble Range: A - D

Tier: 2

Group: 1

Keyword: CCS

Cog level: C/A 3.9/4.1

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Following a LOCA, potential leakage past the purge system reactor building isolation valves is prevented from being released directly to the environment by which one of the following?

- A. Inlet and outlet bleed lines open-ended into containment.
- B. Outlet bleed lines open-ended into the Penetration Rooms and inlet bleeds lines open ended into containment.
- C. Inlet bleed lines open-ended into the Penetration Rooms and outlet bleeds lines open ended into containment.
- D. Inlet and outlet bleed lines open-ended into the Penetration Rooms.

Modified bank 2003 question 549

A, B, and C - new distractors

D) Correct- bleed lines are located between the outer most isolation valves on both the inlet and outlet purge duct work. These bleed lines vent any leakage from the RB through the purge isolation vales into the Penetration Rooms. The PRV system will then process the leakage and the leakage will not be released to the environment.

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

Answer: DDDCB CDBDD Scramble Range: A - D

Tier: 2

Group: 2

Keyword: PURGE

Cog level: M 3.0/3.1

Source: M 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Which one of the following is the correct purpose of the fuel handling system?

The system is designed to:

- A. **MINIMIZE** the possibility of mishandling that could cause fuel assembly damage and/or potential fission product release AND provide a safe, effective means of transporting/ handling fuel from the time it reaches the station in an unirradiated condition until it leaves the station after post irradiation cooling.
- B. **PREVENT** the mishandling that could cause fuel assembly damage and/or potential fission product release **ONLY**.
- C. **MINIMIZE** the possibility of mishandling that could cause fuel assembly damage and/or potential fission product release **ONLY**.
- D. **PREVENT** the mishandling that could cause fuel assembly damage and/or potential fission product release AND provide a safe, effective means of transporting/ handling fuel from the time it reaches the station in an unirradiated condition until it leaves the station after post irradiation cooling.

RFA rewrote the Q.

FH-FHS Lesson Plan

ENABLING OBJECTIVES # 1

State the purpose of the Fuel Handling System and discuss the problems that the Fuel Handling System is designed to prevent. (R1)

The fuel handling system is designed to provide a safe, effective means of transporting and handling fuel from the time it reaches the station in an unirradiated condition until it leaves the station after post irradiation cooling. The system is designed to minimize the possibility of mishandling that could cause fuel assembly damage and/or potential fission product release.

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

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

Scramble Range: A - D

Tier: 2

Group: 2

Keyword: FUEL HANDLING

Cog level: M 2.8/2.9

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

56. 035A4.05 001/2/2/SG SYSTEM/C/A 3.8/4.0/M 1992/01/20/OC03301/R/LSM/RFA

Which one of the following are the key parameters monitored as the OTSGs fill to the OTSG natural circulation level setpoint?

- A. Pressurizer level and CETC temperatures.
- B. Pressurizer pressure and hot leg temperatures.
- C. OTSG levels and CETC temperatures.
- D. OTSG pressures and cold leg temperatures.

Ocone: OP-OC-TA-AM1

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

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

Tier: 2

Group: 2

Keyword: SG SYSTEM

Cog level: C/A 3.8/4.0

Source: M 1992/01/20

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Just inside the 5th floor of the turbine building, a 12" line on each main steam line taps off and runs back outside the turbine building. Which one of the following is the purpose of the valves on these lines?

These valves are designed to be used for a controlled plant cooldown in the event that the:

- A. Atmospheric Dump Valves (ADVs) become inoperative. These valves are manually operated.
- B. Turbine Bypass Valves (TBVs) become inoperative. These valves are manually operated.
- C. Atmospheric Dump Valves (ADVs) become inoperative. These valves are two chain operated "drag" valves designed to allow maintenance on MS-153 & MS-155.
- D. Turbine Bypass Valves (TBVs) become inoperative. These valves are two chain operated "drag" valves designed to allow maintenance on MS-153 & MS-155.

A. Atmospheric Dump Valves (ADVs) / Main Steam Vents

1. Just inside the 5th floor of the turb. bldg., a 12" line on each main steam line taps off and runs back outside the turb. bldg.

2. (OBJ R11) There are manually operated valves on these lines designed to be used for a controlled plant cooldown in the event that the Turbine Bypass Valves (TBVs) become inoperative.

a) ADVs are credited for reducing SG pressure and cooling the RCS when condenser vacuum is lost during SGTR and SBLOCA event analysis

3. Originally two manual gate isolation valves were installed on each atmospheric vent line (MS-153 & 154 "A" line and MS-155 & 156 on "B" line). Due to the difficulty in operating these valves (caused by the large DP), additional piping and valves were added on each unit.

A 1" bypass line now exists around MS-153 & MS-155. A 1" gate valve installed in each bypass line allows for reducing the DP across these 12" gate valves which allows for ease of operation.

Another line which bypasses MS-154 and MS-156 has a chain operated "drag" valve installed. These drag valves are much easier to operate and are suited better for throttling. Many turns of the handwheel are required for stroking these valves which will provide for a more controlled cooldown in the event they are needed.

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

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

Tier: 2

Group: 1

Keyword: ADV

Cog level: M 3.3/3.3

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Which one of the following describe the system that Oconee uses to prevent water hammers from occurring in an "idle" steam line.

All steam lines in the plant have small drain lines that _____ side of the isolation valve.

- A. automatically open on the downstream
- B. automatically open on the upstream
- C. are operated manually on the downstream
- D. are operated manually on the upstream

A. Steam Traps (OBJ R14, 15)

1. An "idle" steam line (one in which there is no flow due to a closed isolation valve) tends to collect condensation in the line where the steam is bottled up.

2. All steam lines in the plant have small drain lines on the upstream side of the isolation valve in the line, to keep the condensation from building up.

3. These small drain lines automatically drain condensate to the condenser to prevent the steam line from filling with water and/or to prevent water hammers from occurring. This is accomplished by the use of a steam trap.

Thermostatic steam traps at Oconee are basically a valve with an expandable bellows acting as a valve disk.

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

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

Tier: 2

Group: 1

Keyword: MAIN STEAM

Cog level: M 2.9/3.1

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Valve 1V-196 (CSAE Exhaust to Stack Drain) must be locked closed at all times if activity above background exists on the OTSG secondary side.

Which one of the following is the reason for this action?

- A. ✓ This prevents the release of radioactive liquid to the trench.
- B. This prevents the CSAE relief valve from cycling.
- C. This prevents the condenser from being isolated on high activity.
- D. This maintains high backpressure on CSAE.

A. (OBJ.R6)Valve (1)(2)(3) V-196 (CSAE Exhaust to Stack Drain) must be locked closed at all times if activity above background exists on the OTSG secondary side. (This prevents the release of radioactive liquid to the trench.)

In May of 1999, Unit 3 3C CSAE relief valve began lifting and closing several times. The steam supply was isolated hoping the relief valve would reseal. As a result, air entered through the relief valve and entered the condenser causing U3 to begin losing vacuum. Power was reduced per the AP to 73%, 3C CSAE was fully isolated and the Main Vacuum Pumps were placed in service

. Faulty Air Removal

- a) High condensate temperature to the CSAE will cause a reduction in air ejector efficiency.
- b) Low steam pressure or clogged steam strainers will reduce the velocity of steam and thus reduce the volume of air the CSAE will handle.
- c) High backpressure on CSAE will affect air removal.
- d)

Loss of loop seal would "short cycle" the air back into the system.

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

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

Tier:	2	Group:	2
Keyword:	CARS	Cog level:	M 2.5/2.7
Source:	NEW	Exam:	OC03301
Test:	R	Author/Reviewer:	LSM/RFA

Unit 1 conditions:

INITIAL CONDITIONS:

- Unit startup in progress
- Reactor power = 30% and increasing
- "1A" Main Feedwater Pump operating
- "1C" and "1B" HWP's are operating
- "1A" HWP in AUTO
- "1C" CBP is operating
- "1A" CBP in AUTO

CURRENT CONDITIONS:

- "1C" CBP trips due to a breaker electrical fault

Which one of the following automatic actions has occurred?

The operator will refer to the Annunciator Response Procedure and verify that the:

- A. reactor tripped on low MFDWP suction pressure.
- B. operating MFDWP tripped on low MFDWP suction pressure after 30 seconds.
- C. standby CBP auto started on low MFDWP suction pressure.
- D. standby HWP auto started on low CBP suction pressure.

2003 bank question # 37

- A. incorrect, there is not a reactor trip on low main feedwater pump suction pressure. It would take the loss of both main feedpumps to cause the trip.
- B. incorrect, the standby booster pump will start at 360 psig on the feedwater pump suction pressure and the running feedwater pump should not trip. Does not trip until £ 235 psig on the feedwater pump suction.
- C. correct, the standby condensate booster will start when feedwater pump suction pressure decreases to 360 psig.
- D. incorrect, condensate booster suction pressure will not decrease because the Hotwell pump is still running.

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

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

Tier: 2

Group: 1

Keyword: CONDENSATE

Cog level: C/A 2.6/2.8

Source: M 2003

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

The Main FDW Block Valves are placed in OPEN when the Startup Control Valves reach 90%. Which one of the following describes the basis for this step?

- A. ✓ To prevent feedwater flow swings.
- B. To prevent feedwater pump cavitation.
- C. To allow complete closure of the minimum flow valves before reaching 100% power.
- D. To bypass the Main FDW Block Valve auto open at a composite demand of 9.0%.

Automatic ICS demand signals to the Main and Startup Control Valves are developed from a common signal source called the Valve Composite Demand

1) Power increase: At a composite demand of 9.0% (equivalent to 90% open on the SU Control Valve), a bistable will automatically open the Main FDW Block Valve (if in AUTO).

1. Main Blocks (FDW-31 and FDW-40)

a) Motor operated from control room (UB1).

b) OPEN, AUTO, CLOSE.

c) ICS sends a signal to close the Main FDW Blocks on a Rx trip.

d) Automatic ICS demand signals to the Main and Startup Control Valves are developed from a common signal source called the Valve Composite Demand

1) Power increase: At a composite demand of 9.0% (equivalent to 90% open on the SU Control Valve), a bistable will automatically open the Main FDW Block Valve (if in AUTO).

2) Power decrease: At a composite demand of 5.0%, the Main FDW Block Valve will close (if in AUTO)

e) During some unit startups, when the Main Blocks were opened, leakage past the seat of the closed Main Control Valves would cause SG levels to increase. This would result in the SU Control Valves, which are controlling SG levels to start close and return SG levels to setpoint (25 inches SUR).

1) With the Main Blocks in AUTO, as the SU Control Valves reached 50%, the Main Blocks would close. After they closed, leakage past the seat of the Main Control Valves would stop, and SG levels would decrease, causing the SU Control Valves to re-open.

2) As the SU Control Valve reaches 90%, the Main Block would once again open, setting up a Feedwater cycle that could quickly become divergent. Once divergent cycle starts, a FDWP trip could occur due to Overspeed or High Discharge Pressure if not properly mitigated. This would lead to a Unit/Reactor Trip.

3) To prevent the Feedwater swing described above, the Main Block Valves were placed in OPEN when the Startup Control Valves reached 90%, and were left in OPEN until Feedwater demand was high enough to ensure that the SU Control Valves would not close. Current procedures require that the Main Blocks (and SU Blocks) be in AUTO prior to exceeding 700 psig MS pressure (to satisfy MSLB/AFIS circuit operability requirements).

Procedures do allow FDW-31 and 40 to be placed in OPEN if FDW control problems occur as a result of the valves opening in AUTO. The blocks will then be placed in AUTO when the Main Control Valve has reached 10% OPEN, since at that point, the SU Control Valve demand is at 100%, and is not likely to decrease until power level decreases for unit shutdown.

2) Power decrease: At a composite demand of 5.0%, the Main FDW Block Valve will close (if in AUTO)

d) Automatic ICS demand signals to the Main and Startup Control Valves are developed from a common signal source called the Valve Composite Demand

1) Power increase: At a composite demand of 9.0% (equivalent to 90% open on the SU Control Valve), a bistable will automatically open the Main FDW Block Valve (if in AUTO).

2) Power decrease: At a composite demand of 5.0%, the Main FDW Block Valve will close (if in AUTO)

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D B D B A B B B B Scramble Range: A - D
Tier: 2 Group: 1
Keyword: MFW Cog level: M 2.7/2.9
Source: NEW Exam: OC03301
Test: R Author/Reviewer: LSM/RFA

You are the NCO on Unit 2. Per EOP Rule 3, you attempt to ensure that an Emergency Feedwater automatic start occurred. It did not. You place the MDEFWPs control switches in "Run." The pumps still do not start.

You attempt to start the TDEFWP. It also fails to start.

You direct an NEO to manually start the Emergency Feedwater pump.

Which one of the following describe the Local steps that will be required to start the pump?

Isolate:

- A. IA supply to MS-93, then bleed air off the regulator using the moisture petcock and then start the pump.
- B. IA and AIA supply to MS-93, then bleed air off the regulator using the moisture petcock and then start the pump.
- C. IA, AIA and N2 supply to MS-93, then bleed air off the regulator using the vent port on the MS-93 supply line and then start the pump.
- D. N2 supply to MS-93, then bleed air off the regulator using the vent port on the MS-93 supply line and then start the pump.

A. Needs AIA

B. Correct

C. No N2 supply not vented through port

D. Method required for unit 1

Manual Start of TDEFDWP

a) MS-93 Failure

1) Per EOP Rule 3, the NCO should ensure Emergency Feedwater is operating, if MDEFWPs are not operating, the control switch is placed in "Run" this should open MS-93 by de-energizing the solenoid. If this fails to start the TDEFWP, an NEO is sent to manually start the pump with a (PS) Procedure. Local step will require:

(d) Bleed air off regulator using moisture petcock. (Not available on Unit 1). On Unit 1 replace the Swagelok body protector with the vent port on the supply line going to 1MS-93.

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

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

Scramble Range: A - D

Tier: 2
Keyword: AFW
Source: NEW
Test: R

Group: 1
Cog level: C/A 4.2/4.2
Exam: OC03301
Author/Reviewer: LSM/RFA

SG pressure is 1000 psig. The TDEFWP is running. A controller failure has caused FDW-315 & 316 to fail full open.

Which one of the following indications would enable the OATC to determine that this failure had occurred?

The crew would:

- A. see a flow mismatch on Total EFDW Flow indications but would NOT see it on the MDEFDWP Discharge Flow gages.
- B. ✓ NOT see a flow mismatch on Total EFDW Flow indications but would see it on the MDEFDWP Discharge Flow gages.
- C. see a mismatch between the indicated flows to each SG. This indicated flow mismatch could be as much as 300 gpm
- D. NOT see a flow mismatch on Total EFDW Flow indications but would see a level change between the OTSGs because the SG are level dominant.

EFW lesson plan

1. The MDEFDWP's have approximately 300 gpm (per pump) recirculation flow to the UST for pump and discharge piping protection. When a MDEFDWP is started, the ARC (Automatic Recirculation Control) valve automatically provides recirculation flow.

NOTE: An event has occurred at another plant concerning these same type ARC valves. The valves failed open due to internal valve failure. One of the problems that came from this failure was the operators were not able to determine from their flow indications that these valves had failed. Some examples of what the Oconee operator might see if these MDEFDWP recirculation valves failed open follows:

- The initial assumption is that the TDEFDWP is not running.
 - If SG pressures were at about 1000 psig and the A MDEFDWP recirculation valve failed open, there would be a mismatch between the indicated flows to each SG. This indicated flow mismatch could be as much as 300 gpm if FDW-315 & 316 were full open. The operator would see the flow mismatch and depending on decay heat could see a lower SG level on the side with the failed valve. There would not be a pump runout concern unless SG pressures were 800 psig or less and FDW-315 & 316 were full open.
 - If the TDEFDWP were running, the operator would NOT see a flow mismatch on Total EFDW Flow indications but would see it on the MDEFDWP Discharge Flow gages.
- If the operator sees a flow mismatch or low SG level and the TDEFDWP is available, he should start the TDEFDWP. Starting the TDEFDWP will assure adequate flow to the SGs

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

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

Tier: 2

Group: 1

Keyword: EFW

Cog level: C/A 2.5/2.8

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

An NLO reports that a HYCE gauge on the front board for the pressure transmitter for Main Steam line 1A is reading zero. There are I&C activities currently in the area attempting to switch power supplies within the panel. Assuming activities in the area have caused a false instrument reading, which one of the following could have caused this reading?

- A. ✓ An interruption of IA to the pressure transmitter.
- B. An interruption of DC power to the gauge.
- C. A loss of AC electrical power to the gauge.
- D. A loss of AC electrical power to the gauge coincident with a loss of DC power to the pressure transmitter.

Facility check to make sure distractor "B" not correct also.

There is a pressure transmitter for each Main Steam line that feeds the HYCE gauge on the front board. These indications utilize Instrument Air (IA) instead of electrical power and will be available for use on a Loss of Power but not on a Loss of IA.

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

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

Tier: 2

Group: 1

Keyword: AC ELECTRICAL

Cog level: C/A 3.0/3.3

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Plant conditions are as follows on Unit 2:

- A Load Shed and a LOCA have occurred concurrently.
- LPI pump B has failed to start.

Which one of the following descriptions is correct?

The operation of LPI pump C Automatically:

- A. starts after a 5 second time delay.
- B. trips and locks out after a 5 second time delay.
- C. trips but can be manually started after a 5 second time delay.
- D. started 5 seconds after taking manual control of the Load Shed circuit channels 1 and 2.

1992/01/20

Oconee Lesson Plan OP-OC-PNS-LPI, pg 34

Obj. 14

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

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

Tier: 2

Group: 1

Keyword: AC ELECTRICAL

Cog level: M 3.3/3.4

Source: M 1992/01/20

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

During alignment of the SSF DC electrical system, the operator is cautioned NOT to open the SSF inverter DC input breaker (CB-1) until the inverter is swapped to an AC-line.

Which one of the following is the expected adverse consequence if the operator fails to adhere to this precaution?

- A. The KSF inverter power fuse may blow.
- B. The SSF 600v load center XSF will de-energize.
- C. Voltage spikes may damage loads on the bus.
- D. Automatic transfer of SSF control power to ES valves will occur.

Bank 2003 Question 350

- A. Correct.
- B. Incorrect. The inverter supplies power to panelboard KSFC, not load center XSF.
- C. Incorrect. Inverter fuses and rectifiers will limit voltage spike.
- D. Incorrect. An automatic swap does not exist.

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

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

Tier:	2	Group:	1
Keyword:	DC POWER	Cog level:	C/A 2.8/3.1
Source:	BANK 2003	Exam:	OC03301
Test:	R	Author/Reviewer:	LSM/RFA

A loss of DC power to the Turbine Driven Emergency Feedwater Pump (TDEFDWP) has occurred.

Which one of the following describes the starting of the TDEFDWP if an AUTOMATIC initiation signal is received?

- A. Automatically started because the steam supply valve, MS-93, will be opened when its pilot solenoid deenergizes, and the operating valve, MS-95, fails open on loss of oil pressure.
- B. Manually started by placing the Control Room control switch to RUN due to a loss of auto initiation logic control power.
- C. Manually started by tripping the trip throttle valve, MS-94, and pulling up on the local hand starting lever, resetting and slowly opening MS-94 to admit steam for rolling the turbine.
- D. Cannot be started since the low oil pressure start permissive for the turbine cannot be met.

Ocone Lesson Plan OP-OC-CF-EF

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

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

Scramble Range: A - D

Tier: 2

Group: 1

Keyword: LOSS OF DC POWER

Cog level: C/A 2.9/3.1

Source: M

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

INITIAL CONDITIONS:

- The SSF has been manned for 6 hours due to a sustained Loss of HPI and CC.

CURRENT CONDITIONS:

- The SSF Diesel Generator speed = 970 RPM.

Which one of the following has failed on the Diesel Generator?

- A. Startup Governor.
- B. Hydraulic Amplifier.
- C. ✓ Electric Governor.
- D. Mechanical Governor.

Bank 2003 Question 148

A. Incorrect- the startup of the SSF Diesel is controlled by the Electric Governor. There is not a Startup Governor associated with the SSF Diesel.

B. Incorrect- this is a component controlled by the Electric governor to convert the magnetic speed signal to a useable signal by the hydraulic section of the electric governor system.

C. Correct- this is the component, which failed. The mechanical governor will take over speed control and maintain diesel speed between 950-980 RPM.

D. Incorrect- the mechanical governor is what is controlling the speed.

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

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

Tier: 2

Group: 1

Keyword: EDG

Cog level: C/A 2.5/3.0

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Which one of the following is the reason that the interim building gas tanks should not be used as the "in service" gas tank?

- A. There is no way to recirc interim building gas tank contents.
- B. There is no way to align the interim building gas tank to reduce the hydrogen concentration.
- C. The only release path is direct to atmosphere.
- D.✓ The interim building gas tank requires about 20 psi Nitrogen pressure to have control of vent header pressure.

Solution - D

B. Tank Isolation

1. Tank should be isolated prior to high pressure alarm (70 psig).

2. Interim building gas tanks should not be used as the "in service" gas tank since it initially requires about 20 psi Nitrogen pressure to have control of vent header pressure.

3. Basic procedure:

- a) Tank should be > 5 psig prior to placing in service, add Nitrogen if required to increase tank pressure.
- b) Close "recirc" valve for isolated tank and open "recirc" valve for tank placed in service.
- c) Close inlet valve for tank to be isolated and open inlet to tank to be placed in service.
- d) Sample isolated tank for hydrogen.
- e) After tank has been isolated for 6 hours, verify that isolated tank pressure is not decreasing and vent header is controlling normally.

4. Reducing Hydrogen in a GWD Tank

- a) If hydrogen is > 3%, lower tank to 50 psig by transferring some of the gas to another tank.
- b) Add 20 psig nitrogen to tank
- c) Resample for hydrogen
- d) Repeat until hydrogen < 3%

C. Transferring Gas Between Tanks

1. Normally done from in-service tank to another tank, this adds operational flexibility to determine which tank is used for in-service work and which tank(s) are used for isolation and decay.

2. Procedure:

- a) Open inlet for tank receiving gas
- b) Close inlet for tank transferring gas.
- 1) In-service tank pressure should begin decreasing and tank receiving gas should be increasing pressure as gas flows:
 - From the in-service GWD Tank
 - Through GWD-1
 - To the vent header

- Is compressed by GWD compressor
 - Discharges to tank being transferred to
 - c) When transfer is complete, open inlet for tank remaining in service and close inlet for tank to be isolated.
 - d) Sample isolated tank for hydrogen.
 - D. Sampling of waste gas decay tank
 1. Sampling is done
 - a) 5 times weekly and after isolation for hydrogen
 - b) Prior to release for activity
 2. Sample flowpath: (sample flows from tank, through sample apparatus, to the vent header)
 - E. (Obj R5) Cross-connecting the vent header
 1. Isolation valves GWD-132 (Vent Header Tie Unit 1) and GWD-134 (Vent Header Tie Unit 3) are opened to make essentially one common vent header.
 2. Either system (1&2's) or (3's) can be shutdown.
 3. The other system can carry the load.
 - F. Gaseous Waste Releases
 1. Should only be made when:
 - a) Additional tank space is needed.
 - b) Acceptable meteorological conditions exist as indicated on OAC.
 - 1) Unfavorable conditions are:
 - (a) Positive delta temperature
 - (b) Very low wind speed
 - 2) Sign Off step for Meteorological conditions are in the body of the procedure. Part of the process of deciding to submit a sample request for release should involve anticipating Meteorological conditions that will exist at time of desired release.
- 3) Atmospheric inversions
- (a) The use of vertical temperature gradients is a practical and universally accepted method of determining atmospheric stability. An inversion is defined as: air at ground level colder than air aloft. Simply stated, unusually stable atmospheric conditions exist when an inversion exists, meaning that vertical air movement is stifled. Clear, calm nighttime conditions are usually very stable because the earth's surface cools rapidly, thus cooling the ground surface air. This is usually the time of day that an inversion will exist. The absence of winds prevents this cool air from "mixing" with the warmer air above. It is under these unfavorable, stable atmospheric conditions that the release of radioactive gases would not be desired.
 2. We should hold tanks as long as possible to allow maximum radioactive decay (ALARA) and therefore release as little activity as practicable.
 3. Prior to release, the operator submits a sample request and RP samples the tank to determine:
 - a) Types of activity
 - b) Quantities of each isotope present
 4. RP also calculates and notes on sample request
 - a) Setpoints for RIA-37 & 38
 - b) Maximum allowable release flow rates
 5. Procedure
 - Steps described are a general description of actual procedure steps. Refer to procedure if more detail is desired.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D C A C A D D C A D Scramble Range: A - D
Tier: 2 Group: 2
Keyword: WGDT Cog level: M 2.6/3.0
Source: NEW Exam: OC03301
Test: R Author/Reviewer: LSM/RFA

Which one of the following is correct concerning the Siphon Seal Water supply?

"A" and "B" SSW Headers are normally in service with LPSW aligned to both headers and with HPSW:

- A. throttled in the "A" header and in recirc in the "B" header.
- B. throttled in the "A" Header and isolated in the "B" Header.
- C. isolated in the "A" Header and throttled in the "B" Header.
- D. throttled in both the "A" and "B" Headers.

Bank 2003 question 777

B

A Incorrect - HPSW is throttled in the "A" Header and isolated in the "B" Header.

B Correct

C Incorrect - HPSW is throttled in the "A" Header and isolated in the "B" Header.

D Incorrect - HPSW is throttled in the "A" Header are isolated in the "B" Header.

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

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

Tier: 2

Group: 2

Keyword: CWS/SWS

Cog level: M 2.5/2.5

Source: M

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

A valve in the SSW A header has failed closed and the header is inoperable. The SSW B header remains operable. The A LPSW pump is in off. The B LPSW Pump is in run. Which one of the following describes what must be done to ensure that the ESV meets TS 3.7.8 (ECCW) requirements?

- A. ✓ The required LPSW pumps for the B SSW header must be operable and the LPSW Pump that must be placed in Auto Start on the Unit supplying the B SSW header must be operable.
- B. The required LPSW pumps for the B SSW header must be operable, the LPSW Pump must be left running on the Unit supplying the B SSW header, and the A LPSW pump must be placed in Pull-to-lock.
- C. The B SSW header flow must be maintained so that changes in SSW header flow caused by starting/stopping ESV pumps are < 50 gpm.
- D. The required LPSW pumps for the B SSW header must be operable, the LPSW Pump must be running on the Unit supplying the B SSW header, and the B SSW header flow must be maintained so that changes in SSW header flow caused by starting/stopping ESV pumps are < 50 gpm.

- A Correct
- B Must be in Auto Start
- C. For Entry into SLC 16.9.12
- D. Combination of B and C

Duke Power Company Procedure No.
Oconee Nuclear Station OP/ 0/A/1104/052

Describe the proper procedure for operation of the Siphon Seal Water (SSW) System.
2. Limits and Precautions

2.1 One SSW header is required to be operable for ESV to meet TS 3.7.8 (ECCW) requirements. For the required SSW header to be operable, the required LPSW pumps to that header must be operable (Ref SLC 16.9.12), AND LPSW Pump Auto Start on the Unit supplying the operating SSW header must be operable (Ref TS 3.3.28).

2.2 Normal SSW lineup should be as follows:

- A SSW Header in service with LPSW (SSW-1) valved in; HPSW-901 throttled to maintain balanced flow between A and B SSW Headers to within 20 gpm.. {1}
- B SSW Header in service with LPSW (SSW-2) valved in, HPSW-900 closed.
- A and B SSW Headers supplying all CCW and ESV pumps.
- Maintain > 50 gpm in a single SSW Header, to allow surveillance of SSW strainer .P. {1}

2.3 Entry into SLC 16.9.12 is NOT required IF SSW header flow < 50 gpm due to changes in SSW header flow caused by starting/stopping ESV pumps, large changes in HPSW pressure, etc Enclosure "Balancing Flow Between SSW Headers" can be performed as needed.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: A A C A C D C D A B	Scramble Range: A - D
Tier:	2		Group:	1
Keyword:	SWS		Cog level:	M 3.5/3.7
Source:	NEW		Exam:	OC03301
Test:	S		Author/Reviewer:	LSM/RFA

INITIAL CONDITIONS:

Maintenance has just been completed and the Instrument Air Compressors are aligned as follows for post maintenance testing:

- Primary IA compressor: Running
- Backup IA compressors "A" and "B" in Standby 1
- Backup IA compressor "C" in Standby 2
- Auxiliary IA compressor: Auto
- IA-2718 (Air Supply to Radwaste Facility) Open
- Radwaste Air pressure 78 psig (and stable)

CURRENT CONDITIONS:

- A large leak in the cooling water system has caused the air compressors to overheat and the IA System pressure is falling.
- IA pressure has decreased to 88 psig.

Which one of the following is the expected response of the IA system?

All Standby:

- A. 2 IA compressor(s) start only.
- B. 1 IA compressor(s) start only.
- C. 1 AND 2 IA compressors start; Auxiliary IA Compressor starts.
- D. 1 AND 2 IA compressors start; IA-2718 (Air Supply to Radwaste Facility) CLOSES.

Modified question 593. Different answer

C

A. INCORRECT - The 'B' B/U instrument air compressor in STBY #2 will not start until IA pressure reaches 90 psig, the stem identifies pressure at 91 psig.

B. INCORRECT - ONLY the 'A' and 'C' B/U IA compressors will start and they started at 93 psig.

C. Correct - Same as 'A' above for B/U instrument air compressors. The AIA compressors do not start until AIA receiver pressure reaches 88 psig. Changed stem to 88 psig-

D.

INCORRECT- See 'B' above, IA-2718 (Air Supply to Radwaste Facility) closes at IA pressure below 85 psig.

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

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

Tier: 2

Group: 1

Keyword: IA

Cog level: M3.1/3.4

Source: M 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

73. 078K3.02 001/2/1/IA/M 3.1/3.4/NEW/OC03301/R/LSM/RFA

A complete Loss of Instrument Air will result in which one of the following?

RCS Normal Makeup _____ and RCP seal injection _____.

A. is lost, increases.

B. increases, increases.

C. is lost, is lost.

D. increases, is lost.

OP-OC-SPS-SY-HPI,

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 2

Group: 1

Keyword: IA

Cog level: M 3.1/3.4

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

74. 079A2.01 001/2/2/STATION AIR/M 2.9/3.2/NEW/OC03301/R/LSM/RFA

The station air system pressure is decreasing rapidly and the cross connection with the ISA system has failed to open. The loss of SAS procedure directs you to use which one of the following as a source of air during this emergency situations?

- A.✓ A diesel-driven air compressor that can be aligned to the Station Air header and manually started to help supply total IA requirements.
- B. A motor driven air compressor that is aligned to the Station Air header and is automatically started to help supply total IA requirements.
- C. A diesel-driven air compressor that can be aligned to the Breathing Air header and manually started to help supply total IA requirements.
- D. A motor driven air compressor that is aligned to the Breathing Air header and is automatically started to help supply total IA requirements.

1. INTRODUCTION

1.1 This lesson plan discusses the normal and abnormal operation of the plant in relation to the Instrument Air and Service Air Systems. The major components in the systems, components operated by compressed air and the effects on plant operations if these components lose IA are discussed.

1.2

(Obj. R1) The purpose of the Instrument Air System is to supply a reliable source of clean, dry, oil-free compressed air, at the proper pressure, to the numerous valves, controllers, and instruments throughout the plant that operate on compressed air. The IA System is the normal supply for instrument air to the Radwaste Facility.

1.3 Numerous controllers and instruments in the control room, and valves throughout the plant, are designed to operate by means of compressed air. Controllers translate demand signals to the devices by throttling the amount of compressed air reaching them. The amount of throttling is determined by the operator at the control station, which can then be set to automatically maintain the required supply. Some instruments operate on an air signal, proportional to the value of the parameter being measured. Numerous valves throughout the plant are positioned by either admitting compressed air to an operating cylinder, or by bleeding air from the cylinder. 1.4 The IA System supplies the air pressure to operate these devices. The Primary IA compressor normally maintains IA header pressure. The Backup IA compressors normally serves as a backup to the Primary IA compressor.

1.5 A third set of Service Air compressors supply air for equipment such as air drills, paint sprayers, air hoses and the sewage ejectors. Operating pressure is approximately that of the Instrument Air System. There are two rotary screwtype Sullair compressors. It normally only takes one compressor to meet the needs of the Service Air System. If required, these compressors supply another backup source to supply Instrument Air loads.

A fourth source of air during emergency situations is from a diesel-driven air compressor that can be aligned to the Station Air header and manually started to help supply total IA requirements.

MCS	Time:	1	Points:	1.00	Version:	0 1 2 3 4 5 6 7 8 9	
					Answer:	A C B A B A A D B A	Scramble Range: A - D
Tier:		2			Group:		2
Keyword:		STATION AIR			Cog level:		M 2.9/3.2
Source:		NEW			Exam:		OC03301
Test:		R			Author/Reviewer:		LSM/RFA

You are the OATC on unit 2. The Unit 2 control room (Keowee Statalarm Panel Trouble) has just actuated. You determine that the fire is in zone 3. Which one of the following is the fire location?

- A. ✓ Generator #1.
- B. CT-5.
- C. CT-4.
- D. Operating Floor or Equipment Gallery.

2.5 (Obj R11) Keowee Hydro Station Fire Detection System

A.

The system consists of a common Fire Indicating Unit that receives inputs from four Zone Indicating Units. Ionization type smoke detectors provide inputs to the Zone Indicating Units.

The four fire detection zones are:

- 1. Operating Floor and Equipment Gallery.
- 2. Battery Room, Control Room, and Computer Room.
- 3. Generator #1.
- 4. Generator #2.

B. Upon detection of smoke, the detector energizes a relay in the associated Zone Indicating Unit which, in turn, transmits a signal to the Fire Indicating Unit.

1. A common alarm lamp and the associated zone lamp will light on the Fire Indicating Unit and statalarms in the Keowee control room and Unit 2 control room (Keowee Statalarm Panel Trouble) will actuate.

2.

The alarm can be silenced and the statalarms acknowledged, but any subsequent "triggering" of a detector will reflash the alarm and statalarms.

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

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

Scramble Range: A - D

Tier: 2

Group: 2

Keyword: FIRE

Cog level: M 3.1/3.7

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 1 is at 82 % power in power ascension. "1A1" RCP has just tripped.

Which one of the following describe the automatic responses?

- A. Tave input to ICS from Loop "A" is selected and Tcold is near zero.
- B.✓ An ICS runback to 74% at 25% per minute will occur and final FDW flow will be equivalent to 100% power in the "B" Loop.
- C. A runback to 74% CTP, demanded at 25% per minute occurs with the affected loop SG being on low level limits.
- D. An initial 2:1 FDW ratio followed by a reactor trip due to RPS occurs followed by variable low pressure bistables tripping.

B

- A. Incorrect: Loop "B" Tave will be selected
- B. Correct: 74% is load limit. No RPS trip due to initial power level at 85%. Re-ratio will require ~5.5 mpph in "B" header which equals the 100% value for that header.
- C. Incorrect: FDW flow in "A" header will be ~2.5 mpph...well above that for 25"SU level and LLL.
- D. Incorrect: Ratio will be 1:2, RPS trip will not be generated.

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9
			Answer: B D B C A D C B B D Scramble Range: A - D
Tier:	1		Group: 2
Keyword:	RUNBACK		Cog level: M 3.2/3.5
Source:	M 2003		Exam: OC03301
Test:	R		Author/Reviewer: LSM/RFA

Unit 3 plant conditions:

- A Reactor trip occurred.
- The OATC is performing IMAs and has depressed the TURBINE TRIP pushbutton.
- The Main Steam Stop Valve positions indicate "OPEN."
- The Generator Output breakers (PCB-58 & 59) indicate "CLOSED."

Which one of the following is the next IMA step required by the OATC?

- A. Open BOTH generator output breakers.
- B. Place the operating EHC pump to the OFF position.
- C. Place the EHC pumps control switches to the PULL-TO-LOCK position.
- D. Send an operator to PULL the local turbine trip lever at the front standard.

Answer 159

C

- A. Incorrect - PCBs are not opened during the performance of IMAs.
- B. Incorrect - This would only start the automatic pump and the MSSVs would remain open.
- C. Correct - This action secures both EHC pumps and allows the MSSV to close
- D. Incorrect - This would be a method to locally trip the turbine if C did not work but, is operator knowledge and not part of IMA's.

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 1

Group: 2

Keyword: TURBINE TRIP

Cog level: C/A 3.7/3.7

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

78. BW/A05 AK2.1 001/1/2/EDG/M 3.0/4.0/NEW/OC03301/R/LSM/RFA

A thunderstorm was in the area, and there were instabilities in the grid. The OATC has been instructed to start the SSF Diesel Generator. The Diesel has been emergency started and the output breaker is OPEN.

The OATC has been instructed to parallel the diesel to the grid. Which one of the following describes the paralleling of the SSF Diesel Generator?

The DG should:

- A. not be paralleled because it is in speed droop mode.
- B.✓ not be paralleled because it is in isochronous mode.
- C. be paralleled because it is in speed droop mode.
- D. be paralleled because it is in isochronous mode.

Oconee Lesson Plan OP-OC-EAP-SSF

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

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

Tier: 1

Group: 2

Keyword: EDG

Cog level: M 3.0/4.0

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

A reactor trip has occurred with the following parameters observed:

- "A" SG SU Level = 15" and decreasing
- "A" SG Startup Control valve = 100% demand
- "A" SG Startup FDW flow = "0" gpm
- "B" SG SU Level = 25" and stable
- "B" SG Startup Control valve = 15% demand with green and red light
- RB pressure = 0.23 psig and steady

Which one of the following is the correct diagnosis of what is occurring?

- A. The "A" SG is experiencing inadequate heat transfer due to insufficient level.
- B. The "B" SG level is inaccurate due to degraded reactor building.
- C. The "B" SG S/U FDW valve is not opening properly.
- D. The "A" SG is indicating a SG tube leak.

Bank 184

- A. Correct - B SG is performing as required (now an inadequate heat transfer)
- B. Incorrect - RB pressure is < 3 psig so SG level is accurate
- C. Incorrect - A SG CV operating properly as level is above LLL.
- D. Incorrect - conditions indicate a no FDW

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

Answer: A C B A B B B A D

Scramble Range: A - D

Tier: 1

Group: 1

Keyword: VITAL SYSTEM VERF

Cog level: C/A 4.2/4.2

Source: M 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

80. BW/E04EK2.2 001/1/1/INADEQUATE HEAT TRAN/C/A 4.2/4.2/NEW/OC03301/R/LSM/RFA

Unit 3 has implemented the inadequate heat transfer procedure due to a complete loss of feedwater.

The crew has just completed Steps 9 and 10 which opened the RCS High Point Vents.

RCS pressure will be governed by which one of the following?

- A. a combination of HPI pump discharge pressure, the high point vent flow capacity and the decay heat level.
- B. a combination of HPI pump discharge pressure, the PORV relief flow capacity, the high point vent flow capacity and the decay heat level.
- C. a combination of HPI pump discharge pressure, the PORV relief flow capacity and the decay heat level.
- D. HPI pump discharge pressure only.

Inadequate Heat transfer Lesson plan page 15

Steps 9 and 10 opens the RCS High Point Vents which will result in lower RCS pressure, which will allow greater injection flow and therefore better core cooling.

RCS pressure will be governed by a combination of HPI pump discharge pressure, the PORV relief flow capacity and the decay heat level.

RFA removed " which will result in lower RCS pressure, which will allow greater injection flow and therefore better core cooling" from the stem because it teaches.

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

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

Tier:	1	Group:	1
Keyword:	INADEQUATE HEAT TRAN	Cog level:	C/A 4.2/4.2
Source:	NEW	Exam:	OC03301
Test:	R	Author/Reviewer:	LSM/RFA

The "Loss of Heat Transfer" Tab has been implemented when Unit 1 suffered a loss of Main and Emergency Feedwater.

FDW is not yet restored, but RCS conditions do not yet require HPI cooling.

Which one of the following describe the preferred configuration of the RCPs?

- A. One RCP per loop
- B. Any One RCP
- C. 1A1 RCP and any other RCP
- D. All RCPs running

THEN GO TO Step 4.

RNO:

1. (Obj. R2) Reduce operating RCPs to one pump/loop.

FDW is not yet restored, but RCS conditions do not yet require HPI cooling. Two RCPs are left running to reduce total heat input to the RCS. The preferred configuration is one RCP per loop so that forced flow exists in both SGs when feedwater is restored. Since it is not known in which SG(s) feedwater will be restored, or if it will be restored, one RCP should be left running in each loop if possible. The selection of RCPs to run should consider pressurizer spray flow capacity.

Further Explanation of C - while 1A1 RCP provides the best PZR spray, the preferred configuration is one pump per loop

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

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

Tier:	1	Group:	1
Keyword:	HEAT TRANSFER	Cog level:	C/A 4.2/3.8
Source:	NEW	Exam:	OC03301
Test:	R	Author/Reviewer:	LSM/RFA

You are the OATC on unit 3. The crew is in the LOCA CD procedure with EFDW being supplied from unit 2. A single EFDW control valve has failed open. The crew enters EP/3/A/1/1800/001 Enclosure 5.27. Which one of the following will you accomplish using this procedure?

- A. ✓ Isolate the EFDWP supply from unit 2.
- B. Swap the EFDWP supply from unit 2 to unit 1.
- C. Take manual control of the failed unit 2 EFDW control valve.
- D. Regulate EFDWP flow with the unit 2 control valve that has not failed.

EP/3/A/1/1800/001 Enclosure 5.27.

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

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

Tier: 1

Group: 2

Keyword: COOLDOWN

Cog level: C/A 2.7/36.

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

- An MS Line Break has occurred
- Manual control of HPI is desired

Which one of the following is the minimum requirement to take manual control of HPI and throttle flows under the above plant conditions?

The BOP can take manual control of HPI:

- A. if the severity of the transient will be increased based on their judgment.
- B. if the safety system is not required to perform its intended safety function.
- C. as directed by EOP Section 5.0.
- D. ✓ as directed by Rule 6.

A) Incorrect- Non-procedural bypassing requires two licensed operators, one of which is an SRO.

B) Incorrect. Non-procedural bypassing requires two licensed operators, one of which is a SRO.

C) Incorrect- EOP Section 5.0 (Subsequent Actions) does not contain directions on taking manual control of ES components.

D) Correct- procedural guidance is contained in Rule 6 for taking manual control of ES and throttling HPI.

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

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

Tier: 1

Group: 2

Keyword: EOP RULES

Cog level: M 3.4/4.0

Source: BANK 2003

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

84. GEN 2.1.11 001/3//TECH SPEC/M 3.0/3.8/BANK 1990/07/06/OC03301/S/LSM/RFA

The power-imbalance limits defined in Tech Spec 3.5.2, "Control Rod Group and Power Distribution Limits", are based upon which one of the following?

- A. Assures that an acceptable power distribution is maintained for control rod misalignment analysis.
- B. Assures that the potential effects of control rod misalignment on steam line break accident analyses are minimized.
- C. ✓ Assures LOCA analysis limits on maximum linear heat rate for maximum cladding temperature are not exceeded.
- D. Assures that the nuclear uncertainty factor in LOCA analyses will not exceed the Final Acceptance Criteria.

REFERENCE

Oconee Tech Specs bases 3.5.2.6 2.6/3.8

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

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

Tier: 3

Group:

Keyword: TECH SPEC

Cog level: M 3.0/3.8

Source: BANK 1990/07/06

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

You are the assigned Control Room SRO. You have just been notified that a draining evolution in the East Penetration Room has just been completed. Before the RO supervising the drain down leaves the area, you inform him that OMP 1-2, requires an additional notification that the task is complete? Which one of the following do you instruct the RO to notify?

- A. RP only.
- B. ✓ Chemistry only.
- C. Operations Shift Manager only.
- D. RP, Chemistry and Operations Shift Manager.

Based on - ADM040306

- A. Incorrect: OMP 1-2, 5.9.1 (I) required that chemistry and the assigned Control Room SRO be informed when the draining evolution is stopped or concluded and NOT RP.
- B. Correct: OMP 1-2, 5.9.1(I) requires that chemistry and the assigned Control Room SRO be informed when the draining evolution is stopped or concluded.
- C. OMP 1-2, 5.9.1 (I) required that chemistry and the assigned Control Room SRO be informed when the draining evolution is stopped or concluded and NOT the Operations Shift Manger.
- D. Incorrect: OMP 1-2, 5.9.1 (I) required that chemistry and the assigned Control Room SRO be informed when the draining evolution is stopped or concluded

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

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

Scramble Range: A - D

Tier: 3

Group:

Keyword: ADMIN

Cog level: M 2.5/3.3

Source: M

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

Which one of the following describes the operation of the AMSAC (ATWS Mitigation Safety Actuation Circuit) and the DSS (Diverse Scram System) during an ATWS with a complete loss of Main Feedwater?

AMSAC:

- A. trips the main turbine while DSS trips the regulating rods and starts the EFDWPs.
- B. trips the regulating rods while DSS trips the main turbine and starts EFDWPs.
- C. trips the main turbine and starts EFDWPs while DSS trips the regulating rods.
- D. starts EFDWPs while DSS trips the regulating rods and trips the main turbine.

Oconee Lesson Plan OP-OC-CF-EF, Obj. R24

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

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

Tier: 3

Group:

Keyword: SYSTEM PURPOSE

Cog level: M 2.8/2.9

Source: NEW

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

INITIAL CONDITIONS

- TIME = 0900
- The Reactor tripped on Loss of Main FDWPs
- The EFDW system is operating

CURRENT CONDITIONS

- TIME = 1000
- The EFDW system is operating

Which ONE of the following describes the MAXIMUM UST temperature per OP/1/A/1102/01, Controlling Procedure for Unit Startup to ensure the EFDW system adequately removes core decay heat?

- A. 85° F
- B. 125° F
- C. 145° F
- D. 150° F

Bank 2003 question 94

- A. Incorrect - This is the minimum temperature limit for feeding the SG's
- B. Correct - OP/1/A/1102/01, Controlling Procedure for Unit Startup, Limit and Precautions states that UST temperature is limited to 125°F two hours following a reactor trip.
- C. Incorrect - This is the limit for power operations up to 30% power and for shutdown conditions.
- D. Incorrect - This is the EFDW system piping design temperature.

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

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

Scramble Range: A - D

Tier: 3

Group:

Keyword: LIMITS & PRECAUTIONS

Cog level: C/A 3.4/3.8

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

88. GEN 2.1.6 001/3//ADMIN/M 2.1/4.3/BANK 1994/03/07/OC03301/S/LSM/RFA

Which one of the following is the Control Room SRO authorized to do without being relieved?

- A. Provide relief for the Control Room operators.
- B. Prepare Removal and Restorations (R&Rs).
- C. ✓ Designate another SRO as reader of the EOP.
- D. Prepare procedure changes.

BANK 1994/03/07

REFERENCE

OMP 2-1 Rev 10/15/93, Encl. 4.5

EAP-E11, Obj. R7

MCS Time: 1 Points: 1.00

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

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

Scramble Range: A - D

Tier: 3

Group:

Keyword: ADMIN

Cog level: M 2.1/4.3

Source: BANK 1994/03/07

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

An NEO performing surveillances on the ESV/SSW systems observes the following indications:

Both SSW Headers are in service

"A" SSW Hdr gpm = 85

"B" SSW Hdr gpm = 65

"A" SSW Hdr Strainer DP = 10.5

"B" SSW Hdr Strainer DP = 5.5

Which ONE of the following is the correct action in response to these indications?

[Assume normal ESV/SSW system operation and valve alignment]

- A. ✓ Declare the "A" SSW Header inoperable.
- B. Swap and clean the "A" and "B" SSW Header Strainers.
- C. Declare both SSW Headers and both associated ECCW Siphon Hdrs inoperable.
- D. Increase the "B" SSW Hdr flow rate and reduce the "A" SSW Hdr flow rate until strainer P is within operability limit.

Question 778 STG220301

Reference: OP/O/A/1104/052

A. Correct. With both SSW Headers in service, L&P 2.6.2 states that if strainer dp of 10 psid is received, then declare the SSW Hdr inoperable. The curve is used when only one SSW Hdr is in service.

B. Incorrect The "A" SSW Hdr should be declared inoperable due to the strainer dp. The "B" SSW Hdr strainer is not required to be cleaned until 6 psid and the operability limit is 10 psid.

C. Incorrect, The "A" SSW Hdr is inoperable only based on L&P 2.6.2

D. Incorrect, The operability limit of 10 psid has been exceeded in only the "A" Hdr.

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

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

Scramble Range: A - D

Tier: 3

Group:

Keyword: SURVEILLANCE

Cog level: C/A 3.0/3.4

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

You are the Shift Supervisor. Mechanical maintenance is planning to work on the HPI system. You get a report from engineering that during maintenance the system will be FUNCTIONAL. Which one of the following describes if you should allow the maintenance to take place with the unit at 100% power?

The work can:

- A. ✓ occur because the HPI system can perform its intended service; however, applicable TS requirements or licensing/design basis assumptions may NOT be maintained.
- B. NOT occur because the HPI system cannot perform its specified function even with all applicable TS or SLC requirements satisfied.
- C. NOT occur because the A Module of ORAM-SENTINEL has assigned a color of WHITE to the HPI system.
- D. occur because the A Module of ORAM-SENTINEL has assigned a color of GREEN to the HPI system.

A correct

B. Definition of Operable

C and D. PRA information related to risk, not system operability of function

Reference

ADMMR03

ENABLING OBJECTIVES:1.

Define and relate the following terms and their application to the assessment of equipment removed from service. (R2)

- a. Functional
- b. Maintenance
- c. Operable
- d. Probability Risk Assessment (PRA)
- e. Risk
- f. Risk Significant System (RSS)

The following are some of the definitions adopted by the industry and Duke Power Company for consistent interpretation of the Maintenance Rule. These definitions are from the regulation 10CFR50.65, NUMARC 93-01, or were specifically developed for Duke Power.

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

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

Scramble Range: A - D

Tier: 3
Keyword: DEFINITIONS
Source: NEW
Test: S

Group:
Cog level: M 2.3/3.5
Exam: OC03301
Author/Reviewer: LSM/RFA

91. GEN 2.2.2 001/3//CONTROLS/M 4.0/3.5/BANK 1991/01/24/OC03301/R/LSM/RFA

Which one of the following determines when the Megawatt Calibrating Integral will be controlled by turbine header pressure error?

- A. The bypass valves controls are in manual.
- B. The diamond control is in manual.
- C. The SG/RX control is in manual.
- D.✓ Turbine Bailey is in hand while all other stations are in auto.

REFERENCE

LP Vol. II, ICS, OP-OC-STG-ICS p.59

MCS	Time: 1	Points: 1.00	Version: 0 1 2 3 4 5 6 7 8 9	
			Answer: DBDAACCADC	Scramble Range: A - D
Tier:	3		Group:	
Keyword:	CONTROLS		Cog level:	M 4.0/3.5
Source:	BANK 1991/01/24		Exam:	OC03301
Test:	R		Author/Reviewer:	LSM/RFA

A point radiation source in the auxiliary building reads 500 mRem/hr at a distance of two feet. Two options exist to complete a mandatory assignment near this point source.

OPTION 1. Operator X can perform the task in 30 minutes while working at a distance of FOUR (4) feet from the point source.

OPTION 2. Operators X and Y, using an extension tool, can perform the task in 75 minutes at a distance of EIGHT (8) feet from the point source.

Operator X has a quarterly dose of 902 mRem
Operator Y has a quarterly dose of 1115 mRem

Which one of the following choices is the preferred option, if any, to complete the assignment in accordance with ALARA? (Assume no dose extensions have been authorized)

- A. ✓ Option 1
- B. Option 2
- C. Option 1 and 2 are equally acceptable.
- D. Neither Option 1 nor 2 can be used.

Solution - A - Option 1 62.5 mRem

REFERENCE

Oconee: ALARA Manual, General Employee Training Handbook
194001K104 (3.3/3.5)

Modified - Original Question:

*QNUM 29735
*HNUM 30083 (Do NOT change If < 9,000,000)
*ANUM 29745
*QCHANGED FALSE
*ACHANGED FALSE
*QDATE 1991/07/24
*FAC 269 Oconee 1, 2 & 3
*RTYP PWR-B&W177
*EXLEVEL R
*EXMNR
*QVAL
*SEC
*SUBSORT
*KA 194001K104
*QUESTION

A point radiation source in the auxiliary building reads 500 mRem/hr at a distance of TWO (2) feet. TWO (2) options exist to

complete a mandatory assignment near this point source.

OPTION 1. Operator X can perform the task in 30 minutes while working at a distance of FOUR (4) feet from the point source.

OPTION 2. Operators X and Y, using an extension tool, can perform the task in 75 minutes at a distance of EIGHT (8) feet from the point source.

WHICH ONE (1) of the following choices is the preferred option, with correct rationale, to complete the assignment, in accordance with ALARA?

- a. Option 1, as X's exposure is 62.5 mRem.
- b. Option 1, as X's exposure is 125 mRem.
- c. Option 2, as the exposure per person is 39 mRem.
- d. Option 2, as the exposure per person is 156 mRem.

*ANSWER

a. [+1.0]

*REFERENCE

Ocone: ALARA Manual, General Employee Training Handbook
194001K104 (3.3/3.5)

Which one of the following describes the most favorable meteorological conditions for making a Gaseous Waste Release?

_____ wind speed with air at ground level _____ than air aloft.

- A. LOW / COLDER
- B. LOW / WARMER
- C. HIGH / COLDER
- D. HIGH / WARMER

REFERENCE

OP-OC-WE-GWD, Revision 05, page 22

(2.5/2.8) #49

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

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

Tier: 3

Group:

Keyword: RAD RELEASE

Cog level: C/A 1.8/2.9

Source: BANK 1995/07/07

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

Unit 1 plant conditions:

1. A Reactor trip occurred on low RCS pressure
2. RCS pressure = 1200 psig
3. RB pressure = 2.0 psig
4. The BOP is performing Rule #2, Loss of SCM

Which one of the following statements is correct concerning this condition?

- A. ES will NOT actuate if power is lost to two out of three ES analog channels.
- B. Channels 1-6 RZ module Blue and White lights should be "ON" and verified "ON" by the operator performing Enclosure 5.1, ES Actuation.
- C. Enclosure 5.1, ES Actuation, shall be performed by the BOP after Rule #2 is completed, while the OATC performs EOP LOSCM tab actions.
- D. ✓ Enclosure 5.1, ES Actuation, shall be performed by the OATC after IMAs are verified, symptoms check is completed, and while the BOP performs Rule #2.

- A. Incorrect - analogs will trip on a loss of power.
- B. Incorrect - at this time only ES 1 and 2 have or should have actuated.
- C. Incorrect - encl. 5.1 should be performed as soon as possible. It has higher priority than LOSCM tab actions and should be performed as soon as an operator is available.
- D. Correct: BOP performs Rule #2. When IMAs and symptom check completed by the OATC, a Parallel Action of LOSCM is to perform Encl. 5.1. OATC will have to perform this with the BOP running rule #2.

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

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

Tier: 3

Group:

Keyword: ADMIN

Cog level: M 3.4/3.9

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

95. GEN 2.4.23 001/3//CRITICAL SAFETY/M 2.8/3.8/BANK 1991/01/24/OC03301/R/LSM/RFA

Which one of the following represents the correct order of priority (from highest to lowest priority) for the following critical safety functions?

- A. Inadequate Core Cooling, Subcriticality, RCS Integrity, Heat Sink.
- B. Inadequate Core Cooling, Subcriticality, Heat Sink, RCS Integrity.
- C. Subcriticality, Inadequate Core Cooling, RCS Integrity, Heat Sink.
- D. Subcriticality, Inadequate Core Cooling, Heat Sink, RCS Integrity.

GEN 2.4.23

***REFERENCE**

LP Vol V., SPDS, OP-OC-SPS-IC-SPDS, p.9,LPRO/LPSO 2a

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

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

Scramble Range: A - D

Tier: 3

Group:

Keyword: CRITICAL SAFETY

Cog level: M 2.8/3.8

Source: BANK 1991/01/24

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

96. GEN 2.4.25 001/3//FIRE/C/A 2.9/3.4/BANK 2003/OC03301/R/LSM/RFA

Which one of the following areas does the HPSW system provided sprinkler fire protection for?

- A. Reactor Building.
- B.✓ 230 KV switchyard.
- C. Keowee Hydro Units.
- D. CCW Intake Structure.

Question 587 SSS030301 SSS030301

Which one of the following areas is provided sprinkler fire protection via the HPSW system?

Answer 587

B

- A. Incorrect. supplied from LPSW
- B. Correct. supplied from Yard header (Major Fire Loop load).
- C. Incorrect. has own water supply system
- D. Incorrect. no sprinkler system supplied for intake structure

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

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

Tier: 3

Group:

Keyword: FIRE

Cog level: C/A 2.9/3.4

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

The Reactor Building Hydrogen Analyzer system Gaseous Post Accident Sample Panel is in operation. You are the OATC and notice that some of the RZ module white and blue lights have illuminated. You determine that Channel 1 has inadvertently been activated.

Which one of the following, states the required immediate actions?

- A. MANUALLY close the reactor building isolation valves for the Hydrogen Analyzer system, then return the Gaseous Post Accident Sample Panel to service.
- B. Verify the Gaseous Post Accident Sample Panel remains in service, then verify the reactor building Hydrogen Analyzer system isolation valves AUTOMATICALLY open.
- C. MANUALLY close the reactor building isolation valves for the Gaseous Post Accident Sample Panel, then place the reactor building Hydrogen Analyzer system in service.
- D. Verify the reactor building isolation valves for the Gaseous Post Accident Sample Panel AUTOMATICALLY close, then place the reactor building Hydrogen Analyzer system in service.

Original Question - Question 562 PNS582 PNS582 SRO ONLY (Modified to be RO)

The Limits and Precautions of OP/1,2,3/A/1102/22, Reactor Building Hydrogen Analyzer system, directs immediate operator actions if the Gaseous Post Accident Sample Panel is in operation when an ES actuation occurs.

Which ONE of the following lists the required immediate actions? (.25)

- A) MANUALLY close the reactor building isolation valves for the Hydrogen Analyzer system, then return the Gaseous Post Accident Sample Panel to service.
- B) Verify the Gaseous Post Accident Sample Panel remains in service, then verify the reactor building Hydrogen Analyzer system isolation valves AUTOMATICALLY open.
- C) MANUALLY close the reactor building isolation valves for the Gaseous Post Accident Sample Panel, then place the reactor building Hydrogen Analyzer system in service.
- D) Verify the reactor building isolation valves for the Gaseous Post Accident Sample Panel AUTOMATICALLY close, then place the reactor building Hydrogen Analyzer system in service.

Answer 562

C

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

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

Scramble Range: A - D

Tier: 3

Group:

Keyword: POST ACCIDENT INS

Cog level: M 3.5/3.8

Source: M

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA

Unit 2 sequence of events:

Time=1200

Unit 2 is shutting down with a 30 gpm tube leak in the 2B SG
An Unusual Event (NOUE) has been declared

Time=1230

While taking the Turbine Generator off-line a Turbine Trip occurs.

Time=1255

One Main Steam Relief valve on the 2B SG will NOT reseal

Time=1300

2B SG has been isolated
The blowing Main Steam Relief valve on 2B SG Main Steam Relief did NOT reseal
when the SG was isolated

PRESENT TIME=1305

Assume NO additional failures occur and that "Emergency Coordinator Judgment/EOF Director Judgment" is NOT used as a reason for the classification.

Which one of the following correctly classifies the event?

- A. ☒ Remain as an NOUE
- B. ☐ Upgrade to an Alert
- C. ☐ Upgrade to a Site Area Emergency
- D. ☐ Upgrade to a General Emergency

Answer 223

REFERENCE ATTACHMENT REQUIRED

A. Correct: Enclosure 4.1 Fission Barrier Matrix Containment Barriers gives 3 points. No point earned from the other two barriers.

B. Incorrect: Enclosure 4.1 Fission Barrier Matrix Containment Barriers gives 3 points. No point earned from the other two barriers. No EAL above a NOUE have been met.

C. Incorrect: Enclosure 4.1 Fission Barrier Matrix Containment Barriers gives 3 points. No point earned from the other two barriers. No EAL above a NOUE have been met.

D.

Incorrect: Enclosure 4.1 Fission Barrier Matrix Containment Barriers gives 3 points. No point earned from the other two barriers. No EAL above a NOUE have been met.

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

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

Tier: 3

Group:

Keyword: ADMIN

Cog level: C/A 2.3/4.1

Source: BANK 2003

Exam: OC03301

Test: S

Author/Reviewer: LSM/RFA

Which one of the following does the Oconee PRA analysis **NOT** identify as an Important Human Action associated with a turbine building flood?

- A. Swap HPI Suction to Spent Fuel Pool.
- B. Refill the Elevated Water Storage Tank.
- C. Connect HPI pump power to ASW switchgear.
- D. Activate the SSF.

Important Human Actions

The following are some important human actions from the Oconee PRA. More detailed information can be found in the Oconee PRA Report Rev. 2, Chapter 3.

Event or Sequence	Operator Action
Loss of all AC Power, TB Flood	Activate the SSF
LOCA	Establish recirc. from containment sump
Turbine Building Flood	Refill the Elevated Water Storage Tank
Loss of 4160vAC during a tornado	Connect HPI pump power to ASW switchgear
Large LOCA	Throttle LPI Pumps
Small or Medium LOCA	Stop the LPI Pumps (Pumping Against Shutoff Head)
TB Flood, Tornado (w/ BWST Failure)	Swap HPI Suction to Spent Fuel Pool
Loss of All LPSW	Cross-connect LPSW Header to other Unit(s)

Activate the SSF - Activation of the SSF is important for many types of events, including: Seismic, Flood, and Station Blackouts (including Tornado and TB Fire).

Establish Recirculation From the Sump - Swap to sump recirculation and establishing high pressure recirculation are important to prevent ECCS failure following a LOCA.

Refilling the Elevated Water Storage Tank - Refilling the EWST is important following a Turbine Building flood by providing backup cooling for the HPI pumps.

HPI to ASW Switchgear - Tornado damage to the 4160 V switchgear in the Turbine Building can be mitigated by connecting an HPI pump to the ASW switchgear.

Throttling the LPI Pumps - Throttling the LPI pumps is an important human action to prevent pump failure from operating in run-out conditions following a large LOCA.

Stopping the LPI Pumps - Stopping the LPI pumps for small and medium LOCA sequences prevents pump damage from "dead-heading" against the high RCS pressure.

Swap HPI Suction To The SFP - Depletion of the BWST inventory during a TB Flood can be mitigated by realigning the HPI suction to the SFP. This can also be used in Tornado Sequences which damage the BWST.

Cross-Connect LPSW To Another Unit - LPSW flow from another unit can be used to cool important loads including such as the HPI motor coolers and the CC Coolers.

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

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

Scramble Range: A - D

Tier: 3
Keyword: PRA
Source: NEW
Test: S

Group:
Cog level: M 3.1/4.0
Exam: OC03301
Author/Reviewer: LSM/RFA

Unit 2 plant conditions:

INITIAL CONDITIONS:

2A1 is secured

CURRENT CONDITIONS:

AP/29 is in progress

Reactor power = 43% and is decreasing

The BOP is swapping Auxiliaries:

When he attempted to close 2TA SU 6.9 FDR, a 2TA switchgear lockout occurred.

Which one of the following describes your actions as the Procedure Director?

- A. ✓ GO TO the EOP and stop AP/29 directions.
- B. Refer to the EOP and continue with AP/29 in parallel.
- C. Suspend AP/29 directions until 2TA switchgear can be returned to service.
- D. Continue AP/29 until the GO TO OP/1102/10, Controlling Procedure for Unit Shutdown is reached.

bank 250

- A. Correct - When 2TA swgr lockout occurs the reactor will trip on flux/flow (loss of 2 RCPs) this meet entry conditions to the EOP. AP/29 should be stopped as the first note say AP/29 should not be used when EOP entry conditions exist. This note is conflicting later in AP/29 when tripping the reactor per AP/29 then the EOP is not entered.
- B. Incorrect - AP/29 is stopped when EOP entry conditions are met.
- C. Incorrect - EOP entry condition - reactor trip - have been met.
- D. Incorrect - EOP entry conditions have been met

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

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

Tier: 3

Group:

Keyword: ADMIN

Cog level: M 3.1/3.8

Source: BANK 2003

Exam: OC03301

Test: R

Author/Reviewer: LSM/RFA