

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
1	F	2												N	S	C, CR, 41.10
2	F	3												N	S	B, CR, 41.4
3	F	2												N	S	A, CR, 41.4
4	H	3												N	S	D, CR, 41.7
5	H					U								N	E S	D, CR, 41.7 – Distractors A and B are not credible since the indicator “BUS E1C VOLTS” directly indicate bus E1C is not deenergized. This meets the KA since it is testing whether or not the applicant can read voltmeters to determine bus status during a LOOP. Modify distractors A and B. A and B were revised to utilize more information in the drawing.
6	F	3												N	S	B, CR, 41.6
7	H	3												N	S	B, CR, 41.4
8	H	3												B	S	D, CR, 41.4

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

- Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
- Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
- Check the appropriate box if a psychometric flaw is identified:
 - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
 - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
 - The answer choices are a collection of unrelated true/false statements.
 - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
 - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
- Check the appropriate box if a job content error is identified:
 - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
 - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
 - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
 - The question requires reverse logic or application compared to the job requirements.
- Check questions that are sampled for conformance with the approved K/A and those that are *designated SRO-only* (K/A and license level mismatches are unacceptable).
- Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
- Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
- At a minimum, explain any “U” ratings (e.g., how the Appendix B psychometric attributes are not being met).

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9	H	2												B	S	B, CR, 41.4
10	F	3												N	S	C, CR, 41.10
11	H	2	E											B	E S	D, CR, 41.9 – The stem asks, in part, for the effect on containment. Arguably, the correct answer does not have any containment effects in it. It could be argued there is no correct answer. Change made.
12	F	3	E											N	E S	A, CR, 41.11 – Change indicator “5” in the stem to “4”. Done.
13	H	3												N	S	C, CR, 41.11 Steps are not in order IAW procedure. Revise answers. OK as is due to the procedure not requiring a specific order.
14	F	3												N	S	D, CR, 41.10
15	H	3												B	S	B, CR, 41.7
16	H	3												B	U S	B, CR, 41.4 Used on failed exam. Replace the question. Replaced with bank 2068. This tests on same knowledge as original, but is not the same question.
17	H	3												N	S	C, CR, 41.10
18	H	3												N	S	B, CR, 41.5
19	H	3												N	S	A, CR, 41.4
20	F	2												B	S	A, CR, 41.10
21	F	2												B	S	B, CR, 41.3
22	F	3												N	S	A, CR, 41.10
23	F	3												B	S	B, CR, 41.10
24	H	3					E							N	E S	D, CR, 41.4 – This question asks for the status of off-site power following a grid disturbance. There are a variety of types of grid disturbances (eg, degraded voltage) that could result in a start of the EDGs and not a de-energization of the aux transformer. Therefore it could be argued there is more than one correct answer. Edited stem to ensure what buses are available. This changed answer to C.
25	F	3												M	U S	C, CR, 41.7 Used on failed exam Q36 for Unit 2. This is not a new question. Replace question. Replaced question and KA (Bank 1678, KA 064 K6.08). Answer is now B.
26	H	3												N	S	A, CR, 41.10

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27	F	2										U		B	U S	B, CR, 41.7 – This is a KA mismatch as it does not test on the bus power supply as required. This could easily be corrected by using a 4160VAC bus nomenclature, 480 VAC bus nomenclature, etc. Bus nomenclature added.
28	F	2					E							B	E S	B, CR, 41.6 – Suggest changing “should be sufficient to” to “will” in distractors A and C. Change Made.
29	F	2												B	E S	A, CR, 41.6 Minor edit to stem. Change made.
30	H	3												N	S	A, CR, 41.10 – Add a “that” between “Emergency Boration by” and “amount” in the stem. Amount is a condition of addition. Change the stem to add bullet so the preferred method of boration is chosen. Changed stem to state all equipment is available. Licensee stated preferred method is the correct answer.
31	H	3												B	E S	C, CR, 41.7 Minor edit to stem. Change made.
32	H	3												N	S	D, CR, 41.14
33	F	3												B	E S	D, CR, 41.10 Minor edit to answer. Change made.
34	F	3												N	S	C, CR, 41.10
35	H	3												M	S	B, CR, 41.4
36	H	3												M	S	B, CR, 41.14 – This is not a modified question. Actually it iss because the parameter that is being asked is different.
37	H	3												N	S	D, CR, 41.5
38	H	3												N	S	C, OR, 41.10 – Do the applicants need a set of steam tables to determine subcooling margin from the information provided in the stem? Yes. Ok as is.
39	H	3												N	S	B, CR, 41.5
40	H	3					E							N	E S	C, CR, 41.10 – Distractor D is also correct since level must be restored to above 34%, and the distractor says it must be raised to greater than 14%. (34% is greater than 14%) Changed D to be at least 14%.
41	H	3												B	S	C, CR, 41.7
42	H	3												B	S	A, CR, 41.3

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43	H	3												B	S	C, OR, 41.10
44	F	3												B	S	D, CR, 41.7
45	H	3										U		B	S	D, CR, 41.7 – This question is a KA mismatch because it does not test on the service water pump automatic start features. This actually tests SWS auto start features based on mode switch position (ECW is part of service water). The applicant must know that auto trips are disabled, and the pump will auto start regardless of mode.
46	H	3												B	E	A, CR, 41.7 Minor edit to stem. Change made.
47	F	2										U			U S	C, CR, 41.4 – Not familiar with the CL-ACW system. If the individual components referenced in the stem are service water flow control valves, then the question is ok as written. Refocus the stem so that a change in SW flow will elicit the answer. Done.
48	F	2												B	S	A, CR, 41.10
49	F	3			U									N	U S	B, CR, 41.4 – The distractors are a collection of true / false statements. Modify distractors to remove T/F aspect. Distractors modified, question OK now.
50	H	3										U		B	U S	A, CR, 41.7 – This question is U because the KA is about the “operating behavior characteristics” and the question does not test on this. The question should ask something on the indications that would indicate there was backflow from the RWST. Licesnee submitted change to stem that gave indications of open sump suction valves that requires applicant to determine status. OK now.
51	H	3												N	S	C, CR, 41.10
52	H	3												B	S	B, CR, 41.10
53	H	3												B	S	A, CR, 41.4
54	H	3												B	S	B, CR, 41.5
55	F	3												B	S	A, CR, 41.11
56	H	3												B	S	C, CR, 41.5
57	H	3												N	S	A, CR, 41.14
58	F	2												N	S	B, CR, 41.3
59	F	3												N	S	D, CR, 41.6
60	F	3											U	N	S	C, CR, 43.7 – This is an SRO question because it test on refueling activities performed outside the control room. Question OK as is because it asking high level

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only				
																	information taught to RO applicants; not specific procedural requirements.
61	F	3												N	S		B, CR, 41.7
62	H	3												B	S		B, CR, 41.5
63	H	3												N	S		A, CR, 41.4
64	H	3												N	S		D, CR, 41.5
65	F	2	E											B	S		B, CR, 41.10 – Suggest adding a statement in the stem something to the affect that all the other requirements (eg, requal training) are met. OK as is. The answers and stem are focused on minimum shifts to maintain active license.
66	F	3												B	S		B, CR, 41.5
67	H	3												M	S		C, CR, 41.7
68	H	3												N	S		A, CR, 41.14 – Are steam tables needed to determine the SG pressure given the temperature? Yes. Ok as is.
69	F	3												B	S		C, CR, 41.10
70	H	2												B	S		A, CR, 41.12 Minor change to stem. Change made to stem.
71	H	3												B	S		B, CR, 41.4
72	F	3												N	S		D, CR, 41.2
73	F	3												N	S		A, CR, 41.6
74	F	2												N	S		A, CR, 41.7
75	F	3												N	S		B, CR, 41.13
76																	
77																	
78																	
79																	
80																	
81																	
82																	

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
83																
84																
85																
86																
87																
88																
89																
90																
91																
92																
93																
94																
95																
96																
97																
98																
99																
100																
RO TOTALS:			B= 33 M= 2 N= 40					F= 33 (44%) H= 42 (56%)				E= 9 U= 6		Additional Notes:		
SRO TOTALS:			B= M= N=					F= H=				E= U=		Additional Notes:		
GENERAL COMMENTS:																

1. Bank questions are indicated by **B**; Modified are indicated by **M**; New questions are indicated by **N**
2. Chief Examiner follow-up comments are indicated in *blue*.
3. Average difficulty is 2.80 on the RO exam and NA on the SRO exam. These values fall within the expected range for this reviewer
4. The 10CFR55.41/43 distribution is: RO / SRO

41.1 = 0	43.1 = 0
41.2 = 1	43.2 = 0
41.3 = 3	43.3 = 0
41.4 = 14	43.4 = 0
41.5 = 8	43.5 = 0
41.6 = 5	43.6 = 0
41.7 = 14	43.7 = 1
41.8 = 0	
41.9 = 1	
41.10 = 19	
41.11 = 3	
41.12 = 2	
41.13 = 1	
41.14 = 3	
5. The answer distribution is: RO / SRO
A = 20 (27%)
B = 24 (32%)
C = 17 (23%)
D = 14 (19%)
6. There are 2 questions with attachments provided.
7. This exam review was completed by S. Garchow on April 8, 2010.

The following have occurred:

- LOCA outside containment
- ECCS Containment Sump Suction Valves opened on low RWST level
- Transition to OPOP05-EO-EC11, Loss of Emergency Coolant Recirculation

Per OPOP05-EO-EC11 which one of the following is the correct SEQUENCE to stop backflow from the RWST to the containment sump?

Stop the LHSI, HHSI and CS Pumps, then

- A.
 1. Close the Containment Sump Suction Valves
 2. Open the RWST to SI Suction Header Valves
 3. Open the SI Pump Mini Flow Valves
 4. Start the LHSI, HHSI and CS Pumps as necessary
- B.
 1. Open the RWST to SI Suction Header Valves
 2. Open the SI Pump Mini Flow Valves
 3. Close the Containment Sump Suction Valves
 4. Start the LHSI, HHSI and CS Pumps as necessary
- C.
 1. Open the RWST to SI Suction Header Valves
 2. Close the Containment Sump Suction Valves
 3. Open the SI Pump Mini Flow Valves
 4. Start the LHSI, HHSI and CS Pumps as necessary
- D.
 1. Open the SI Pump Mini Flow Valves
 2. Close the Containment Sump Suction Valves
 3. Open the RWST to SI Suction Header Valves
 4. Start the LHSI, HHSI and CS Pumps as necessary

Answer: A 1. Close the Containment Sump Suction Valves; 2. Open the RWST to SI Suction Header Valves; 3. Open the SI Pump Mini Flow Valves; 4. Start the LHSI, HHSI and CS Pumps as necessary

Exam Bank No.: 18**RO Outline Number:****K/A Catalog Number:** W/E11 EA1.2**Tier:** 1**Group/Category:** 1**RO Importance:** 3.5**10CFR Reference:** 55.41(b)(7)

Ability to operate and / or monitor the following as they apply to the (Loss of Emergency Coolant Recirculation): Operating behavior characteristics of the facility.

STP Lesson: LOT 504.27**Objective Number:** 82598

DESCRIBE the indications and anticipated readings used to determine that there is no backflow from the RWST to the emergency sump.

Reference: OPOP05-EO-EC11 Rev 16, LOT 201.10**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: CORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened
- B: INCORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened
- C: INCORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened
- D: INCORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened

Question Level: H**Question Difficulty** 3**Justification:**

Applicant must apply his knowledge of systems interlocks to determine the proper sequence for this valve re-alignment.

Exam Bank No.: 59**Last used on an NRC exam:** 1999

A Plant Operator is required to perform an extensive valve lineup in an area where the radiation level is 200 mrem/hour. The Plant Operator's current annual Total Effective Dose Equivalent (TEDE) is 1100 mrem.

What is the maximum amount of time the Plant Operator can work in this area and not exceed STP's Administrative Action Level (AAL) for annual TEDE?

- A. 2 hours
- B. 5 hours
- C. 12 hours
- D. 17 hours

Answer: A 2 hours

Exam Bank No.: 59**RO Outline Number:****K/A Catalog Number:** G2.3.4**Tier:** 3**Group/Category:** 3**RO Importance:** 3.2**10CFR Reference:** 55.41(b)(12)

Knowledge of radiation exposure limits under normal or emergency conditions.

STP Lesson: LOT 103.04**Objective Number:** 91817

State the 10CFR20 and STP exposure limitations including extensions for the whole body, skin, and extremities for adults or minors.

Reference: OPGP03-ZR-0050 Rev 10**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: CORRECT - The STP AAL is 1500 mrem/year. $1500 - 1100 = 400$ mrem remaining. $400/200$ mrem/hr = 2 hours.
- B: INCORRECT - Answer based from calculations using an incorrect AAL of 2000 mrem/year which is the old AAL.
- C: INCORRECT - Answer based from calculations using an incorrect AAL of 4000 mrem/year which is a fictional limit between the other limits listed.
- D: INCORRECT - Answer based from calculations using an incorrect AAL of 5000 mrem/year which is the 10CFR20 annual occupational dose limit.

Question Level: H**Question Difficulty** 2**Justification:**

The applicant must apply STP's AAL to determine the annual dose remaining and then divide that dose by the radiation level to calculate the hours left before exceeding the AAL. Other related dose limits were used to calculate the incorrect distractors thereby enhancing their credibility.

Exam Bank No.: 303**Last used on an NRC exam:** Never

Unit 1 is in the process of performing a plant heatup with the following conditions:

- RCS Pressure is 1500 psig
- RCS Temperature 400 °F
- 0PSP03-SI-0004, HHSI Pump 1A(2A) Inservice Test in progress
- HHSI Pump 1A Discharge Valve, SI-MOV-0004A, is closed

Which one of the following correctly describes the status of HHSI Pump 1A if an SI actuation were to occur?

HHSI Pump 1A would:

- A. continue to run on recirc flow. MOV-0004A will not automatically open.
- B. continue to run; MOV-0004A would automatically open allowing injection into the RCS.
- C. trip on a bus strip signal, then sequence on and run on recirc flow. MOV-0004A will not automatically open.
- D. trip on a bus strip signal, then sequence on; MOV-0004A would automatically open allowing injection into the RCS.

Answer: A continue to run on recirc flow. MOV-0004A will not automatically open.

Exam Bank No.: 303 **RO Outline Number:**

K/A Catalog Number: 006 A3.05 **Tier:** 2 **Group/Category:** 1

RO Importance: 4.2 **10CFR Reference:** 55.41(b)(7)

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

STP Lesson: LOT 201.10 **Objective Number:** 29419

GIVEN a plant condition, PREDICT the operation of the ECCS to include automatic actuations, interlocks and/or trips.

Reference: LOT 201.10

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT: MOV-0004A is a manual valve and therefore will not open on a Safety Injection. The SI actuation (Mode I) will not strip the bus before loading SI/ESF Equipment. That would only happen for a Mode II or Mode III.
- B: INCORRECT: The HHSI pump will continue to run, but MOV-0004A will not open as it's a manual valve.
- C: INCORRECT: The SI actuation (Mode I) will not strip the bus before loading SI/ESF Equipment. That would only happen for a Mode II or Mode III. The HHSI pump will run on recirc though.
- D: INCORRECT: A bus strip signal will not occur and the pump will run on recirc as MOV-0004A will not automatically open.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the operating status of the HHSI pump given the plant conditions and knowledge of systems controls and interlocks.

Exam Bank No.: 465**Last used on an NRC exam:** 1997

Given the following:

- Unit 1 is in Mode 3.
- Unidentified RCS leakage is 0.5 gpm and rising.
- Some personnel have already entered Containment to investigate the cause of the leakage.
- A second group of individuals is in the process of entering Containment.
- During this second entry, the Primary Reactor Operator notes rising Containment Building pressure and radiation level due to a rise in RCS leakage.

Which of the following:

(1) correctly describes the effect on Containment as the entry is made,

AND

(2) is a required action for the Control room staff in accordance with 0PSP03-XC-0002A, Containment Entry and Partial Inspection (Containment Integrity Established) based on the above conditions?

- A. (1) Containment pressure will substantially lower.
(2) Initiate a Phase 'A' Containment Isolation and direct personnel in containment to exit via the Auxiliary Airlock.
- B. (1) Containment pressure will substantially lower.
(2) Direct a Plant Operator to enter containment to notify personnel in containment of the rising leakage.
- C. (1) Containment pressure will not be appreciably affected.
(2) Monitor containment pressure, if it approaches 0.5 psig, then notify personnel in containment to exit immediately.
- D. (1) Containment pressure will not be appreciably affected.
(2) Immediately notify personnel in containment of the rising leakage by sounding the Containment Evacuation Alarm.

Answer: D (1) Containment pressure will not be appreciably affected.
(2) Immediately notify personnel in containment of the rising leakage by sounding the Containment Evacuation Alarm.

Exam Bank No.: 465**RO Outline Number:****K/A Catalog Number:** 103 A2.05**Tier:** 2**Group/Category:** 1**RO Importance:** 2.9**10CFR Reference:** 55.41(b)(10)

Ability to predict impact of emergency containment entry on the containment system and use procedures to control the consequences of emergency containment entry.

STP Lesson: LOT 505.01**Objective Number:** 92108

Given a plant condition, STATE the actions required to be performed per the applicable Off-Normal procedure.

Reference: 0PSP03-XC-0002A, Rev 37, step 3.5**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: Containment pressure should not change appreciably because entry and exit is made through one door at a time so containment integrity always exists. If a Phase A isolation occurs, the procedure directs use of the the aux airlock, but does not require initiation of Phase A..
- B: INCORRECT: Containment pressure should not change appreciably because entry and exit is made through one door at a time so containment integrity always exists. The action is not a procedural requirement. Sending additional personnel in containment under these conditions would not be desirable.
- C: INCORRECT: The PERS AIRLOCK DOOR TRBL annunciator alarms whenever the door operating handwheel is rotated so this annunciator will alarm upon entry. 0.5 psid is the maximum operating pressure for the airlocks. The procedural requirement is to notify personnel as soon as containment conditions change.
- D: CORRECT: The PERS AIRLOCK DOOR TRBL annunciator alarms whenever the door operating handwheel is rotated so this annunciator will alarm upon entry. Changes that affect containment must be communicated to personnel in containment. The primary method is by using the evacuation alarm.

Question Level: F**Question Difficulty** 3**Justification:**

Knowledge of the RCB entry procedure is required.

Exam Bank No.: 973**Last used on an NRC exam:** Never

Given the following:

- A reactor trip has occurred from full power.
- Reactor trip and bypass breakers are open.
- Nuclear Instrument Power Range detectors indicate power is 1% and lowering.
- 2 Control Bank D rods indicate 188 steps withdrawn, all other rods indicate fully inserted.

Based on these conditions, which one of the following correctly describes the required actions?

- A. An emergency boration of 7200 gallons (456 ppm) must be performed to ensure the minimum required shutdown margin is maintained.
- B. An emergency boration of 1860 gallons (120 ppm) must be performed to limit fission gas release and maintain fuel pellet temperature within design limits.
- C. No action is required since the core is designed for these conditions and the reactor has been verified to be shutdown by diverse indications.
- D. A Safety Injection signal must be manually actuated to ensure the reactor core remains in a safe shutdown condition.

Answer: A An emergency boration of 7200 gallons (456 ppm) must be performed to ensure the minimum required shutdown margin is maintained.

Exam Bank No.: 973 **RO Outline Number:**

K/A Catalog Number: APE 005 AK3.01 **Tier:** 1 **Group/Category:** 2

RO Importance: 4.0 **10CFR Reference:** 55.41(b)(10)

Knowledge of the reasons for the following responses as they apply to the inoperable/stuck Control Rod: Boration and Emergency Boration in the event of a stuck rod during trip or normal evolutions.

STP Lesson: LOT 504.06 **Objective Number:** 81674

Given a step, note, or caution from 0POP05-EO-ES01, STATE/IDENTIFY the basis for the step, note or caution and the basis for the action to include the action itself, its purpose and result.

Reference: 0POP05-EO-ES01, Rev. 24

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT: Action specified is per 0POP05-EO-ES01, Step 4. Basis is per the Background document for ES01.
- B: INCORRECT: The gallons/ppm in this distracter are appropriate for any rods not fully inserted and are at 18 steps or less.
- C: INCORRECT: Action is required because there are 2 rods stuck. No action would be required if there were only one rod stuck.
- D: INCORRECT: Safety Injection would add the requisite boron to ensure SDM, but it is not a required action per procedure.

Question Level: F **Question Difficulty** 3

Justification:

Must know step requirements associated with stuck control rods following a trip.

Exam Bank No.: 1034**Last used on an NRC exam:** 2001

Given the following:

- Unit 1 is in MODE 4.
- RCS temperature is 325°F.
- RCS pressure is 340 psig.
- RHR Train 'B' is in service.
- An un-isolable leak in the Instrument Air (IA) system has occurred.
- IA system pressure is 60 psig and lowering.

Which one of the following correctly describes the RHR and RCS system responses?

	RHR HEAT EXCHANGER VALVE FAILURE MODE	EFFECT ON RCS TEMPERATURE
A.	BYP FLOW CONT valve FCV-852 will fail OPEN	Will be LOWER
B.	BYP FLOW CONT valve FCV-852 will fail CLOSED	Will be HIGHER
C.	OUTL TEMP CONT valve HCV-865 will fail OPEN	Will be LOWER
D.	OUTL TEMP CONT valve HCV-865 will fail CLOSED	Will be HIGHER

Answer: C OUTL TEMP CONT valve HCV 865 will fail OPEN; Will be LOWER

Exam Bank No.: 1034 **RO Outline Number:**

K/A Catalog Number: 005 K6.03 **Tier:** 2 **Group/Category:** 1

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: RHR heat exchanger.

STP Lesson: LOT 201.09 **Objective Number:** 4245

GIVEN a plant or system condition, PREDICT the operation of the Residual Heat Removal system.

Reference: LOT 201.09, LOT 202.26, LOT 504.02

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT: RHR Hx Bypass Valves fail closed on loss of air, not open. If they did fail closed, RCS temperature would lower as indicated.
- B: INCORRECT: RHR Hx Bypass Valves DO fail closed on loss of air, but that would result in RCS temperature lowering, not rising.
- C: CORRECT: The RHR Hx Outlet Temp Cont Valves fail open and the Bypass Flow Cont valves fail closed on a loss of IA. Either of these failures will cause RCS temperature to lower because there is greater heat removal in the RHR Hx.
- D: INCORRECT: The RHR Hx Outlet Valves fail open on a loss of air. RCS temperature would rise as indicated if they did fail closed.

Question Level: H **Question Difficulty** 3

Justification:

Must know failure modes of RHR Hx valves and be able to determine effect on RCS temperature based on failure of those valves.

Exam Bank No.: 1058**Last used on an NRC exam:** 2001

Which one of the following sets of conditions satisfies Technical Specification requirements in Mode 6 during core alterations?

	MINIMUM Reactor Cavity Boron Concentration	MINIMUM Reactor Cavity level (feet above vessel flange)
A.	2800 ppm	21
B.	2700 ppm	23
C.	2700 ppm	21
D.	2800 ppm	23

Answer: D 2800 ppm, 23

Exam Bank No.: 1058 **RO Outline Number:**

K/A Catalog Number: G2.2.22 **Tier:** 3 **Group/Category:** 2

RO Importance: 4.0 **10CFR Reference:** 55.41(b)(10)

Knowledge of limiting conditions for operations and safety limits.

STP Lesson: LOT 503.01 **Objective Number:** 92102

Given the topic or title of a specification included in the Technical Specifications, or the Technical Requirements Manual (TRM), DESCRIBE the general requirements of the specification to include components or administrative requirements affected, limitations, major time frames involved, major surveillance in order to comply, and the bases for the specification.

Reference: Tech Spec 3/4.9

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT: Level is required to be at least 23 feet above the vessel flange
- B: INCORRECT: Boron is required to be greater than or equal to 2800 ppm
- C: INCORRECT: Boron is required to be greater than or equal to 2800 ppm and level is required to be at least 23 feet above the vessel flange
- D: CORRECT: All conditions are in accordance with Tech Specs

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of Tech Spec LCO entry conditions

Exam Bank No.: 1577**Last used on an NRC exam:** Never

An operator action of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS, is to “Ensure 480V LC 1K1 (2K1) and 1L1 (2L1) feeder breakers open”.

This step will de-energize power to the....

- A. Rod Drive MG Set motors. Opening only one of the breakers will cause a reactor trip.
- B. Rod Drive MG Set motors. Both breakers must be opened to cause a reactor trip.
- C. Reactor Trip Breaker shunt trip coils. Opening only one of the breakers will cause a reactor trip.
- D. Reactor Trip Breaker shunt trip coils. Both breakers must be opened to cause a reactor trip.

Answer: B Rod Drive MG Set motors. Both breakers must be opened to cause a reactor trip.

Exam Bank No.: 1577 **RO Outline Number:**

K/A Catalog Number: EPE 029 EK2.06 **Tier:** 1 **Group/Category:** 1

RO Importance: 2.9 **10CFR Reference:** 55.41(b)(7)

Knowledge of the interrelations between the following and ATWS: Breakers, relays, and disconnects

STP Lesson: LOT 201.18 **Objective Number:** 3069

IDENTIFY major components, system interfaces, interlocks and relative location of components and instrumentation by drawing and labeling a block diagram of the Rod Control System.

Reference: LOT 201.18, Rod Control

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: The Load Centers DO supply power to the MG motors, but both MG sets must be de-energized to initiate a reactor trip.
- B: CORRECT: The Load Centers supply power to the MG motors. Either MG set providing power to the Rod Control System will be sufficient to power the rod drives (design redundancy) so both MG must be de-energized as stated.
- C: INCORRECT: The Load Centers do not supply power to the shunt trip coils.
- D: INCORRECT: The Load Centers do not supply power to the shunt trip coils.

Question Level: F **Question Difficulty** 3

Justification:

must know the distribution for rod drive power including the design redundancy that must be accounted for to perform a reactor trip.

Which of the following describes the power supply to Hydrogen Recombiner 1A?

- A. 4160VAC Bus E1B
- B. 480VAC MCC E1B4
- C. 120VAC Panel DP-1203
- D. 125VDC Bus E1B11

Answer: B 480VAC MCC E1B4

Exam Bank No.: 1686 **RO Outline Number:**

K/A Catalog Number: 028 K2.01 **Tier:** 2 **Group/Category:** 2

RO Importance: **10CFR Reference:** 55.41(b)(7)

Knowledge of the bus power supplies to the following: Hydrogen recombiners

STP Lesson: LOT 201.27 **Objective Number:** 91588

DESCRIBE the means of circulation through the H2 recombiner.

Reference: LOT201.27 PowerPoint slide #19

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - it is 480V
- B: CORRECT - Recombiner 1A is supplied by 480V MCC E1B4
- C: INCORRECT - It is 480V
- D: INCORRECT - It is 480V

Question Level: F **Question Difficulty** 3

Justification:

Requires a basic knowledge of system design.

Exam Bank No.: 1904**Last used on an NRC exam:** Never

Given the following:

- Unit 1 is in Mode 3 at normal operating temperature and pressure and with normal system lineups for this plant condition.
- An electrical disturbance caused the loss of the NORTH Bus in the Switchyard.
- ESF DG 12 is now running and supplying its respective 4160V ESF Bus.
- All systems operated as designed.

Which one of the following correctly describes the status of the power available from the offsite circuits?

Unit 1...

- A. Auxiliary and Standby Transformers are both ENERGIZED.
- B. Auxiliary and Standby Transformers are both DE-ENERGIZED.
- C. Auxiliary Transformer is ENERGIZED, but the Standby Transformer is DE-ENERGIZED.
- D. Auxiliary Transformer is DE-ENERGIZED, but the Standby Transformer is ENERGIZED.

Answer: C Auxiliary Transformer is ENERGIZED, but the Standby Transformer is DE-ENERGIZED.

Exam Bank No.: 1904 **RO Outline Number:**

K/A Catalog Number: APE 077 AA2.05 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(7)

Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Operational status of offsite circuit.

STP Lesson: LOT 201.30 **Objective Number:** 91662

Given control room indications associated with the Offsite Electrical Distribution system, EVALUATE plant conditions.

Reference: LOT 201.31, POP02-AE-0001, Rev. 23

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The Standby Transformer is supplied by the North Bus and will be de-energized under these conditions (which is why DG-12 started)
- B: INCORRECT: The Aux Transformer normally supplies A and C ESF buses; taps off upstream of the switchyard and should be unaffected by the loss of the North Bus. This is substantiated from the fact that only DG-12 started.
- C: CORRECT: The U1 Standby Transformer is supplied from the North Bus and would now be de-energized. Since the Standby transformer normally only supplies Train B ESF Bus, only DG-12 will be running. The Aux Transformer normally supplies the other 2 ESF buses and is unaffected since it taps off upstream of the switchyard.
- D: INCORRECT: The Standby Transformer is supplied by the North Bus and will be de-energized under these conditions (which is why DG-12 started). A loss of the North Bus will leave the Aux transformer un-affected.

Question Level: H **Question Difficulty** 3

Justification:

Must evaluate given plant conditions and be able to determine the status of offsite power sources.

Exam Bank No.: 1905**Last used on an NRC exam:** Never

Given the following:

- A Small Break LOCA has occurred on Unit 2.
- The Reactor cannot be tripped.
- Operators are performing the actions of OPOP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.
- CNTMT PRESS HI/LO annunciator is in alarm. Current Containment pressure is 5.5 psig.
- All SG LO-LO-LVL annunciators are in alarm. Current levels are 8-12% NR.
- All AFW flows are 150-175 gpm.

In accordance with OPOP05-EO-FRS1, the secondary heat sink is...

- A. ADEQUATE, but RCS temperatures will continue to rise if Reactor power is greater than 5%.
- B. ADEQUATE and RCS temperatures can be stabilized regardless of Reactor power.
- C. INADEQUATE. Total AFW flow should be raised to greater than 1080 gpm.
- D. INADEQUATE. At least one SG level should be raised to at least 14% NR.

Answer: C INADEQUATE. Total AFW flow should be raised to greater than 1080 gpm.

Exam Bank No.: 1905 **RO Outline Number:**

K/A Catalog Number: EPE W/EO5 EK1.3 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(10)

Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Secondary Heat Sink)

STP Lesson: LOT 504.28 **Objective Number:** 83555

Given a step, note or caution from 0POP05-EO-FRS1, STATE its basis.

Reference: 0POP05-EO-FRS1, Rev. 15

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The heat sink is inadequate because neither SG levels nor AFW flow meet the heat sink requirements for 0POP05-EO-FRS1 and the adverse containment conditions that exist. AFW flow meets the normal heat sink requirements for flow in other procedures, but does not meet FRS1 requirements. It is true that RCS temperatures would continue to rise if reactor power is above 5%, even if the heat sink were adequate.
- B: INCORRECT: The heat sink is inadequate because neither SG levels nor AFW flow meet the heat sink requirements for 0POP05-EO-FRS1 and the adverse containment conditions that exist. AFW flow meets the normal heat sink requirements for flow in other procedures, but does not meet FRS1 requirements. Additionally, RCS temperatures would continue to rise if reactor power is above 5%.
- C: CORRECT: the heat sink is inadequate because neither SG levels nor AFW flow meet the heat sink requirements for 0POP05-EO-FRS1. The appropriate action is raise AFW flow to above 1080 gpm.
- D: INCORRECT: the heat sink is inadequate, but the action is incorrect. To establish a heat sink with SG level, the level would have to be raised to at least 34% NR due to adverse containment conditions. The action of raising level to 14% NR would satisfy heat sink requirements if adverse containment conditions did not exist.

Question Level: H **Question Difficulty** 3

Justification:

Must compare the given conditions to procedural requirements to determine the correct status of the heat sink.

Exam Bank No.: 1908**Last used on an NRC exam:** Never

Given the following:

- Unit 1 is operating at 100% power with all required equipment available.
- The Reactor trips due to a secondary plant transient.
- The crew is performing Step 4 of OPOP05-EO-ES01, Reactor Trip Response: “VERIFY Control Rods Fully Inserted.”
- One Control Rod indicates it is at 50 steps on DRPI.
- A second Control Rod indicates it is at 10 steps on DRPI.
- All other Control Rods have Rod Bottom lights lit.

OPOP05-EO-ES01 Step 4 specifies Emergency Boration by amount (gallons or ppm) or until RCS boron concentration is 2800 ppm. Assuming you will perform an Emergency Boration by amount, which one of the following correctly describes the action to be taken and the basis for that action?

In accordance with POP04-CV-0003, Emergency Boration, initiate an Emergency Boration from the....

- A. Boric Acid Storage Tanks (BAT's). Add more boric acid for the rod at 50 steps because it affects Shutdown Margin more than the other rod.
- B. Refueling Water Storage Tank (RWST). Add the same amount of boric acid for each rod because the amount is based on rods that are fully withdrawn.
- C. Boric Acid Storage Tanks (BAT's). Add the same amount of boric acid for each rod because the amount is based on rods that are fully withdrawn.
- D. Refueling Water Storage Tank (RWST). Add more boric acid for the rod at 50 steps because it affects Shutdown Margin more than the other rod.

Answer: A Initiate an Emergency Boration from the Boric Acid Storage Tanks (BAT's). Add more boric acid for the rod at 50 steps because it affects Shutdown Margin more than the other rod.

Exam Bank No.: 1908 **RO Outline Number:**

K/A Catalog Number: APE 024 G2.1.32 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.8 **10CFR Reference:** 55.41(b)(10)

Emergency Boration: Ability to explain and apply system limits and precautions.

STP Lesson: LOT 201.07 **Objective Number:** 91060

DESCRIBE the steps necessary to commence an emergency boration in accordance with OPOP04-CV-0003, Emergency Boration

Reference: OPOP05-EO-ES01, Rev. 24; OPOP04-CV-0003, Rev. 12; LOT201.07, handout page 78

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: Action is per the procedure (BATs are used first if available, which was given in the stem). Bases correctly states that SDM is affected more by rods stuck at higher positions
- B: INCORRECT: The preferred method of Emergency Borating is from the BA Tanks, not the RWST. Additionally, the amount of acid to be added is based on designated rod positions, not full out.
- C: INCORRECT: This distracter correctly states the method for Emergency Boration, but incorrectly states the amount to be added is the same for both rods.
- D: INCORRECT: The preferred method of Emergency Borating is from the BA Tanks, not the RWST. The basis for the amount of acid being added is correct.

Question Level: F **Question Difficulty** 3

Justification:

Must know requirements of procedure step and basis.

Exam Bank No.: 1916**Last used on an NRC exam:** Never

Which of the following indications are available in the Control Room for monitoring a Waste Monitor Tank Release?

1. RT-8038, LWPS Monitor #1, status on the RM-11 display
 2. RT-8038, LWPS Monitor #1, status on CP-023 (RM-023)
 3. Circ Water Pump status on CP-009
 4. WL-FV-4077, LWPS DISCHARGE VALVE, position on CP-009
-
- A. 1, 3
 - B. 1, 4
 - C. 2, 3
 - D. 2, 4

Answer: A 1, 3

Exam Bank No.: 1916 **RO Outline Number:**

K/A Catalog Number: 068 A4.02 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(13)

Ability to manually operate and/or monitor in the control room: Remote radwaste release.

STP Lesson: LOT 202.41 **Objective Number:** 92938

SUMMARIZE the Process and Effluent Radiation Monitor information available on RM-11 and RM-23 displays

Reference: LOT202.41, Handout #2; LOT202.22, PowerPoint slide #36

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: CORRECT - Indications are in the locations identified.
- B: INCORRECT - FV-4077 does not have position indication on CP-009 (or anywhere in the control room).
- C: INCORRECT - CP-023 has indications/controls for the safety related rad monitors and a couple non-safety related, but RT-8038 is not one of them.
- D: INCORRECT - FV-4077 does not have position indication on CP-009 (or anywhere in the control room). CP-023 has indications/controls for the safety related rad monitors and a couple non-safety related, but RT-8038 is not one of them.

Question Level: F **Question Difficulty** 3

Justification:

Knowledge of available control board indications is required.

Exam Bank No.: 1917**Last used on an NRC exam:** Never

Given the following:

- Unit 1 is operating at 100% power
- SGFPs 11, 12 and 13 are in service
- Condensate Pumps 11 and 12 are in service
- Condensate Pump 12 subsequently trips

Prior to any Operator actions, which of the following alarms would be expected for these conditions?

1. SGFPT 11/12/13 SUCTION PRESS LOW
2. COND PMP TRIP
3. SGFPT 11/12/13 SEAL WTR DP LO
4. POLISHER SYS DIFF PRESS HI

- A. 1, 2
- B. 2, 3
- C. 3, 4
- D. 1, 4

Answer: B 2, 3

Exam Bank No.: 1917 **RO Outline Number:**

K/A Catalog Number: 056 G2.4.46 **Tier:** 2 **Group/Category:** 2

RO Importance: 4.2 **10CFR Reference:** 55.41(b)(7)

Condensate System: Ability to verify that the alarms are consistent with current plant conditions.

STP Lesson: LOT 202.10 **Objective Number:** 83037

DESCRIBE the instrumentation and controls available to monitor and operate the Condensate System

Reference: POP09-AN-09M1, page 3; LOT202.10, PowerPoint slide #33

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - The seal DP alarms will come in, however the condensate pumps do not directly supply suction to the SGFPs, so a low suction alarm would not be expected.
- B: CORRECT - The condensate pump trip alarm would be received since the pump stops with a start signal present and the reduction in condensate system pressure caused by the pump trip will cause the seal water DP low alarms to come in.
- C: INCORRECT - The seal DP alarms will come in, however polisher system flow will actually drop which would lower the DP through the polishers.
- D: INCORRECT - The condensate pumps do not directly supply suction to the SGFPs, so a low suction alarm would not be expected and polisher system flow will actually drop which would lower the DP through the polishers.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must analyze the given conditions and then using system design knowledge determine how the plant will respond and what indications should be evident.

Exam Bank No.: 1927**Last used on an NRC exam:** Never

Which one of the following correctly describes the effect on RCP operation if ONLY Thermal Barrier CCW cooling is lost?

RCP #1 seal inlet temperature will...

- A. RISE. The RCP must be tripped within 3-5 minutes to prevent damage to #1 seal.
- B. REMAIN THE SAME. RCP operation may continue; however, Thermal Barrier cooling should be restored as soon as possible.
- C. RISE. RCP operation may continue providing RCP seal temperatures and flows remain within prescribed limits.
- D. REMAIN THE SAME. The RCP must be tripped within 3-5 minutes because the lower pump bearing lost cooling flow.

Answer: B REMAIN THE SAME. RCP operation may continue; however, Thermal Barrier cooling should be restored as soon as possible.

Exam Bank No.: 1927 **RO Outline Number:**

K/A Catalog Number: 008 K3.03 **Tier:** 2 **Group/Category:** 1

RO Importance: 4.1 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect that a loss of malfunction of the CCWS will have on the following: RCP

STP Lesson: LOT 201.05 **Objective Number:** 97119

Given plant conditions, ANALYZE the conditions and accurately PREDICT Reactor Coolant Pump response.

Reference: OPOP04-RC-0002, Rev. 28

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: Seal inlet temperatures will NOT rise therefore a RCP trip is NOT required.
- B: CORRECT: The RCP Thermal Barrier is designed to cool incoming RCS water to the seal package if normal seal injection is lost. Normal seal injection flows TO the RCS therefore the seal package temperatures will remain the same. Because Thermal Barrier cooling is a backup method of cooling the seal, it should be restored as soon as possible.
- C: INCORRECT: Seal inlet temperatures will NOT rise. The prescribed action is correct if seal injection flow to the RCP is lost.
- D: INCORRECT: It's true that seal injection temperature will remain the same, however the lower pump bearing will not lose cooling because seal injection is still present and cools the bearing as it flows to the RCS.

Question Level: H **Question Difficulty** 3

Justification:

Must understand RCP seal operation and be able to determine how seal operation is affected by a loss of thermal barrier cooling.

Exam Bank No.: 1933**Last used on an NRC exam:** Never

Given the following:

- Unit 2 has a normal 13.8 KV electrical lineup.
- An air leak on ESF DG #23 required isolating one of the Starting Air Receivers by closing its outlet isolation.
- The second Starting Air Receiver is at normal operating pressure.

A Unit 2 Standby Transformer lockout occurs.

Which of the following describes the response of ESF DG #23 to these conditions?

ESF DG #23 will.....

- A. NOT receive a start signal, but is capable of starting and will accelerate to full speed in <10 seconds.
- B. NOT receive a start signal, but is capable of starting and will take >10 seconds to accelerate to full speed.
- C. receive a start signal and accelerate to full speed in <10 seconds.
- D. receive a start signal, but will take >10 seconds to accelerate to full speed.

This question modified from #1833 that was on his original exam. An alternative would be to change the KA and use the question on the next 2 pages.

Answer: A NOT receive a start signal, but is capable of starting and will accelerate to full speed in <10 seconds.

Exam Bank No.: 1678

Last used on an NRC exam: 2007

Because of mechanical problems, the fuel oil transfer pumps located at the Auxiliary Fuel Oil Storage Tank (AFOST) are unavailable.

Due to this condition, which one of the following describes the design capability associated with the ESF Diesel Generators?

Under these conditions, the ESF Diesels are designed to operate at full load...

- A. indefinitely using gravity feed.
- B. up to 7 days.
- C. up to 10 days.
- D. up to 14 days.

Replace KA 064 K6.07 (Question #1933) with 064 K6.08 and use this question.

Answer: B up to 7 days

Exam Bank No.: 1678 **RO Outline Number:** 2-1-21 **SRO Outline Number:**

K/A Catalog Number: 064 K6.08 **Tier:** 2 **Group/Category:** 1

RO/SRO Importance: 3.2 / 3.3 **RO-10CFR55.41 #** 4

SRO-10CFR55.43 # or **SRO Obj:**

Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: Fuel oil storage tanks

STP Lesson: LOT 201.39 **Objective Number:** 44273

DESCRIBE the flowpath of the Emergency Diesel Generator systems, sub systems, and interconnections with other systems.

Reference: LOT201.39 lesson handout page 31

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from:

Distractor Justification

- A: INCORRECT - The DG FOSTs are located at a higher elevation than the AFOST, so gravity feed will not work.
- B: CORRECT
- C: INCORRECT - The DG FOSTs have a 7 day design capacity.
- D: INCORRECT - The DG FOSTs have a 7 day design capacity.

Level F **Difficulty** 3

Justification:

A knowledge of the fuel oil transfer system and DG design is required.

Exam Bank No.: 1933 **RO Outline Number:**

K/A Catalog Number: 064 K6.07 **Tier:** 2 **Group/Category:** 1

RO Importance: 2.7 **10CFR Reference:** 55.41(b)(7)

Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Air receivers

STP Lesson: LOT 201.39 **Objective Number:** 98476

Given a plant condition and/or various diesel modes of operation, PREDICT the response of the emergency diesels.

Reference: LOT201.39, handout page #18

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Modified **Modified from** 1833

Distractor Justification

- A: INCORRECT: The DG will receive a start signal.
- B: INCORRECT: The DG will receive a start signal and take less than 10 seconds to come up to speed under these conditions.
- C: CORRECT: The DG will start since E1B is supplied by the Standby Transformer and is capable of accelerating to speed within 10 seconds with only one receiver.
- D: INCORRECT: The DG is still capable of starting in less than 10 seconds.

Question Level: H **Question Difficulty** 3

Justification:

Applicant must determine the effect of the loss on the transformer on the diesel and then determine the effect of the depressurized receiver on the start capability.

Exam Bank No.: 1939**Last used on an NRC exam:** Never

Which one of the following describes the design features for the Fire Protection water system that provides for maintaining fire water system header pressure?

- A. A Jockey Pump with local controls; and automatic starting of Motor-driven Fire Pumps if the Jockey Pump cannot maintain pressure.
- B. A Jockey Pump with local controls; and automatic starting of Diesel-driven Fire Pumps if the Jockey Pump cannot maintain pressure.
- C. A Jockey Pump with controls in the Unit 1 Control Room; and automatic starting of Diesel-driven Fire Pumps if the Jockey Pump cannot maintain pressure.
- D. A Jockey Pump with controls in the Unit 1 Control Room; and automatic starting of Motor-driven Fire Pumps if the Jockey Pump cannot maintain pressure.

Answer: B A Jockey Pump with local controls; and automatic starting of Diesel-driven Fire Pumps if the Jockey Pump cannot maintain pressure.

Exam Bank No.: 1939 **RO Outline Number:**

K/A Catalog Number: 086 K4.02 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.0 **10CFR Reference:** 55.41(b)(7)

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Maintenance of fire header pressure.

STP Lesson: LOT 201.29 **Objective Number:** 53717

DESCRIBE the procedural requirements of POP02-FP-0001, Fire Protection System Operating Procedure, to include notes and precautions, and normal system alignment.

Reference: LOT 201.29, OPOP02-FP-0001, Rev. 26

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT: The Jockey pump control is correct, but the fire pumps are diesel driven, not motor driven.
- B: CORRECT: The Jockey Pump has local controls. The Fire pumps are all diesel driven.
- C: INCORRECT: The Jockey pump control is incorrect. The fire pumps are diesel driven as stated.
- D: INCORRECT: The Jockey pump control is incorrect. Additionally, the fire pumps are diesel driven, not motor driven.

Question Level: F **Question Difficulty** 2

Justification:

Must know the basic controls and operation of the fire protection pumps.

Exam Bank No.: 1942**Last used on an NRC exam:** Never

Assuming all light bulbs are functional, based on the attached display of Control Room Panel CP-003, 4160V Bus E1C is energized...

- A. via the Aux Transformer. The normal off site supply from the 138 KV line has been lost.
- B. via the 138 KV line. The normal off site supply from the Aux Transformer has been lost.
- C. by its respective ESF DG. The normal off site supply from the 138 KV line has been lost.
- D. by its respective ESF DG. The normal off site supply from the Aux Transformer has been lost.

Answer: D energized by its respective ESF DG. The normal off site supply from the Aux Transformer has been lost.

Exam Bank No.: 1942 **RO Outline Number:**

K/A Catalog Number: APE 056 AA2.78 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(7)

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Bus Voltmeters

STP Lesson: LOT 201.31 **Objective Number:** 80603

DESCRIBE the instrumentation and controls available to monitor and operate the Non-Class 1E Electrical Distribution System.

Reference: OPOP02-AE-0001, Rev. 23

Attached Reference ☒ **Attachment:** Picture on second page of question file

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The bus voltage is indicating normal, it is the normal supply voltage that is indicating 0. Normal supply is the Aux transformer.
- B: INCORRECT: The bus voltage is indicating normal, it is the normal supply voltage that is indicating 0. Normal supply is the Aux transformer.
- C: INCORRECT: The bus is energized. The 138 kv line is the emergency offsite supply.
- D: CORRECT: The control board display shows the Bus voltage as normal, but the normal supply voltage as 0. The normal supply for this bus is from the Aux Transformer, but that supply is unavailable based on the SPLY BKR being open.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the electrical lineup from the presentation of control board indications.

Exam Bank No.: 2068**Last used on an NRC exam:** Never

Given the following:

- A steam break OUTSIDE containment results in a Safety Injection initiation.
- Operators are performing the actions of 0POP05-EO-EO10, Loss Of Reactor Or Secondary Coolant.

Which one of the following correctly describes how CURRENT RCFC cooling water flow and Containment pressure compares to the conditions that existed prior to the Safety Injection?

	RCFC cooling water flow	Containment pressure
A.	Higher	Higher
B.	Higher	Lower
C.	Lower	Higher
D.	Lower	Lower

This question replaces #1125 on the original draft exam.

Answer: A Higher; Higher

Exam Bank No.: 2068 **RO Outline Number:**

K/A Catalog Number: 103 A1.01 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.7 **10CFR Reference:** 55.41(b)(7)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature and humidity.

STP Lesson: LOT 202.33 **Objective Number:** 4967

STATE the sources of cooling water to the RCFC'S and when each is used.

Reference: LOT 202.33, Reactor Containment Building HVAC (Rev 6)

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: CORRECT: CCW flow through the RCFCs is ~4 times higher than chilled water flow during normal plant ops. Although the cooling water flow is higher, RCB pressure will actually rise to the higher temperature of CCW compared to chilled water.
- B: INCORRECT: RCB pressure will rise due to the higher temperature cooling flow through the RCFCs
- C: INCORRECT: Post accident flow through the RCFCs is higher.
- D: INCORRECT: Post accident flow through the RCFCs is higher and RCB pressure will rise.

Question Level: H **Question Difficulty** 3

Justification:

Requires the applicant to determine the direct effect of the SI on RCFC cooling flow and the indirect effect on RCB pressure.