

DUANE ARNOLD

APRIL 2001

**NRC COMMENTS ON
WRITTEN
EXAMINATION**

ES-401

Written Examination
Review Worksheet

Form ES-401-9

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q# K/A	SRO Only			
1	R1	F	2										ok	RO	S	N	Verified system knowledge-level question.
2				X	X		X								U1		<p><u>NRC Comments:</u> Distractor a is only one that answers "yes - 1/2 scram" while distractors b through d state "no and reason for no." Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova)</p> <p>Recommend format of Yes-correct reason, Yes-incorrect reason, No-incorrect reason, No-incorrect reason.</p> <p><u>Licensee's Resolution:</u> Revised question with two distractors of half scram w/reason and two distractors of no change w/ reason. Revised question retained.</p>
	R2	F	2										ok	RO	S	N	
3	R3 S3	H	2										ok	RO	S	B	
4	R4	F	2										ok	RO	S	N	
5	R5	F	3										ok	RO	S	N	Verified system knowledge-level question
6	R6	F	2										ok	RO	S	B	
7	R7 S7	F	2										ok	RO	S	N	Per NUREG 1021, questions directly asking for power supply are considered of low level of knowledge; however this type of question may be used judiciously. This is the first question of this nature.
8	R8	F	2										ok	RO	S	B	

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		56. U/E/S	* B/M/W/N	67. Explanation	
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q≠K/A				SRO Only
9	R9 S9	F	4 2		X								ok	RO	U2	N	<p><u>NRC Comments:</u> Distractor a is only one that answers "yes - initiated" while distractors b through d state "no and reason for no." Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova)</p> <p>SROs will have a copy of Technical Specification as a reference which resulted in a LOD of 1 for the original submittal.</p> <p>Also, distractors b through d do not make sense....SBLC has not initiated properly because system flow will be greater than 56 gpm - stem states that flow is 55 gpm.</p> <p><u>Licensee's Resolution:</u> 1. Changed question format to eliminate the 1/3 format. Revised question was retained. 2. Will remove applicable TS section from the references for the SRO 3. Changed "will be" to "would be". Distractors make sense now.</p>
10				X	X		X								U-F		<p><u>NRC Comments:</u> Distractor a is only one that answers "yes - 1/2 scam" while distractors b through d state "no and reason for no." Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova)</p> <p>Confirmed this question was considered system knowledge.</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R10	F	3										ok	RO	S	N	
11	R11	H	2	E									ok	RO	E	B	<p><u>NRC Comments:</u> Re-order stem sentences for clarity. (Change: Assume no operator action, what is affect?, plant conditions) to The following conditions exist... Assume no operator action.... What is status of RPS?</p> <p><u>Licensee's Resolution:</u> 1. Re-ordered question stem as suggested.</p>

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q* K/A	SRO Only				
12	R12 S12	F	3										ok	RO	S	B	
13	R13 S13	H	2										ok	RO	S	N	
14	R14 S14	H	4 3										ok	RO	U3	N	<p><u>NRC Comments:</u> SROs will have a copy of Technical Specification as a reference which resulted in a LOD of 1 for the original submittal.</p> <p>Distractor d not parallel construction with others. Distractors a through c state number of switches (comma), how arranged. Distractor d states number of switches. Sentence description of how arranged. Possible to state: d. There are four pressure switches, all shared (or common) in two logic channels.</p> <p><u>Licensee's Resolution:</u> 1. Will remove applicable TS section from the references for the SRO. 2. Made suggested changes to distractor d.</p>
15	R15 S15	F	2										ok	RO	E	N	<p><u>NRC Comments:</u> Consider table format for easier reading.</p> <p><u>Licensee's Resolution:</u> Decided not to change format.</p>
16				X	X		X								U-F		<p><u>NRC Comments:</u> Distractor a is only one that answers "remain the same" while distractors b through d state "increase and give MFLPD trend." Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova)</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R16 S16	H	2										ok	RO	S	N	

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q# K/A	SRO Only			
17	R17 S17	F	2					X					ok	RO	U4	N	<p><u>NRC Comments:</u> Candidate could correctly argue that distractor a is correct (scram the reactor when unexpected condition.)</p> <p><u>Licensee's Resolution:</u> 1. Changed question stem to read "Which of the following describes the appropriate actions per the ARPs?"</p>
18	R18 S18	F	2	E									ok *	RO	E	N	<p><u>NRC Comments:</u> Question tests knowledge of location of water level indication. K/A 21600A1.03 is the ability to predict or monitor changes in parameters during surveillance testing. The operator would need to know where these indicators are in order to monitor them during the surveillance - the question indirectly matches the K/A.</p> <p>Also, too much information, too complicated from a visual standpoint and question testing two systems/parameters.</p> <p><u>Licensee's Resolution:</u> 1. Removed information on pressure indication to focus stem better. Revised question was retained.</p>
19	R19 S19	H	2										ok	RO	S	M	
20	R20	H	3					E					ok	RO	E	N	<p><u>NRC Comments:</u> Distractor c states that torus pressure is too high. Reference states that SRV won't open because of <i>reactor pressure</i>, not torus pressure. Is this a correct answer?</p> <p><u>Licensee's Resolution:</u> 1. Reworded correct answer to differential between torus and reactor pressure as this is the technically correct answer. This change also draws better relationship with K/A. 2. Reordered distractors by length.</p>
21	R21 S21	F	2										ok	RO	S	B	
22	R22 S22	F	2*										ok	RO	S	N	Per NUREG 1021, questions directly asking for power supply are considered of low level of knowledge; however this type of question may be used judiciously. This is the second question of this nature.

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q# K/A	SRO Only			
23	R23	H	3	E									ok	RO	E	N	<p><u>NRC Comments:</u> Suggest changing stem (to eliminate the "least preferred" statement" to "which of the following conditions will result in rod drift if a scram signal is received?"</p> <p>Bold or somehow highlight "not"</p> <p><u>Licensee's Resolution:</u> 1. Can't use suggested stem change as this would eliminate distractor a as a viable distractor. Distractor b(correct answer) is the only one which will result in a rod drift - a condition which is not desirable. Facility has no concerns with "least preferred"</p> <p>2. "NOT" cap'd and bold.</p>
24	R24	H	2										ok *	RO	S	N	<p><u>NRC Comments:</u> Weak link to K/A - question asks for feedwater flow rate when opening 4 SRVs. K/A deals with SRVs and water level. Maintaining a feedwater flow rate demonstrates the ability to monitor level (K/A).</p>
25	R25 S25	H	3										ok	RO	E	B	<p><u>NRC Comments:</u> Capitalize "no" in each distractor.</p> <p><u>Licensee's Resolution:</u> 1. "NO" cap'd in distractors.</p>
26	R26 S26	F	3										ok	RO	S	N	
27	R27 S27	F	2	E									ok	RO	E	N	<p><u>NRC Comments</u> Stem contains teaching - remove "Starting large loads....voltage transients" This information is not needed and causes one to eliminate distractors a and b immediately.</p> <p><u>Licensee's Resolution:</u> 1. Statement removed from stem.</p>
28	R28 S28	F	3		E								ok	RO	E	B	Removed "train" after SBGT in distractor d for better consistency.
29	R29 S29	F	2										ok	RO	S	N	

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q# K/A	SRO Only			
30	R30	H	3										ok	RO	S	N	
31	R31	H	3										ok	RO	S	N	
32	R32 S32	F	2		E								ok	RO	E	N	<p><u>NRC Comments:</u> Partial cue in stem - states "LOCA" - leads to containment conclusion. Possible to change to "post accident monitoring" instead?</p> <p><u>Licensee's Resolution:</u> 1. Made suggested changes.</p>
33				X	X		X								U-F		<p><u>NRC Comments:</u> Distractor a is providing more information than was asked for in stem. Stem asked if RPIS failure affected RWM (NO/YES) and if YES, how. Distractor a states NO and gives reason.</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R33 S33	H	3										ok	RO	S	N	
34								No ans					X		U5	N	<p><u>NRC Comments:</u> 1. MO 1913 and MO 1921 will be lost - No correct answer! 2. K/A 2190000K2.01 deals with knowlege of electrical power for torus pool cooling mode valves. Question tests knowledge of electrical power, but answer is LPCI, not torus cooling.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
34N	R34 S34	H	2										ok	RO	S	N	

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35	R35	F	3		E								ok-E	RO	E	M		<p><u>NRC Comments:</u> Distractor d as written doesn't address the K/A directly. Would have clearer match if distractor d changed to "preclude operation og reactor breaker to torus vac breaker. " Also, this change will be aligned with structure of other distractors (specific systems/equipment mentioned, not structures)</p> <p><u>Licensee's Resolution:</u> 1. Suggested changes made.</p>
36	R36	F	2										ok *	RO	S	N		<p><u>NRC Comments:</u> Selected K/A from outline was 205000K2.01 (power supplies for pump). K/A for question is 205000K2.02 (valves). Chief agreed to change K/A as LOD for pump electrical supply would be '1'. Question as written is a bit higher at '2' due to possible misconception.</p> <p>Per NUREG 1021, questions directly asking for power supply are considered of low level of knowledge; however this type of question may be used judiciously. This is the third question of this nature.</p>
37	R37	H	2										ok	RO	S	N		
38	R38	H	3										ok	RO	S	N		
39		H F	1												U6			<p><u>NRC Comments:</u> Considered basic knowledge for operators to reduce power with recirc. Fundamental because applicant need only know how to reduce power. K/A 245000A4.05 deals with ability to manually operator generator megawatt output - question deals with how to lower power...which does lower gen megawatt....not clear match.</p> <p><u>Licensee's Resolution:</u> New question submitted.</p>
39N	R39 S39	F	3										ok	RO	S	N		

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
40							X						ok	RO	U7	B	<p><u>NRC Comments:</u> Distractors c and d involve HPCI/RCIC in CST to CST mode. Possible to change HPCI - why would someone believe HPCI would be used in the long term?</p> <p><u>Licensee's Resolution:</u> Revised question significantly</p>
40N	R40 S40	H	3										ok	RO	S	B-M	
41	R41 S42	F	2										ok	RO	S	N	
42													X		U8		<p><u>NRC Comments:</u> K/A 262001K5.01 deals with the knowledge of the principle involved with paralleling two A.C. sources. The question deals with which set of controls is utilized when adjusting frequency.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
42N	R42 S 1	H	2										ok	RO	S	N	
43				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R43	F	3										ok	RO	S	N	

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q K/A	SRO Only			
44	R44 S44	H	4 2										ok	RO	U9	N	<p><u>NRC Comments:</u> SROs will have a copy of Technical Specification as a reference which resulted in a LOD of 1 for the original submittal.</p> <p>Remove "in Modes 1, 2, and 3" in distractor c and replace with "durgin fuel moves".</p> <p><u>Licensee's Resolution:</u> 1. Will remove applicable TS section from the references for the SRO. 2. Distractor c not changed as the suggested change would result in a possible correct answer.</p>
45	R45 S45	F	2										ok	RO	S	M	
46	R46 S46	H	2										ok	RO	S	N	
47				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "No" while distractors b through d state "yes and reason for yes."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R47 S47	F	3										ok	RO	S	N	
48	R48	F	2										ok	RO	S	N	
49	R49 S49	H	3										ok	RO	S	N	
50	R50 S50	H F	2										ok	RO	S	N	<p><u>NRC Comments:</u> Question is fundamental - what type of core orificing exists. Facility commented that candidate needs to know reason for the sizing. Disagree. The candidate needs to know the peripheral orifice are smaller than the ones used in the interior. The question isn't asking for the reasoning.</p> <p>Changing to "F" does not affect quality of exam.</p>

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
51			1				X								U10		<p><u>NRC Comments:</u> It is always "correct" to scram the reactor if the operator is not comfortable with situation.</p> <p>Distractors a and d are only credible answers. Either you can depress the manual pushbuttons without OSS permission, or you can't. Why would someone believe that distractor b or c are correct (can push A without permission but need permission to press B, etc.)</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
51N	R51 S51	F	3										ok	RO	S	N	
52	R52 S52	F	3										ok	RO	S	B	
53													X		U		<p><u>NRC Comments:</u> K/A 295006AK2.02 deals with the knowledge of the interrelationship between a scram and reactor water level control. The question asks whether notching will occur since the backfill system has been out greater than 7 days concurrent with a shutdown.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
53N	R53 S53	F	2										ok	RO	S	N	
54	R54 S54	F	4										ok	RO	S	M	
55							X								U11		<p><u>NRC Comments:</u> Why are distractors a and b credible? How would someone draw the conclusion that the turbine will trip on reverse power or overspeed condition using the EHC diagram provided?</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
55N	R55 S55	H	3										ok	RO	S	B	

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
56								no ans							U12		<p><u>NRC Comments:</u> During validation week, the facility notified the chief that there is no answer to this question - it has not been confirmed that the 170" scam is avoided at this initial power level.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
56N	R56 S56	H	3										ok	RO	S	N	
57	R57	F	3				E						ok	RO	E	N	<p><u>NRC Comments:</u> Consider eliminating distractor b and replace with "4 process monitors" One each to cooling tower, one each to discharge canal"</p> <p><u>Licensee's Resolution:</u> 1. Suggested changes made.</p>
58					X										U13		<p><u>NRC Comments:</u> Distractor c (answer) only one without a specific peak swing (6,8,12%). This is a CUE to the correct answer.</p> <p><u>Licensee's Resolution:</u> 1. Submitted new question.</p>
58N	R58 S58	H	3										ok	RO	S	N	
59	R59 S59	H	3										ok	RO	S	N	
60	R60 S60	F	2										ok	RO	S	M	
61	R61 S61	F	2										ok	RO	S	N	Bold or somehow highlight "not"
62	R62 S62	H	4										ok	RO	S	N	
63	R63 S63	F	3										ok	RO*	S	N	Verified RO level - 10 CFR55.41 (b)(5)

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				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
64	R64 S64	H	2		E								ok	RO	E	B	<p><u>NRC Comments:</u> Modify distractor c to read "the status of the containment spray subsystem." instead of "which CS subsystems are in use." (For parallel construction)</p> <p><u>Licensee's Resolution:</u> Suggested changes were made.</p>
65	R65 S65	H	3										ok	RO	S	B	Grammar - "locked up" instead of "locks up" in stem. Put a comma after "necessary" in distractor b.
66	R66 S66	H	2										ok	RO	S	B	
67	R67	H	2		E								ok	RO	E	N	<p><u>NRC Comments:</u> 1. Remove "There are no rod blocks..." This is a cue and the information is not needed since the question is essentially asking if there are any rod blocks. 2. In distractor c change "will already be in effect in this configuration" to "is in effect because the grapple is not FULL-UP." This creates parallel construction with others.</p> <p><u>Licensee's Resolution:</u> Suggested changes made.</p>
68	R68 S68	H	3										ok	RO	S	B	Wrong K/A values on reference sheet (not 3.8/4.1 - should be 3.4/3.6)
69			1												U14		<p><u>NRC Comments:</u> Keep revised. As written question is LOD of 1. (Simple systems question) Original question is a accident mode question which better matches K/A also. Suggest changing original to include outlet and loop inlet temp and have one of these high (to meet K/A)</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
69N	R69 S69	F	2										ok	RO	S	M	

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70	R70 S70	F	2										ok	RO	S	N	
71	R71 S71	H	3										ok	RO	S	N	Question format is reversed logic. Facility commented not a problem.
72	R72 S72	F	4 2										ok	RO	U15	N	<p><u>NRC Comments:</u> SROs will have a copy of Technical Specification as a reference which resulted in a LOD of 1 for the original submittal.</p> <p>Make sure someone can't confuse distractor d with Group 4.</p> <p><u>Licensee's Resolution:</u> 1. Will remove applicable TS section from the references for the SRO. 2. Added PCIS group at the end of each distractor.</p>
73	R73 S73	H	3										ok	RO	S	M B	<p><u>NRC Comments:</u> K/A 295018 AK3.01 deals with loss of component cooling and isolation of non-essential heat loads. Question does not deal with isolation of loads - rather increase flow to essential loads through opening of a bypass valve. Suggest changing distractor a to reflect isolation, not opening of bypass.</p> <p>Question was not modified from bank - only explanation added. Additional information added is not required to answer the question.</p> <p><u>Licensee's Resolution:</u> 1. Changed correct answer a to "intake coils isolate". Reordered: distractors by length. 2. Understood question was not modified.</p>
74	R74	H	3					E					ok	RO	E	N	<p><u>NRC Comments:</u> Correct answer is "c" NOT "d".</p> <p><u>Licensee's Resolution:</u> Agreed. Changed answer to "c".</p>

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75	R75 S75	H	3										ok *	RO	E	B	<p><u>NRC Comments:</u> K/A 295022AK1.02 deals with the operational implications of loss of CRD pumps and reactivity control. The question states CRD pumps are lost and asks how is reactivity control affected by an ED. K/A match is weak but acceptable.</p> <p><u>Licensee's Resolution:</u> Added "adversely" in front of "will be" in the stem.</p>
76	R76	H	3										ok	RO	S	N	
77	R77 S77	H	2				E						ok	RO	E	N	<p><u>NRC Comments:</u> Distractor c is not credible. Distractor b is somewhat credible. Please modify one of these.</p> <p><u>Licensee's Resolution:</u> 1. Modified distractor c to "structural damage to the SRV tailpipe." Reordered distractors in accordance with length.</p>
78													X		U16		<p><u>NRC Comments:</u> K/A 295029 G2.4.2 deals with knowledge of EOP entry conditions. Question asks what is the maximum allowable level per TS? (TS requirement is 10.43; EOP entry is 10.4.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
78N	R78	F	2										ok	RO	S	B	
79	R79	H	3										ok	RO	S	N	
80	R80	F	2	E									ok *	RO	E	N	<p><u>NRC Comments:</u> Question does not require candidate to demonstrate the relationship between low suppression pool level and downcomers directly. The answer states the level (7.1 ft) and the reason (downcomers).</p> <p>For a better K/A match, suggest eliminating the level reference in each distractor and rewrite the stem question to state ED at 7.1 ft - what does this level correspond to?</p> <p><u>Licensee's Resolution:</u> 1. Made suggested changed. Removed numeric value in each distractor.</p>

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q* K/A	SRO Only			
81	R81 S81	H	3	E	E								ok *	RO	E	N	<p><u>NRC Comments:</u> The South CRD Module Area Radiation monitor is alarming. Does HPCI/RCIC/RWCU lines run through this area such that a break in one of these lines could result in the alarm?</p> <p>The K/A deals with the knowledge of the reasons for isolating systems as they apply to high secondary containment radiation. The question gives a secondary containment high radiation situation and test whether the student knows which systems can or can not be isolated because of other reasons within the EOPs. This question mets the K/A.</p> <p><u>Licensee's Resolution:</u> 1. Removed the specific reference to the CRD area rad monitor and replaced with a generic reactor building ARM alarm. 2. Added electrical ATWS occurred to stem. Information needed to confirm CRD needed.</p>
82				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "no" while distractors b through d state "yes and reason for yes."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R82	F	2										ok *	RO	S	N	<p>K/A 295034 EA2.01 deals with the ability to determine vent rad levels as they apply to secondary containment ventilation high radiation. The question asks whether the operator can determine the high radiation levels using control room indications. K/A match is weak - this was the closest link the facility could make without making the question LOD = 1.</p>
83	R83	H	2*		E								ok	RO	E	N	<p><u>NRC Comments:</u> LOD appears to be low 2. Suggest changing distractor d to MG set A. Bold or somehow highlight "not"</p> <p><u>Licensee's Resolution:</u> 1. Can't change to MG set A as this will be incorrect answer. 2. Bold and Cap'd WOULD NOT.</p>

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	*	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
84		F											X		U17	N	<p><u>NRC Comments:</u> K/A deals with the ability to operate and or monitor RHR/shutdown cooling mode during a loss of shutdown cooling event. The question asks for limitations on pump starts - applicable to any mode of operation.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
84N	R84 S 8	H	4										ok	RO	S	N	
85	R85 S85	H	2										ok	RO	S	B	
86	R86 S80	H	3										ok	RO	S	N	
87	R87 S87	F	2										ok	RO	S	N	
88				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p>Suggest: Which of the following statements are TRUE? a. All steps are appropriately marked. b. The N/A'd steps need to be initialed. c. Step (b)1 was not corrected properly. d. Steps can not be signed off with a ✓.</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R88 S88	H	2										ok	RO	S	N	

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
89		H	2		E								ok	RO	E	B	<p><u>NRC Comments:</u> Change distractor b to read information copy - reviewed after completion (if appropriate for this site)</p> <p>Remove "The NSOE decides.....for this activity" from the stem. It somewhat cues that the operator did not perform acceptably. Replace with "The NSOE started the compressor from memory."</p> <p><u>Licensee's Resolution:</u> Needed new question because of JPM change during the validation week.</p>
89N	R89	H	3										ok	RO	S	N	
90	R90 S90	H	3				E						ok	RO	E	M	<p><u>NRC Comments:</u> What is "more restrictive, less restrictive"? Suggest the following: a. both may be vented with concurrence from SS/SM b. PI 4553 concur; PS4549 procedure c. PI4553 skill of the craft, PS 4559 concurrence d. both vented with procedure.</p> <p>Recommend changes because as written, the question doesn't test specific knowledge - just are there more or less requirements.</p> <p><u>Licensee's Resolution:</u> No changes made. Facility stated that suggested changes were too specific without procedure. Question tests generic knowledge.</p>
91	R91 S91	F	2										ok	RO	S	B	Removed " at EOC" in distractor b since information is not needed.
92	R92	H	3										ok	RO	S	B	
93	R93 S93	H	2	E									ok	RO	E	N	<p><u>NRC Comments:</u> Eliminate the detailed steps performed by the operator and simply ask at which point can the LCO be exited?</p> <p><u>Licensee's Resolution:</u> Information is needed to verify that operator performed the correct steps in the correct order (else, pump can't be declared operable.) In other words, correct answer can not be after pump started and stopped unless gap was checked earlier. However, pump not operable after gap checked.</p>

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	*	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q# K/A	SRO Only			
94	R94	H	2										ok	RO	S	B	
95			1												U18		<p><u>NRC Comments:</u> LOD of 1 - not discriminatory. Basic rad rules. Suggest listing out and have candidate select one which is not required - bring up to a low 2.</p> <p><u>Licensee's Resolution:</u> Submitted new question.</p>
95N	R95 S95	F	2										ok	RO	S	N	<p><u>As administered changes:</u> During the exam, a candidate stated that there was no correct answer because the admin dose limit for a lifetime was 25 R and the initial conditions stated that the individual had 36 R exposure. The proctor told the applicant to skip the question. The proctor consulted with the chief examiner. We reviewed the references and found a note confirming the applicant's statement - then found another contradicting statement. It was decided to change the 36R to 23R. The 23R represented the planned special exposure limit which is a plausible distractor.</p>
96	R96	H	2										ok	RO	S	B	
97	R97	F	3										ok	RO	S	N	
98	R98	F	2										ok	RO	S	N	Basic EOP knowledge - meets K/A.
99				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "no" while distractors b through d state "yes and reason for yes."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R99 S99	H	3										ok	RO	S	N	

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	*	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
100				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	R100 S100	H	2										ok	RO	S	N	
S2	S2	F	2										ok	RO*	S	N	<p><u>NRC Comments:</u> K/A 202002 K3.01 deals with knowledge of the effect that a loss of recirc flow control has on core flow. Question stem states that flow increases and essentially asks how high will core flow rise. While the question deals with how the controller fails, it does meet the K/A - loss of recirc flow control (controller failure) on core flow (rises until it reaches a lockup condition.)</p> <p>Question is correctly written at RO level.</p>
S4		H F	1											X-S	U19		<p><u>NRC Comments:</u> Question is asking for shutoff head of LPCI - system knowledge, not SRO-only and not higher order question (need only know shutoff head) Also- direct look up from EOPs which will be provided.</p> <p><u>Licensee's Resolution:</u> Submitted a new question.</p>
S4N	S4	H	3										ok	SRO	S	N	
S5	S5	H	3										ok	RO*	S	N	Question correctly written at RO level.

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
S6	S6	H											ok	X-S RO	S *	N	<p><u>NRC Comments:</u> Question asks for the impact of losing instrument air - system knowledge and is not considered an SRO-level question (can't tie to 10 CFR 55.43 (b).)</p> <p><u>Licensee's Resolution:</u> 1. Added more to distractors regarding the status of HPCI; however, this did not result in an SRO-level question. 2. Down graded to RO-level question.</p> <p>NOTE: The SRO exam must have 25 SRO-level questions. The facility provided 28 SRO-different questions, 25 of which need to be at the SRO-level. This question was not marked "U" since the total of SRO-level questions is at least 25.</p>
S8				X	X		X									U-F	<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p><u>Licensee's Resolution:</u> Question was dropped. Licensee used question #84 from the RO exam to replace this question. Therefore, this question is at the RO level.</p>
S10	S10	H	2										ok	SRO	S	B	<p>10 CFR 55.43(b)(5)</p> <p>Verified EOP entry conditions will be whited-out.</p>
S11	S11	H	2										ok	SRO	S	N	<p>10 CFR 55.43(b)(5)</p>
S20															Not rated		<p><u>NRC Comments:</u> K/A 295006G2.1.14 deals with knowledge of system status which requires notification of plan personnel. Question asks what is the proper notification (Tier 3 question - not Tier 1)</p> <p>The Chief Examiner and facility agreed that it was not possible to write a SRO-level question with a level of difficulty >1 for this generic. A new K/A was selected.</p>
S20N	S20	H	3										ok	SRO	S	N	<p>10 CFR 55.43(b)(5)</p>
S23	S23	F	2										ok	RO*	S	B	<p>Question is correctly written at RO level.</p>

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	*	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q# K/A	SRO Only			
S24				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "no" while distractors b through d state "yes and reason for yes."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	S24	F	3										ok	SRO	S	N	10 CFR 55.43(b)(5)
S30	S30	F	2										ok	SRO	S	N	10 CFR 55.43(b)(5)
S31	S31	H	3										ok	SRO	S	N	10 CFR 55.43(b)(5)
S35	S35	H	2										ok	SRO	S	N	10 CFR 55.43(b)(4) and (5)
S36	S36	H	2	E									ok	RO*	E	N	<p><u>NRC Comments:</u> To make sure distractor d is not also correct, add "under these current conditions" to the stem. Otherwise, candidate can argue that over time, distractor d would be correct</p> <p>Question is correctly written at the RO level.</p> <p><u>Licensee's Resolution:</u> 1. Added "at this time" to stem to eliminate the potential confusion.</p>
S37	S37	H	2										ok	RO*	S	B	Question is correctly written at RO level.
S38	S38	H	3										ok	SRO	S	B	10 CFR 55.43(b)(5)
S41				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "no" while distractors b through d state "yes and reason for yes." What is being prioritized in this question? Does this meet the K/A?</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	S41	F	3										ok	SRO	S	N	10 CFR 55.43(b)(5) - interpreting EOPs.

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
S43	S43	F	2	*									ok	RO*	E	N	<p><u>NRC Comments:</u> Teaching in the stem - is it necessary to define DELUGE and PREACTION?</p> <p>Question is correctly written at the RO level.</p> <p><u>Licensee's Resolution:</u> Preaction is a subset of deluge - the definition as it applies to this question is needed for clarification.</p>
S48													X		U20		<p><u>NRC Comments:</u> K/A295038EK2.01 deals with the interrelationship between high offsite release rate and radwaste. Question asks what type of effluent monitoring if available in the low level radwaste processing and storage facility? Not convinced this meets the K/A.</p> <p><u>Licensee's Resolution:</u> Agreed with chief examiner. The licensee requested to change the K/A to a generic (PARS) since the licensee could not write an SRO-level question for this K/A. The chief examiner agreed.</p>
S48N	S48	H	3										ok	SRO	S	N	
S57	S57	H	3										ok	SRO	S	N	10 CFR 55.43(b)(5)
S67	S67	H	3										ok	SRO	S	B	10 CFR 55.43(b)(5) - EOP reading
S74	S74	F	2	E									ok	SRO	E	B	<p><u>NRC Comments:</u> 10 CFR 55.43(b)(5)</p> <p>Statement "assume that the following conditions occur in sequential order from a-d" refers to the distractors. Is it possible to make these conditions part of the stem and change distractors to read "a" "b" "c" etc.?</p> <p><u>Licensee's Resolution:</u> 1. Removed "assume" statement and replaced with "Which one of the following conditions requires tripping of the SBLC pumps?" 2. Remove "when all/ after the..." from each distractor.</p>
S76	S76	H											ok	SRO	S	N	System knowledge or 10 CFR 55.43(b)(7)?

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	*	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q* K/A	SRO Only			
S78	S78	H	2										ok	X-S RO	S *	N	<p><u>NRC Comments:</u> System knowledge (what happens to flow and indication if recirc pump trips) and is not considered an SRO-level question (can't tie to 10 CFR 55.43 (b).)</p> <p><u>Licensee's Resolution:</u> 1. Maintain question as a RO level question.</p> <p>NOTE: The SRO exam must have 25 SRO-level questions. The facility provided 28 SRO-different questions, 25 of which need to be at the SRO-level. This question was not marked "U" since the total of SRO-level questions is at least 25.</p>
S79	S79	H	3										ok	RO*	S	N	Question correctly written to RO level.
S82				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p>Suggest the following to provide counter balance: Ask which of the following is true and take out the "yes"/"no".</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	S82	H	2										ok	SRO	S	N	10 CFR 55.43(b)(4)
S83				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	S83	H	2										ok	SRO	S	N	10 CFR 55.43(b)(1)
S84	S84	H	3										ok	SRO	S	M	10 CFR 55.43(b)(1)

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Back-ward	Q* K/A	SRO Only				
S86				X	X		X								U-F		<p><u>NRC Comments:</u> Distractors lack counter balance and symmetry (NUREG 1021, Appendix B.2.f and e-mail from George Usova) Distractor a is only one that answers "yes" while distractors b through d state "no and reason for no."</p> <p><u>Licensee's Resolution:</u> 1. Changed question to eliminate the "1/3" format. The revised question was retained.</p>
	S86	F	2										ok	SRO	S	N	10 CFR 55.43(b)(6)
S89	S89	F	2										ok	SRO	S	N	10 CFR 55.43(b)(3) Bold or somehow highlight "not"
S92	S92	F	2										ok	SRO	S	N	10 CFR 55.43(b)(5)
S94	S94	F	2										ok	SRO	S	N	TS bases not supplied. 10 CFR 55.43(b)(5)
S96	S96	F	2										ok	SRO	S	N	10 CFR 55.43(b)(4)
S97	S97	H	3										ok	SRO	S	N	10 CFR 55.43(b)(2)
S98	S98	F	2				E						ok	SRO	E	N	<p><u>NRC Comments:</u> Even though TS is provided - distractor c will be more credible if TS is used instead of an AOP (operability requirements are never in an AOP)</p> <p>10 CFR 55.43(b)(1)</p> <p><u>Licensee's Resolution:</u> 1. Used TS bases as distractor. Reordered distractors in accordance with length.</p>

Q#	Exam Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		56. U/E/S	* B/M/N	67. Explanation	
				Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q* K/A	SRO Only				
<p>Instructions</p> <p>[Refer to <u>Section D of ES-401</u> and Appendix B for additional information regarding each of the following concepts.]</p> <p>1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.</p> <p>2. 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).</p> <p>3. Check the appropriate box if a psychometric flaw is identified:</p> <ul style="list-style-type: none"> · 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. · More than one distractor is not credible. · One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem). <p>4. Check the appropriate box if a job content error is identified:</p> <ul style="list-style-type: none"> · 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. <p>5. Check the appropriate box if the sampled question does not match the approved K/A or an SRO-only question is not at the SRO level.</p> <p>6. Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?</p> <p>67. For any "U" ratings, at a minimum, explain how the Appendix B psychometric attributes are not being met.</p> <p>* Source of question: Bank/Modified/New. B-P means used on previous NRC exam, pre-validated.</p>																		

Please note: Format questions were counted as 1 Unsatisfactory - the remaining were not counted in the final total as this format was incorrectly accepted in past exams. This was discussed and approved by the Branch Chief, David Hills.

2. The reactor Mode Switch is in REFUEL during refueling operations.

APRM A is BYPASSED.

All SRMs and IRMs are operable and NOT BYPASSED.

Which of the following CORRECTLY describes the response of the Reactor Protection System (RPS) if the mode switch on the 1C36 drawer for A IRM were to be taken to the STANDBY position?

- a. A half scram would result due to an inoperable IRM.
- b. A half scram would result due to an inoperable IRM with companion ARPM downscale.
- c. There would be NO CHANGE to RPS because A IRM remains operable in STANDBY.
- d. There would be NO CHANGE to RPS because the reactor Mode Switch is in REFUEL.

ANSWER: a

Distractor 1: Companion APRM has no affect in refuel.

Distractor 2: Mode switch out of operate makes IRM INOP and results in a ½ scram.

Distractor 3: IRMs only bypassed in RUN.

REFERENCE: SD-878.2

K/A System: 215003 IRM

K/A Number K3.01 (Knowledge of the effect that a loss or malfunction of IRM on RPS.)

K/A Value: 3.95/4.0

DAEC Objective: 79.00.00.06

Cognitive Level: 1 I

Source: NEW

9. During an ATWS transient, the Shift Supervisor has directed the initiation of Standby Liquid Control System (SBLC).

After placing the SBLC system mode switch to the PUMPS A and B RUN position, you observe the following conditions:

Both SBLC pumps RED lights ON
 Both SBLC Squib valve ready lights OFF
 SBLC Squib continuity loss annunciator ON
 SBLC System discharge pressure is 980 psig
 SBLC System flow = 55 gpm
 SBLC storage tank level lowering
 Reactor pressure is 950 psig
 RWCU isolated
 Reactor power lowering

Evaluate these conditions and indicate if the SBLC system has initiated properly and if not, then specify the discrepancy.

- a. The SBLC system has initiated properly.
- b. The SBLC system has NOT initiated properly because system flow would be greater than 56 gpm.
- c. The SBLC system has NOT initiated properly because the Squib valve continuity loss annunciator would not be activated.
- d. The SBLC system has NOT initiated properly because the system discharge pressure would be at least 100 psig greater than reactor pressure.

ANSWER:

a

Distracter 1: Per OI-153, SBLC has initiated properly, system flow should be > 52.4 gpm. Actual pump flow during testing is closer to 28 gpm.

Distracter 2: Per OI-153, SBLC has initiated properly, continuity annunciator should be activated.

Distracter 3: Per OI-153, SBLC has initiated properly, system pressure should be greater than reactor pressure, however there is no minimum amount specified.

REFERENCE: OI-153

K/A System: 211000 (Standby Liquid Control System)

K/A Number: K4.08 (Knowledge of Standby Liquid Control System design feature(s) and/or interlocks which provide for the following: SYSTEM INITIATION UPON OPERATION of SBLC SWITCH.)

K/A Value: 4.2/4.2

DAEC Objective: 6.00.00.05 Describe how the Standby Liquid Control System RESPONDS TO AN INITIATION signal.

Cognitive Level: 1 I

Source: New Question

10. The plant is less than 75% power as directed by STP 3.3.1.1-19 "Functional Test of TSV Closure Input to RPS and RPT". (Routine turbine testing)

Per this procedure, both pushbuttons for Turbine Stop Valve 1 and 2, in RPS Channel A1, are simultaneously depressed and then released when the TSVs reach 90% open.

Which of the following CORRECTLY describes the response of the Reactor Protection System to this test?

- a. The RPS system is DESIGNED for ½ scrams during this type of testing and the action described would result in a ½ scram.
- b. The RPS system is DESIGNED for ½ scrams during this type of testing however, the action described would NOT result in a ½ scram.
- c. The RPS system is NOT DESIGNED for ½ scrams during this type of testing. I&C Technicians must install relay blocks in the appropriate RPS relays at the beginning of this section of the STP.
- d. The RPS system is NOT DESIGNED for ½ scrams during this type of testing. The ½ scram is inhibited when the "A" RPT System Mode Select Switch, C71A-S12A, on 1C15, is placed in TEST at the beginning of this section of the STP.

ANSWER: a

Note: ILC candidates perform this STP as part of their training. It is one of the few times that they do test that result in ½ scrams.

Distracter 1: TSV 1 & 2 testing produces a ½ scram.

Distracter 2: RPS is designed for ½ scrams during testing. This is a functional test performed by operators. It does not require I&C Techs who would be responsible for installing relay blocks.

Distracter 3: RPS is designed for ½ scrams during testing. This may be an obscure test switch but candidate should recognize that the plant is designed to take ½ scrams during testing but not ½ RPT trips.

REFERENCE: STP 3.3.1.1-19 and SD-358

K/A System: 212000 (Reactor Protection System)

K/A Number: K4.05 (Knowledge of the Reactor Protection System design feature(s) and/or interlocks which provide for the following: FUNCTIONAL TESTING OF THE SYSTEM WHILE MAINTAINING POWER OPERATION.)

K/A Value: 3.4/3.6

DAEC Objective: 22.02.01.08 Describe the Reactor Protection System interlocks, including purpose, setpoints, logic, and when/how they are bypassed.

Also Task 97.04, Perform TSV closure RPS and RPT Functional.

Cognitive Level: 1 I

Source: New Question

16. The plant is operating at 95% power.

“E” APRM is bypassed.

An LPRM associated with “E” APRM fails UPSCALE.

Which of the following CORRECTLY describes the affect of this failure on the value of Core Thermal Power (MWTH) on the 3D Monicore official case?

- a. LPRMs and APRMs are NOT factors in the heat balance calculation.
Therefore, there would be NO CHANGE to the official case MWTH.
- b. LPRMs and APRMs are factors in the heat balance calculation.
There would be NO CHANGE to the official case MWTH because “E” APRM is bypassed.
- c. LPRMs are a factor in the heat balance calculation.
Therefore, the official case MWTH would INCREASE.
- d. APRMs are a factor in the heat balance calculation even when bypassed.
The official case MWTH would INCREASE because the upscale LPRM would cause a higher reading on the “E” APRM.

ANSWER: a

Note: Core Thermal Power is derived from a heat balance and is used to assign the value of reactor power to the APRMs. MWTH will not change.

Distracter 1: No change is correct but NIs are not a factor.

Distracter 2: MWTH will not change. NIs are not a factor.

Distracter 3: MWTH will not change. NIs are not a factor.

REFERENCE: SD 878.3

K/A System: 215005 (Average Power Range Monitor/Local Power Range Monitor)

K/A Number: K3.08 (Knowledge of the effect of a loss or malfunction of the APRM/LPRM will have on the following: CORE THERMAL CALCULATIONS.)

K/A Value: 3.0/3.4

Objective: 81.01.01.15 Given any APRM System operating mode and various plant conditions, predict how any APRM System operation or failure will impact each of the following supported systems: PLANT PROCESS COMPUTER.

Cognitive Level: 2 RI

Source: New Question

18. Which of the following correctly identifies the Control Room panel(s) where a reactor water level indicator and/or recorder in the range of:
+8" to +218"
can be read?
- a. 1C05 only
 - b. 1C05 and 1C03
 - c. 1C05 and 1C04
 - d. 1C05 and 1C09

ANSWER: a

Distracter 1: +8" to +218" is a Yarway on 1C05 only. 1C03 also has a Yarway but it measure fuel zone,

-153-218. It is a possible misconception that the 1C03 RPV level recorder has a range of +8" to +218", but it records fuel zone range.

Distracter 2: +8" to +218" is considered "wide range" Yarway. The 1C04 level indication has a wide range of 300 inches, +158-+458.

Distracter 3: 1C09 has several Containment Accident recorders, but no RPV level recorders.

REFERENCE: M-115 ; SD 880

K/A System: 216000 (Nuclear Boiler Instrumentation)

K/A Number: A1.03 (Ability to predict and/or monitor changes in parameters associated with operating the Nuclear Boiler Instrumentation controls including: SURVEILLANCE TESTING.)

K/A Value: 2.9/3.2

Objective: 88.00.00.02 Describe the operation of the following Non-Nuclear Instrumentation System components including range, control room location, calibration condition, any compensation and any instruments that share the same sensing lines: LEVEL, PRESSURE, TEMPERATURE, FLOW.

Cognitive Level: 1 S

Source: NEW

33. A reactor startup is in progress.

The Rod Worth Minimizer (RWM) is in OPERATE.

There are four (4) partially withdrawn rods with substitute positions already entered into the RWM.

When rod 30-31 is moved from position 46 to position 48, the FULL OUT light comes ON but the 48 position for this rod on the 4-Rod display goes BLANK. This is accompanied by a ROD DRIFT annunciator.

There is NO OVERTRAVEL OUT Annunciator.

Which of the following CORRECTLY describes the affect, if any, of this Rod Position Information System (RPIS) failure on the Rod Worth Minimizer?

- a. There will be NO AFFECT on the RWM.
- b. The RWM will enforce a SELECT BLOCK.
- c. The RWM will enforce INSERT and WITHDRAW BLOCKS.
- d. There will be NO INSERT, WITHDRAW, or SELECT BLOCKS, but the RWM will provide the message INVALID ROD 30-31 POS, MAX SUBS ALREADY MADE.

ANSWER: c

Distracter 1: The RWM will enforce INSERT and WITHDRAW BLOCKS. RWM gets its rod position indications from 00-48 reed switches.

Distracter 2: The RWM will enforce INSERT and WITHDRAW BLOCKS, not select blocks.

Distracter 3: The RWM will enforce INSERT and WITHDRAW BLOCKS. This message is for when 8 positions are substituted, not 4.

REFERENCE: AOP 357, Rev. 23; SD 878.8, Rev. 3; SD 856.1, Rev. 2; OI 856.3, Rev. 7

K/A System: 214000 (Rod Position Information System)

K/A Number: K3.01 (Knowledge of the effect that a loss or malfunction of the Rod Position Information System will have on the following: RWM.)

K/A Value: 3.0/3.2

Objective: 84.00.00.05

Given a Rod Worth Minimizer System operating mode and various plant conditions, predict how the Rod Worth Minimizer System will be impacted by failures in the following support systems: RPIS.

Cognitive Level: 2-RI

Source: NEW

34. When placing the "B" Loop of RHR in the Torus Cooling Mode, the OUTBD TORUS CLG/SPRAY valve, MO-1932, and the TORUS COOLING/TEST valve, MO-1934, must be opened.

The loss of which of the following busses will prevent operation of these RHR system MOVs?

- a. 1B34
- b. 1B44
- c. 1B34A/1B44A
- d. 1B37

ANSWER: b

Note: Both MOVs are powered from 1B44.

Distracter 1: Selected if candidate identifies A loop valves with the same function.

Distracter 2& 3: Selected if candidate thinks these valves are important enough to be powered from the swing bus. 1B37 comes from the swing bus.

REFERENCE: OI-149 RHR

K/A System: 219000 (RHR/LPCI Torus/Suppression Pool Cooling Mode)

K/A Number: K2.01 (Knowledge of electrical power supplies for the following: VALVES)

K/A Value: 2.5/2.9

Objective: 2.01.01.06

Given an RHR System operating mode and various plant conditions, predict how the RHR System will be impacted by operation, or failure of the following support system(s): ESSENTIAL 4160/480 VAC ELECTRICAL POWER SUPPLIES.

Cognitive Level: 1-F

Source: New Question

39. (Assume that all times and values provided are exact.)

The System Operation Center requests that the DAEC lower generator output by 60 MWe.

The operator on the Recirc controls records the following readings as he begins the downpower:

Time Generator Megawatt Output

0120 560 MWe
 0121 550 MWe
 0122 547 MWe
 0123 544 MWe
 0124 542 MWe
 0125 540 MWe

- 1) Has the operator exceeded the IPOI-3 "Power Operations" limit for STEP CHANGES in reactor power? (Exceeded or NOT exceeded)
- 2) Has the operator exceeded the IPOI-3 limit for OVERALL RATE OF POWER CHANGE? (Exceeded or NOT exceeded)
 - a. 1) Exceeded
2) Exceeded
 - b. 1) Exceeded
2) NOT exceeded
 - c. 1) NOT exceeded
2) Exceeded
 - d. 1) NOT exceeded
2) NOT exceeded

ANSWER: d

Note: First step change was 10 MWe; The limit is 5%, or ≈ 25 MWe. Overall rate of change was 20 MWe/5 minutes or 4 MWe/Minute; The limit is 1% or 5 MWe/minute. The customary rate of change is 2-3 MWe/Min.

Distracter 1: Selected if candidate thinks Step Change limit is 1% (5 MWe) and Overall rate limit is 2-3 MWe/minute.

Distracter 2: Selected if candidate thinks Step Change limit is 1% (5 MWe).

Distracter 3: Selected if candidate thinks Overall rate limit is 2-3 MWe/minute.

REFERENCE: IPOI 3, Power Operations

K/A System: 245000 (Main Turbine Generator and Auxiliary Systems)

K/A Number: A4.05 (Ability to manually operate and/or monitor in the control room:
GENERATOR MEGAWATT OUTPUT.)

K/A Value: 2.7/2.7

Objective: 93.11.01.13 Explain basis for the P&Ls of IPOI-3.

Cognitive Level: 3-SPK

Source: New Question

40. A COMPLETE LOSS Uninterruptible AC Power (1Y23) has occurred while at 100% power. Operators manually scrammed the reactor due to RPV level control problems. RPV level lowered to 140" and is now at 150" and rising slowly.

Assume that there are NO EOP-2 entry conditions.

Which of the following EOP-1 Alternate Pressure Control Systems will **NOT** remain available?

- a. Main Steam Line Drains
- b. Main Turbine Bypass Valves
- c. RWCU in Recirculation Mode
- d. LOW- LOW Set Safety Relief Valves

ANSWER: b

Note: Uninterruptible AC Power would not be available to power EHC Logic after the turbine trip therefore, turbine bypass valves cannot be used.

Distracter 1: Would remain available. Selected if candidate thinks a Group 1 Isolation would occur.

Distracter 2: Would remain available. Selected if candidate thinks a Group 5 Isolation would occur.

Distracter 3: Would remain available. Selected if candidate thinks LLS logic is powered from UPS.

REFERENCE: AOP 301, Loss of Essential Power, and AOP 357, Loss of Uninterruptible AC Power.

K/A System: 262002 (Uninterruptible Power Supply)

K/A Number: K3.13 (Knowledge of the effect that a loss or malfunction of the Uninterruptible Power Supply will have on the following: REACTOR PRESSURE.)

K/A Value: 2.7/2.9

Objective: 52.01.01.02

Given an EHC System operating mode and various plant conditions, predict how the EHC System will be impacted by failures in the following support systems:
UNINTERRUPTIBLE AC CONTROL POWER SYSTEM.

Cognitive Level: 2 RI

Source: Exam Bank

42. The Electrical grid and site transformers have been restored following a Loss of Offsite Power. The OSS directs you, as the 1C08 panel operator, to transfer 1A3 from the "A" Standby Diesel Generator (SBDG) to the Startup transformer.

- The BUS 1A3 TRANSFER breaker mode selector switch is placed in MANUAL.
- The handle for the SYNCHRONIZE switch is inserted into 4KV BREAKER 1A302 STARTUP TRANSFORMER TO BUS 1A3 and placed in the ON position.

At this point you observe that the synchroscope is rotating slowly in the COUNTER CLOCKWISE direction.

Which of the following CORRECTLY describes the operational implications of these synchroscope indications while preparing for breaker closure?

- a. "A" SBDG speed must be RAISED to achieve proper synchroscope rotation for breaker closure because it is the RUNNING source.
- b. "A" SBDG speed must be LOWERED to achieve proper synchroscope rotation for breaker closure because it is the RUNNING source.
- c. This is the accepted direction of rotation for breaker closure when an Offsite source is the INCOMING source.
- d. The System Operations Center (SOC) must adjust synchroscope rotation for breaker closure because the Offsite source is the INCOMING source.

ANSWER: b

Note: Synchroscope must be moving slowly in the CLOCKWISE direction for breaker closure.

Distracter 1: A SBDG is almost always the incoming source, but not in this situation. If it were incoming, raising would be the correct direction of adjustment.

Distracter 2: Rare situation; Plausible if candidate does not understand synchronization principles.

Distracter 3: Rare situation; Plausible if candidate does not understand synchronization principles.

REFERENCE: OI-304.2

K/A System: 262001 (A.C. Electrical Distribution)

K/A Number: K5.01 (Knowledge of the operational implications of the following concepts as they apply to A.C. Electrical Distribution: Principle involved with paralleling two A.C. sources.)

K/A Value: 3.1/3.4

Objective: Task 15.08 Transfer essential bus from SBDG to Startup transformer.

Cognitive Level: 3-SPK

Source: NEW

43. Which of the following operator actions MUST be taken before the Diesel Fire Pump, 1P-49, can be started locally by lifting one of the two MANUAL START CONTACTOR LEVERS?

In order for 1P-49 to be started by lifting a manual start contactor lever, the operator MUST FIRST...

- a. override open the electric fuel solenoid.
- b. close the breaker to the emergency start batteries.
- c. place Control Switch HS-3300A in 1C-116 in the TEST position.
- d. place Control Switch HS-3300A in 1C-116 in either the MAN A or MAN B position.

ANSWER: a

Note: When started from the Control Room or 1C-116 the fuel solenoid is energized to open. On a manual start, there is no fuel until the fuel solenoid is overridden. There are 4 distinct ways to start 1P-49; from the Control Room, HS-3300A to MAN A or MAN B and depress START PB, HS-3300A to TEST, and finally by overriding fuel solenoid and manually lifting a start contactor.

Distracter 1: Batteries are always connected to starter and provide DC control power to 1C116.

Distracter 2: This action by itself will start 1P-49 and is not required to be performed first.

Distracter 3: This action electrically energizes the starting contactors when used in conjunction with the START pushbutton, but is not required to be performed first.

REFERENCE: OI-513

K/A System: 286000 (Fire Protection System)

K/A Number: 2.1.30 (Ability to locate and operate components including local controls.)

K/A Value: 3.9/3.4

Objective: NSPEO Task 9.05 (Plant Equipment Operator)

Cognitive Level: 1-P

Source: NEW

51. An ATWS has occurred.

The 1C05 operator has started the second CRD pump and is performing RIP 103.2 "Increase CRD Cooling Flow and Pressure".

- 1) How will CRD cooling flow be increased?
 - 2) How will CRD cooling pressure be increased?
- a.
 - 1) By raising the CRD Flow Controller FC-1814 setpoint to maximum in AUTO.
 - 2) By throttling OPEN MO-1830, DRIVE WATER Δ P CONTROL.
 - b.
 - 1) By raising the CRD Flow Controller FC-1814 setpoint to maximum in AUTO.
 - 2) By throttling CLOSED MO-1830, DRIVE WATER Δ P CONTROL.
 - c.
 - 1) By raising the CRD Flow Controller FC-1814 output to maximum in MANUAL.
 - 2) By throttling OPEN MO-1830, DRIVE WATER Δ P CONTROL.
 - d.
 - 1) By raising the CRD Flow Controller FC-1814 output to maximum in MANUAL.
 - 2) By throttling CLOSED MO-1830, DRIVE WATER Δ P CONTROL.

ANSWER: c

Distracter 1: Controller in AUTO is plausible to free up operator during a busy evolution.

Distracter 2 : Controller in AUTO is plausible to free up operator during a busy evolution. Closing Drive water DP valve is plausible because it raised Drive water pressure to better drive control rods.

Distracter 3: Closing Drive water DP valve is plausible because it raised Drive water pressure to better drive control rods.

REFERENCE: RIP 103.2

K/A System: 295015 (Incomplete scram-Abnormal)

K/A Number: 2.4.11 (Knowledge of Abnormal condition procedures.)

K/A Value: 3.4/3.6

Objective: Task 95.08 Insert control rods by increasing CRD Cooling Flow and Pressure.

Cognitive Level: 1-P

Source: NEW

53. GEMAC Feedwater Level Controllers were in normal operation for full power operation when a reactor scram occurred.

Per IPOI-5, "Reactor Scram", the 1C05 operator depressed the pushbutton handswitch for MANUAL LEVEL SETBACK TO 175".

Which of the following CORRECTLY describes the affect of this action on the Feedwater Level Controllers?

- a. The Master Controller remains in AUTO and its setpoint goes to 175".
- b. The Master Controller shifts to MANUAL and its setpoint goes to 175".
- c. The Master Controller is removed from the circuit.
Both "A" and "B" Feed Reg Valves remain in AUTO and their setpoints go to 175".
- d. The Master Controller is removed from the circuit.
Both "A" and "B" Feed Reg Valves shift to MANUAL and their setpoints go to 175".

ANSWER: a

Note: The only time this switch is used is during Feedwater Level control following a reactor scram.

Distracter 1: Plausible because of the name of the pushbutton.

Distracter 2: Plausible because operator may want to control feed reg valves independently after a scram. A & B controllers in AUTO put the master in the control circuitry.

Distracter 3: Plausible because of the name of the pushbutton.

REFERENCE: IPOI 5

K/A System: 295006 (Scram)

K/A Number: AK2.02 (Knowledge of the interrelations between SCRAM and the following:
REACTOR WATER LEVEL CONTROL)

K/A Value: 3.8/3.8

DAEC Objective: 45.05.01.05 Describe the operation of the FWLC circuitry.

Cognitive Level: 1-I

Source: New

55. The Electrohydraulic Control (EHC) System logic diagram provided on the next page.

The EHC system was in the following condition:

- Pressure Setpoint 940 psig
- Load Set Setpoint 600 MWe
- Load Limit 100%
- Max Combined Flow Limiter 125%

A transient occurs that results in a RISE in reactor pressure and a RISE in Main Turbine Throttle pressure to 980 psig

Which of the following CORRECTLY describes the response of the EHC system?

- a. The Pressure Set unit will shift control to the "B" pressure regulator.
- b. The Load Limit will be controlling and allow a maximum of 100% steam flow to the condenser.
- c. The Load Set Limiter will be controlling and will allow the Turbine Control Valves to open until the generator load is 600 MWe.
- d. The Max Combined Flow Limiter will be controlling and will allow the Turbine Control Valves to be fully open and with at least one Bypass Valve open.

ANSWER: d

Distracter 1: Both Pressure regulator would adjust their outputs equally an "A" would remain in control.

Distracter 2: Load Limit is set at 100% to limit the Main Generator to 100% of rated electrical load, and adjusts the Control Valves accordingly. This setting does not affect the Bypass Valves positioning.

Distracter 3: The Load set limiter is set at a higher value than pressure set and load limit and would not take control.

REFERENCE: SD-693.2a, Figure 8

K/A System: 295007 (High reactor pressure)

K/A Number: AA1.05 (Ability to operate and/or monitor as they apply to High reactor pressure: REACTOR/TURBINE PRESSURE REGULATING SYSTEM.)

K/A Value: 3.7/3.8

DAEC Objective: 99.16.01.06 Evaluate plant conditions and control room indications to determine if the EHC System is operating as expected, and identify any actions that may be necessary to place the EHC System in the correct lineup.

Cognitive Level: 3 PEO

Source: Exam Bank, Question # 2679

56. Reactor power was 100% when the "A" Reactor Feed pump tripped.

- 1) Do the Recirculation Pumps INITIALLY runback to 20% or 45%?
 - 2) Is this automatic runback expected to prevent a RPV low level scram?
- a. 1) 20%
2) YES; The runback will prevent a RPV low level scram.
 - b. 1) 20%
2) NO; The runback allows additional time for operator action prior to reaching the low level scram setpoint.
 - c. 1) 45%
2) YES; The runback will prevent a RPV low level scram.
 - d. 1) 45%
2) NO; The runback allows additional time for operator action prior to reaching the low level scram setpoint.

ANSWER: d

Note: Based on a Plant event. Follow up investigation confirmed that plant will not avoid a RPV low level scram from 100% power upon loss of a Feed Pump. SD 264 states that purpose is to "allow additional time for operator action prior to reaching the low level scram setpoint". Pump discharge valve closed is a 20% or Feed flow <20 % is a 20% runback.

Distracter 1: 45% Runback not 20%. If recirc did runback all the way to 20% the low level scram might be avoided.

Distracter 2: 45% Runback not 20%. Reason is correct/

Distracter 3: Low level scram is unavoidable.

REFERENCE: System Description 264 Reactor Recirculation System, pages 31 and 32

K/A System: 295009 (Low Reactor Water Level)

K/A: AK3.01 (Knowledge of the reasons for the following responses as they apply to Low Reactor Water Level: RECIRCULATION PUMP RUNBACK)

K/A Value: 3.2/3.3

DAEC Objective: 12.00.00.02 Identify the conditions that allow or cause the following events to occur: RECIRC PUMP SPEED LIMITER IN EFFECT.

Cognitive Level: 1-I & B

Source: New

58. A transient has occurred that resulted in power operations in the Exclusion Zone of the DAEC Stability Power/Flow Map.

The Panel 1C05 operator has been assigned to monitor for core thermal/hydraulic instability.

Assume that A, B, C, & D APRMs remain relatively stable at 52-55% throughout this period.

The Panel 1C05 operator observes these changes to E and F APRMs per the following timeline:

- Time 1:
Low to High values on E APRM are observed to be 50-57% with the band getting wider. F APRM remains relatively stable at 52-55% at this time.
- Time 2:
Low to High values on E APRM are observed to be 49-58% with the band getting wider. Low to High values on F APRM are observed to be 50-57% with the band getting wider.
- Time 3:
Low to High values on E APRM are observed to be 48-59% with the band getting wider. Low to High values on F APRM are observed to be 49-58% with the band getting wider.
- Time 4:
Low to High values on E APRM are observed to be 47-60% with the band getting wider. Low to High values on F APRM are observed to be 48-59% with the band getting wider.

Per AOP-255.2, "Power/Reactivity Abnormal Change", at which time is a manual reactor scram first required?

- a. Time 1
- b. Time 2
- c. Time 3
- d. Time 4

ANSWER: a

Note: Scram required for ANY APRM "undamped oscillations greater than normal".

Normal = 52-55% in this case. A previous definition was >10% swings.

Distracter 1: Selected if candidate thinks >1 APRM with undamped oscillations is necessary.

Distracter 2: Selected if candidate thinks any APRM with oscillations >10% is necessary.

Distracter 3: Selected if candidate thinks >1 APRM with oscillations >10% is necessary

REFERENCE: AOP 255.2 Power/Reactivity Abnormal Change, IPOI-3 Appendix 1

K/A System: 295014 (Inadvertent Reactivity Addition)

K/A Number: AK3.01 (Knowledge of the reasons for the following responses as they apply to Inadvertent Reactivity Addition: reactor scram).

K/A Value: 4.1/4.1

DAEC Objective: 94.03.04.01 Explain when a reactor scram is required per AOP 255.2.

Cognitive Level: 3-SPK

Source: NEW

69. The Primary Containment Ventilation system and plant status are as follows:

- The reactor is shutdown.
- All Recirculation fan handswitches are in AUTO.
- The Mode Switch for "A" Loop of Drywell Cooling is in the AUTO position.
- Fans 1A, 2A, 3A, 4A, 5A, 6A, 7A, & 7B are running in HIGH speed.
- The Mode Switch for "B" Loop of Drywell Cooling is in the STANDBY position.
- Fans 1B, 2B, 3B, 4B, 5B & 6B are OFF.
- Drywell pressure is 1.6 psig.
- Well Water outlet temperatures from "B" Loop Coolers are all approximately 110°F.
- Air outlet temperature from the 1A & 1B Coolers is 140°F.

Select the statement that is correct concerning the status of the Primary Containment Ventilation system.

- a. The system is operating as expected for these conditions.
- b. All Drywell Cooling Fans should be running in HIGH speed due to the elevated Drywell pressure.
- c. All Drywell Cooling Fans should be running in HIGH speed due to the elevated "B" Loop Coolers Well Water outlet temperatures.
- d. All Drywell Cooling Fans should be running in HIGH speed due to the elevated 1A & 1B Coolers Air outlet temperature.

ANSWER: d

Note: Per ARP 1C25A[B] A-4 & OI-760 P&L#4, All fans switch to High speed and isol valves open at 120°F cooler water out or 135°F air temp out.

Distractor 1: B Loop fans should be running due to Loop overtemperature of >135°F. Plausible because temperature is less than 150°F EOP entry setpoint.

Distractor 2: Drywell pressure is elevated but it is below the 2# setpoint that would shift all fans to slow speed. Fans do not auto start on DW pressure.

Distractor 3: This is a very high temperature for Well Water but still below the 120°F Loop Overtemperature Auto initiation.

REFERENCE: 1C25A[B], A-4, Drywell Cooling Loop "A" ["B"] Over Temp, OI-760 P&L #4.

K/A System: 295012 (High Drywell Temperature)

K/A Number: AK2.01 (Knowledge of the interrelations between High Drywell Temperature and the following: DRYWELL VENTILATION.)

K/A Value: 3.4/3.5

DAEC Objective: 68.00.00.05 Evaluate plant conditions and control room indications to determine if the Primary Containment Ventilation System is operating as expected, and identify any actions that may be necessary to place the Primary Containment Ventilation System in the correct lineup.

Cognitive Level: 1-I

Source: Revised, Exam Bank

78. Which of the following conditions would require entry into EOP-2 "Primary Containment Control"?
- a. Drywell Pressure at 1.8 psig
 - b. Torus Water Level at 10.6 ft.
 - c. Drywell Hydrogen Concentration at 0.5 %
 - d. Air inlet temperature to the coolers in the CRD area of the Drywell at 155°F

ANSWER: b

Distractor 1: Hi DW pressure alarm is 1.5# and initiates much activity. EOP entry would be 2#.

Distractor 2: EOP entry would be 4.0% not 0.4 %. Common point of confusion.

Distractor 3: EOP entry would be 150°F but based on Average DW Temp not a local temp.

REFERENCE: EOP-2

K/A System: 295029 (High Suppression Pool Water Level)

K/A Number: 2.4.2 (Knowledge of system setpoints, interlocks, and automatic actions associated with EOP ENTRY CONDITIONS.)

K/A Value: 3.9/4.1

DAEC Objective: 95.00.00.08 Explain when EOPs are entered

Cognitive Level: 1 F

Source: Exam Bank

82. A Group 3 isolation has just occurred due to HIGH RADIATION LEVELS in the Reactor Building Vent Shaft.

At which of the following locations can operators determine the actual radiation levels in the Vent Shaft?

The meter face on the Reactor Bldg. Vent Shaft Rad Monitors can be read...

- a. in the Control Room backpanel area at 1C36 (SRM and IRM panel).
- b. in the Control Room backpanel area at 1C23 (Main Plant HVAC panel).
- c. in the Reactor Bldg., on the North side mezzanine above the CRD Repair Room.
- d. in the Reactor Bldg., on the South side mezzanine above the Transversing Incore Probe (TIP) Room.

ANSWER: c

Distracter 1: Selected if candidate confuses RB Vent Shaft Rad Monitors with the Refuel Floor Exhaust Rad Monitors.

Distracter 2: Common misconception. Rad levels cannot be read in the control room but they can be read locally as directed by the ARP. This condition alarms at 1C23 in the backpanel, but there are no monitors there.

Distracter 3: Main Steam line temperatures are read at both in plant location answer options, but the RB Vent shaft can only be read above CRD Repair Room.

REFERENCE: ARP 1C23A&B

K/A System: 295034 (Secondary Containment Ventilation High Radiation)

K/A Number: EA2.01 (Ability to determine and/or interpret as they apply to Secondary Containment Ventilation High Radiation: VENTILATION RADIATION LEVELS)

K/A Value: 3.8/4.2

DAEC Objective: 67.01.01.07 (Identify the appropriate procedures that govern RB HVAC operation, including operator responsibilities in all modes of operation, and any actions required by personnel outside the control room.)

Cognitive Level: 1 S

Source: NEW

84. The "B" RHR Loop was placed in Shutdown Cooling 12 hours ago after a normal shutdown.

Current conditions are as follows:

- RPV water level is stable at 200".
- Both Recirc pumps have been secured.
- The "B" Recirc Pump Discharge Bypass valve is open to keep that loop warm.
- "B" Recirc Loop suction temperature is 180°F and stable.
- The RPV wall temperature is 180°F and stable.
- "B" RHR pump is running.
- "B" RHRSW pump is running.
- Many outage activities, including Control Room panel modifications, are in progress.

While in this condition, the Drywell Health Physics Technician calls the control room to report that wisps of steam have started coming from the Drywell sump area and that it is starting to get very humid in the Drywell.

Control Room operators begin to investigate this report.

Which of the following malfunctions would be consistent with this report and current plant conditions?

Control Room Operators find that...

- a. MO-4602, "B" Recirc Pump Suction valve, somehow got closed.
- b. MO-1905, "B" RHR Inboard Inject Isolation valve, somehow got closed.
- c. MO-1947, "B" RHR HX Service Water Outlet valve, somehow got closed.
- d. MO-1908, Inboard Shutdown Cooling Isolation valve, somehow got closed.

ANSWER: b

Note: Question is based on industry experience in which the SDC discharge valve went closed without operators knowing about it. Recirc pumps secured with RPV level <214 inches means no natural circulation. Coolant temperatures are not reliable indication of coolant temperature without forced circulation. Such a report from the DW is listed as a probable indicator in AOP 149. Stem conditions indicate that there is **no reactor recirculation flow**, either forced or natural.

Distracter 1: The Discharge Valve is normally tagged closed to prevent SDC flow from bypassing the core. Alternately, the Suction valve can have been tagged closed in its place for the same reason. Therefore closing this valve would have no affect of recirculation flow.

Distracter 2: This constitutes a loss of SDC, but not of reactor recirculation flow. If this were the cause, Recirc Pump suction temps and vessel wall temps would be rising due to hotter and hotter forced circulation water.

Distracter 3: This constitutes a loss of SDC but would also trip the running RHR pump.

REFERENCE:AOP-149; OI-149; IG 94-01; SEN 171; ARP 1C03B (A-8)

K/A System: 295021 (Loss of Shutdown Cooling)

K/A Number: AA2.07 (Ability to determine and/or interpret the following as they apply to Loss of Shutdown Cooling: Reactor recirculation flow.)

K/A Value: 2.9/3.1

DAEC Objective: 94.01.01.04 Evaluate plant conditions and control room indications and determine if entry into AOP-149 is warranted. (Loss of S/D Cooling)

Cognitive Level: 2-RI Source:NEW

88. See the partially completed page of IPOI-2 "Startup" on the next page of this exam.

A startup is in progress after a short duration maintenance outage.

A Drywell entry was NOT performed.

The next step of the startup is to withdraw control rods to establish one Turbine Bypass Valve 20%-90% open.

Assume that the attached page is the Working Copy of IPOI-2.

Which of the following CORRECTLY describes the placekeeping /logkeeping on the attached page?

- a. All steps have been properly documented per plant procedures?
- b. IPOI-2 steps may NOT be marked N/A (Not Applicable).
- c. The correction in step (b)1 was NOT performed properly.
- d. IPOI-2 steps may NOT be signed off using a check mark.

ANSWER: d

Note: Placekeeping with grease pencils on Operating Instructions and during Simulator training is a common practice. This question verifies that candidates recognize the stricter requirements for documenting IPOI steps. This requirement is in both references.

Distracter 1: The completed IPOI procedure steps are a permanent record and must therefore be initialed or signed per IPOI-2 and ACP-101.01.

Distracter 2: Steps may be marked N/A per ODI-022 and ACP 101.01

Distracter 3: Correction was performed perfectly per current rev of ODI 022. A recent concern has been that ALL corrections must be initialed, dated and timed. So as of the date of question development, the date and time are excessive, but not improper. If ODI-022 is revised, this answer option will still be in compliance.

REFERENCE: ODI-022, ACP-101.01

K/A System: GENERIC

K/A Number: 2.1.18 (Ability to make accurate, clear and concise logs, records, status boards, and reports.)

K/A Value: 2.9/3.0

Objective: 96.05 Conduct plant operations in accordance with Administrative Procedures

Cognitive Level: 3-SPK

Source: New Question

89. The plant has experienced a complete loss of River Water Supply.

A Nuclear Station Operating Engineer (NSOE) has been dispatched from the Work Control Center to the Pump House to establish makeup to the RHRSW/ESW pits from GSW.

Which of the following is CORRECT concerning Procedure Usage Level for this operation?

- a. This is a Skill of the Craft activity that does NOT require procedure usage.
- b. This is a routine activity that requires Information Use.
- c. This is an Abnormal Operating Procedure that requires Reference Use.
- d. This is a Supplemental Emergency Procedure that requires Continuous Use.

ANSWER: c

Distracter 1: This procedure has the operator open 3 Control Valves and throttle open a dilution flow throttle valve. A very simple procedure that could be considered skill of the craft but is not listed as one in ACP 1410.1.

Distracter 2: This is a practically a routine activity. This AOP is derived from the procedure for chlorination of the RHRSW/ESW pits. The AOP simply starts the dilution flow and omits the Chlorine injection steps. There is one additional step in the AOP, throttling open the dilution flow throttle valve.

Distracter 3: Supplemental Emergency Procedure sounds plausible but the procedure is in the AOP. There are no sign-off in the SEPs which are necessary for "Continuous Use" procedures.

REFERENCE: ACP 101.01; ACP 1410.1; OI-515; AOP-410

K/A System: GENERIC

K/A Number: 2.1.20 (Ability to execute procedure steps.)

K/A Value: 4.3/4.2

Objective: 96.05.02.21 (Explain the guidance for Operations Procedure Use and Adherence contained in ACP 1410.1.)

Cognitive Level:3-SPK Source: NEW

95. Which of the following is **NOT** an example of **SOURCE TERM REDUCTION** as defined by ACP 1411.1, "The ALARA Emphasis Program"?
- a. The Scram Discharge Volume was wrapped with lead blankets.
 - b. The area around the CRD Discharge Filter was decontaminated.
 - c. The floor drain of the CRD Repair Room was flushed to remove a hot spot.
 - d. The stellite rollers on the control rods were replaced to reduce cobalt in the reactor coolant system.

ANSWER: a

Note: STR= "Systematic application of principles used to remove and/or avoid the buildup of radioactive material in a system which contribute significantly to occupational exposure." Correct answer may be an example of shielding or ALARA but not of STR.

STR is listed with time, distance, and shielding as ALARA principles. It is operationally valid for candidate to understand its definition.

Distracter 1, 2, & 3: ACP 1411.1 uses these activities as examples of STR.

REFERENCE: ACP 1411.1, The ALARA Emphasis Program; OI-878.6 TIP

K/A System: GENERIC

K/A Number: 2.3.2 (Knowledge of facility ALARA program.)

K/A Value: 2.5/2.9

Objective: GET Objective

Cognitive Level: 1 D

Source: NEW

99. The RHR System was placed in the Shutdown Cooling mode during a normal shutdown. Cooldown has progressed to the point that the head vents have been opened.

Shortly after that, a Group 4 Isolation results in the loss of Shutdown Cooling. The OSS directs you to monitor panel 1C05 while the rest of the operating crew investigates.

Several annunciators are alarming. As you scan the annunciator panels from your station at 1C05, you can see a rapidly flashing annunciator on the EOP ANNUNCIATORS panel, 1C14.

The annunciator window has a WHITE lens but you are too far away to read the wording on the annunciator window.

Could this be a high priority annunciator?

- a. No; All high priority annunciators have either a blue or red lens.
- b. No; All annunciators on this panel are for EOP Defeats (overrides). The alarming condition must be the result of an operator action taken in response to this event.
- c. Yes; The annunciator could be a high area WATER LEVEL EOP-3 entry condition.
- d. Yes; The annunciator could be a high area TEMPERATURE EOP-3 entry condition.

ANSWER: c

Note: Group 4 isolations are: Low RPV Level <170", High DW Pressure <2#, and High RPV pressure, >135 psig. With the head vents open, the Group 4 must have been caused by low RPV level.

Distracter 1: Not all EOP entry conditions have colored lenses. On 1C14, area water levels above Max Normal and Max Safe are white lenses.

Distracter 2: 22 of 24 are for EOP defeat annunciation, but this panel also includes, and is the only place for, Area Water Level alarms. Also, there are no applicable EOP defeats to be installed at the onset of Group 4 isolation due to Low RPV level.

Distracter 3: Hi Area Temps is an EOP-3 entry condition, but the Steam Leak Detection annunciator is on panel 1C04B.

REFERENCE: ARP 1C14A & B; 1C04B; EOP-3; ACP1410.1

K/A System: GENERIC

K/A Number: 2.4.45 (Ability to prioritize and interpret the significance of each annunciator or alarm.)

K/A Value: 3.3/3.6

Objective: 1.04.16.02 (Explain the Control Room Operators responsibilities when receiving and acknowledging an annunciator per ACP1410.1.)

Cognitive Level: 3-SPK

Source: New Question

§4. The following plant conditions exist after a Loss of Coolant Accident:

- All control rods are fully inserted.
- Containment Sprays have failed.
- Emergency Depressurization has been performed.
- Average Drywell Air Temperature is 320°F and rising slowly.
- RPV Flooding is in progress due to loss of RPV water level indications.
- Torus Average Water temperature is 150°F and rising slowly.
- The 3 available RHR pumps are injecting into the RPV at 14400 gpm.
- Torus Water level is 10.0 ft and lowering steadily due to RPV injection.

The 1C03 operator reports the following trends to you, the OSS:

- RHR loop flows are lowering slowly.
- RHR Pump Amps are lowering slowly.
- RHR Pump discharge pressure is rising slowly.

Which of the following would account for these indications?

- a. The RPV is full.
- b. The RHR suction strainers are becoming blocked.
- c. The elevated Drywell air temperature is affecting the RHR system indications.
- d. The lowering Torus Level and rising Torus Temperature are affecting RHR Pump NPSH.

ANSWER: a

Distracter 1: Would cause lowering or erratic flow and amps but not rising discharge pressure.

Distracter 2: Drywell air temp is very elevated and has caused the loss of RPV level indications but has no affect on the trends provided.

Distracter 3: Would cause lowering or erratic flow and amps but not rising discharge pressure.

REFERENCE: RPV Flood: SEP 305

K/A System: 203000 (Residual Heat Removal/Low Pressure Coolant Injection)

K/A Number: 2.4.47 (Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.)

K/A Value: SRO 3.7

Objective: SRO 2.06.01.12 Evaluate plant conditions and control room indications to determine if the RHR System is needed to be running in any particular mode, is operating as expected and/or is no longer needed and identify any actions that may be necessary to place the RHR System in the correct lineup.

Cognitive Level: 3 SPK

Source: New Question

§ 6. HPCI is running normally in the CST to CST mode with the following air operated valves in their expected positions:

- CV-2211 HPCI STEAM LINE DRAIN ISOL (Inboard) CLOSED
- CV-2212 HPCI STEAM LINE DRAIN ISOL (Outboard) CLOSED
- CV-2234 CLOSED RADWASTE DISCH ISOL (Inboard) CLOSED
- CV-2235 CLOSED RADWASTE DISCH ISOL (Outboard) CLOSED
- CV-2315 TEST BYPASS THROTTLED OPEN

Which of the following would describe the operating status of these valves and the HPCI System IN THE NEXT 10 MINUTES if a COMPLETE LOSS of Instrument and Service Air were to occur?

(Do not assume any HPCI initiations, trips or isolations resulting from the loss of Air transient.)

- a. There would be NO CHANGE to these valve positions and HPCI would continue to operate in the CST-CST mode.
- b. The inboard drains, CV-2211 and CV-2234, would be failed OPEN and HPCI would continue to operate in the CST-CST mode.
- c. The outboard drains, CV-2212 and CV-2235, would be failed OPEN and HPCI would continue to operate in the CST-CST mode.
- d. CV-2315 TEST BYPASS would be failed CLOSED resulting in a shutdown of CST to CST flow and opening of the Minimum Flow valve.

ANSWER: a

Note: Implicit in this question is whether or not the OSS will have HPCI available for RPV pressure control after the reactor scram.

Distracter 1,& 2: Inboard or outboard logics do not matter and these valves do not have accumulators, so they all fail closed.

Distracter 3: Test Bypass does fail closed, but not in the next 10 minutes because of an accumulator that is designed to keep the valve open for 8 hours.

REFERENCE: SD-152

K/A System: 295019 (Partial or complete loss of Instrument Air)

K/A Number: A2.02 (Ability to determine and/or interpret the following as they apply to Partial or complete loss of Instrument Air: Status of safety related instrument air loads.)

K/A Value: 3.6/3.7

DAEC Objective: RO 5.01.01.02 Given HPCI operating mode and various plant conditions, predict how HPCI will be impacted by the following support system failures: l. Inst. and Service Air systems
SRO 5.17.06.01 Explain which systems have associated accumulators and describe the extended operation time allowed by accumulators.

Cognitive Level: 2-RI

Source: NEW

S20. Assume that the plant systems were in the normal lineup for the power level specified in each answer option.

Which of the following events would result in the OSS directing BOTH:

The Immediate Actions of IPOI-5 "Reactor Scram"
and
the IPOI-5 Follow-up Actions to mitigate thermal stratification?

- a. MSIV closure at 15% power.
- b. Loss of both RPS busses at 100% power.
- c. A Main Generator lockout at 25% power.
- d. RPV low water level trip due to a controller failure at 50% power.

ANSWER: c

Note: Correct answer trips the main turbine but is not a direct reactor scram when <30%. Above 22.5% (BPV capacity) this transient will also cause pressure control problems which will result in a scram. It also results in an open circuit transfer of the non essential busses resulting in a loss of Condensate, Feed, Circ Water, and Recirc Pumps.

Distracter 1: Plausible because this transient causes a pressure transient on the RPV. If the pressure reached 1140 psig, the recirc Pumps would trip. At this low power, the reactor would scram at MSIVs <90% open and the pressure transient would be minimal

Distracter 2: Plausible because RPS powers isolation logics which could affect Recirc Pumps.

Distracter 3: Plausible because low RPV level transients affect the Recirc Pumps and low water level could be causing stratification.

REFERENCE: IPOI 5

K/A System: 295006 (Reactor Scram)

K/A Number: AA2.06 .Ability to determine and/or interpret the following as they apply to a SCRAM: Cause of reactor scram.

K/A Value: SRO 3.8

Objective: SRO 4.22.01 Direct operator performance of IPOI-5 actions to mitigate thermal stratification.

Cognitive Level: 3-SPK

Source: New Question

S24. The operating crew was forced to rapidly abandon the Control Room and activate the Remote Shutdown Panel.

One operator reports to you, the OSS, that he depressed both manual scram pushbuttons and saw that the 8 white SCRAM GROUP indicating lights were OFF as he hurriedly abandoned the Control Room.

Which of the following is CORRECT concerning VERIFICATION of the scram in accordance with AOP-915, "Shutdown Outside Control Room"?

- a. Further verification is NOT necessary if the manual scram pushbuttons were used to scram the reactor.
- b. Further verification is NOT necessary if the 8 white SCRAM GROUP indicating lights were confirmed OFF.
- c. Further verification is necessary and performed by confirming that the scram air header pressure is 0 psig.
- d. Further verification is necessary and performed by confirming that all 89 pairs of scram inlet and outlet valves are open.

ANSWER: d

REFERENCE: AOP 915 "Shutdown Outside the Control Room"

Distracter 1&2: Very good signs that reactor scrambled but verification is still required by AOP 915, Step 10 Tab 3

Distracter 3: All rods should be in if this indicates 0 psig, but it is not the parameter checked.

K/A System: 295016 (Control Room Abandonment)

K/A Number: Generic 2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions including: 1 Reactivity Control

K/A Value: SRO 4.3

Objective: 5.30.01 Direct performance of the verification of reactor scram

Cognitive Level: 1-P

Source: New Question

S41. A HIGH STEAM LINE FLOW signal has resulted in a Group 1 Isolation from 100% power. Reports from the Turbine Building confirm that the isolation signal was valid.

The following plant conditions exist:

- Several control rods DID NOT fully insert.
- SBLC has been initiated.
- RPV water level is currently 170" and being intentionally lowered.
- Low-Low Set SRVs are controlling RPV pressure between 1025 and 900 psig.
- The Non Essential busses underwent a closed transfer to the Startup transformer.

Would it be appropriate for the OSS to direct installation of EOP Defeat 15, "MSIV and MSL Drain RX LO-LO-LO Level isolation Defeat"? (APPROPRIATE or NOT APPROPRIATE)

Also, identify the correct reason why it is or is not appropriate.

- a. NOT APPROPRIATE; There is indication of a Steam Line break.
- b. NOT APPROPRIATE; EOP Defeat 15 is installed only if the MSIVs are still open.
- c. APPROPRIATE; The main condenser is available and reopening of the MSIVs/MSL Drains will help stabilize RPV pressure.
- d. APPROPRIATE; The main condenser is available and reopening of the MSIVs/MSL Drains will reduce the challenge to Primary Containment.

ANSWER: a

Note: **ATWS EOP is provided.** OSS must prioritize safety functions. EOP bases is clear that MSIV/MSL Drains should not be reopened with indications of a steam leak.

Distracter 1: Selected if candidate is confused about ATWS Step /2 which says ,if all MSIVs are open install Defeat 15. Defeat 15 purpose statement is to "allow opening" MSIVs with a 3XLO level isolation in effect.

Distracter 2: Not appropriate per ATWS EOP bases. The condenser would be available and reopening MSIVs/MSL Drains would help stabilize RPV pressure.

Distracter 3: Not appropriate per ATWS EOP bases. The condenser would be available and reopening of the MSIVs/MSL Drains will reduce the challenge to Primary Containment.

REFERENCE: ATWS EOP

K/A System: 295025 (High Reactor Pressure)

K/A Number: 2.4.22 (Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.)

K/A Value: SRO 4.0

Objective: SRO 1.21.02 Recognize and prioritize data relevant to the accident or event.

Cognitive Level: 1 B

Source: New Question

S48. EPIP Form NOTE 5 is provided on the next page. EPIP EAL Tables and Section 3.3 are provided as SRO Exam handouts.

A severe Loss of Coolant accident has occurred.

- The Reactor is shutdown.
- RPV level was offscale low for several minutes before it was recovered.
- Level is currently stable at 0".
- A pair of MSIVs has failed to completely close.

The following radiological conditions exist at the time that the Emergency Action Level is being declared:

- The Turbine Bldg KAMAN monitor reading is 0.5 $\mu\text{Ci/cc}$ and is rising steadily.
- The Reactor Bldg. and Offgas Stack KAMAN monitor readings are elevated but not to the alarm level.
- Radiological field survey results are not yet available.
- The Drywell rad monitors are reading 500 R/hr and rising slowly.
- The Torus rad monitors are reading 20 R/hr. and rising slowly.

Which of the following is CORRECT Protective Action Recommendation concerning EVACUATION and SHELTER?

- a. Evacuation is not necessary at this time.
- b. Evacuate within a 2 mile radius and to 5 miles in the downwind subareas.
- c. Evacuate within a 2 mile radius and to 5 miles in the downwind subareas, unless conditions make evacuation dangerous, and shelter downwind subareas from 5 miles to EPZ edge.
- d. Evacuate within a 2 mile radius, evacuate from 2 miles to the EPZ edge in the downwind subareas, and shelter as appropriate beyond the EPZ edge.

ANSWER: b

Note: Based on Offsite Rad Conditions alone, a Site Area Emergency should be declared with no evacuation. However, a General Emergency should be declared from Fission Barrier Table.

Distracter 1: Selected if General Emergency is NOT identified.

Distracter 2: Selected if General Emergency is identified but severe core damage is criteria is misapplied. Severe core Damage is specified on Table 2 as $>700\text{R/hr}$. Drywell or $>30\text{ R/hr}$. Torus rad levels. Evacuation statement from Table 2 is a paraphrase of the correct answer option.

Distracter 3: Last possible option from Table 1; Homogeneous distracter

REFERENCE: EPIP 3.3; EPIP Form NOTE 5; EAL Tables

K/A System: 295038 (High Offsite Release Rate)

K/A Number: 2.4.44 Knowledge of Emergency Plan Protective Action Recommendations.

K/A Value: SRO 4.0

Objective: SRO 3.01.02.07 Demonstrate the ability to use EPIP 3.3 to determine Protective Action Recommendations

Cognitive Level: 3-SPR Source: NEW

S82. The plant is at full power during normal working hours.

While lowering a crate of highly radioactive material from the 5th floor, the sling breaks, causing the contents of the crate to spill out on the ground floor of the Reactor Building.

No one is injured but the Railroad Access ARM is alarming and reading 30 mR/hour.

The OSM takes or directs the following actions:

- Declares a Notification of Unusual Event HU-5, based on OSM judgement.
- Sounds the Evacuation Alarm.
- Makes a Plant Page announcement for all personnel to evacuate the Reactor Building.
- Repeats the Evacuation alarm and Plant Page announcement.

Which of the following is CORRECT concerning the OSM's compliance with the Emergency Plan.

- a. All of the OSM's actions have complied with the Emergency Plan.
- b. The entire plant must be evacuated when the Evacuation Alarm is used for an EAL declaration.
- c. An On-Site Rad Condition classification must be declared, not an HU-5 based on OSM judgement.
- d. The Evacuation Alarm is only used for EAL declarations of ALERT or greater, and may not be used for a Notification of Unusual Event.

ANSWER: b

Note: **Emergency Plan Implementing Procedure EAL Tables are provided.**

Distracter 1: Not per EPIP 1.3 In an EAL condition, the entire plant must be evacuated for accountability purposes.

Distracter 2: The only On-site rad condition NUE is AU2 which has entry condition of 1000X normal ARM reading and is therefore not applicable. There is no restriction for using HU5 on rad conditions.

Distracter 3: Evac alarm must be sounded for Alert or greater ,but may also be used for general evacuation or NUEs. Common misconception.

REFERENCE: EPIP 1.3

K/A System: GENERIC

K/A Number: 2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

K/A Value: SRO 3.3

DAEC Objective: SRO 3.01.03.01 Explain the responsibilities and instructions contained in EPIP 1.3 (Plant assembly and site evacuation)

Cognitive Level: 3-SPK

Source: New

S 83. Postulated scenario:

It is 0400 on a quiet midshift during normal full power operation. The STA's wife calls to tell him that she has gone into labor and that she must get to the hospital.

- At 0405, the STA departs as directed by the Operations Shift Manager (OSM).
- At 0410, the OSM calls the Operations Manager to inform him of the reduction in crew composition.
- At 0420, the OSM reaches a relief for the STA and directs him to come to work.
- At 0615, the STA relief arrives and joins in on the OSS/OSM turnover.
- At 0645, the STA shift turnover briefing is completed.

Which of the following is CORRECT concerning the operating crew's compliance with the shift manning requirements of ACP 1410.1, "Conduct of Operations", in the above postulated scenario?

- a. The operating crew has complied fully with the shift manning requirements of ACP 1410.1.
- b. The STA may NOT leave until the Plant Manager's permission is obtained.
- c. The STA may NOT leave until his relief has arrived on site and has been briefed.
- d. The STA position must be manned by a relief within two hours of the STA's departure.

ANSWER: d

Note: This question is based on a plant event and relatively recent change to ACP1410.1. Operations Manager must be notified, the position "manned", and the plant must be stable. These are all conditions satisfied in the postulated scenario except manning the watch in 2 hours. Manning the watch is not defined. It could mean arrival or it could mean completion of turnover briefing. In either case, the STA position was vacant for >2 hours.

Distracter 1: Did not comply because crew composition was reduced for >2 hours.

Distracter 2: Operations Manager required ; not Plant Manager. And it is not required beforehand.

Distracter 3: STA may leave under the stated conditions.

REFERENCE: ACP 1410.1; T.S. 5.2.2

K/A System: Generic

K/A Number: 2.1.4 (Knowledge of shift staffing requirements.)

K/A Value: SRO 3.4

DAEC Objective: SRO 1.01.01.01 Explain the crews responsibilities and authorities, the requirements, instructions and attachments of ACP1410.1 (Conduct of Ops)

Cognitive Level: 3-SPK

Source: NEW

86. New fuel has been loaded during a refueling outage.

Which of the following correctly describes how the new value of Shutdown Margin is determined at the DAEC?

- a. The only method used to establish Shutdown Margin is the analytical calculation performed by Reactor Engineers.
- b. Both an analytical calculation and confirmatory Surveillance Test Procedure are performed. This STP identifies the rod positions and other plant conditions at which the SRM counts increase by a factor of 10.
- c. Both an analytical calculation and confirmatory Surveillance Test Procedure are performed. This STP identifies the rod positions and other plant conditions at which the reactor achieves criticality.
- d. Both an analytical calculation and confirmatory Surveillance Test Procedure are performed. This STP identifies the rod positions and other plant conditions at which the reactor achieves 100% power.

ANSWER: c

Note: **Section 3.1.1 will be removed from the Tech Specs provided to SRO Candidates.** STP 3.1.1-01 is performed every first startup per IPOI-1 to reduce uncertainties in the calculation.

Distracter 1:

Distracter 2: STP is performed but SDM is calculated using Critical data, not SRM counts. Plausible distracter because the factor of 10 increase value is the point at which notch withdrawal must begin.

Distracter 3: STP is performed but SDM is calculated using Critical data, not 100%. Plausible distracter because number of rods remaining partially inserted at full power.

REFERENCE: TS 3.1.1

K/A System: GENERIC

K/A Number: 2.2.34 (Knowledge of the process for determining the internal and external effects on core reactivity.)

K/A Value: SRO 3.2*

Objective: SRO 4.23.01 Direct performance of applicable portions of IPOI-1 (Startup Checklist) attachments and checklists.

Cognitive Level: 1-F

Source: New Question