

**NRC COMMENTS TO THE PROPOSED
WRITTEN EXAMINATION, ES-401-9
FOR THE D. C. COOK INITIAL EXAM - MARCH 2007**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only			
1B	F	2											N		U S	Q ≠ K/A. No reference to breakers, relays or disconnects. Reference provided to show relationship.
2B	F	1											N		U	LOD <2.0 Q ≠ K/A. Question is associated with the indications available for the Pressurizer PORVs and Safety Valves. K/A is associated with the interrelations between the PZR Vapor Space Accident and sensors and detectors. LOD = 2. Q reworked to match K/A.
3B	H	2											N		U	Q ≠ K/A. Question doesn't address danger associated w/ inadequate core cooling. Q reworked to include core damage as danger.
4B	F	2											N		U	Q ≠ K/A. K/A refers to a large break LOCA, question has low containment pressure indicating small break LOCA. Q reworked.
5B	H	2											N		U	Q ≠ K/A, since the question is associated with a situation in which RCP makeup is increased, while the K/A is associated with Loss of RCS Makeup. Q reworked.

Instructions

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

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

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6N	H	2											x		E	Put periods where they need to be at the end of sentences and plant conditions.
7B	H	2											N		U	Q ≠K/A Question tests CCW interlocks, but does not test ability to coordinate personnel activities outside the control room. Distractor c. is implausible, so no correct answer as submitted. Stem states Unit 2 CCW pumps cannot be restarted. Replaced Question.
8B	F	2											x		U S	Should be higher skill level. Evaluation is required w/choice of procedure to execute. Is this RO, or should this be SRO? Who makes the choice? Info is an immediate action from E-0, required to be memorized by ROs.
9B	H	2											x		E U	Question replaced because of double jeopardy relationship w/ Q #41.
10B	H	2											N		U S	Q ≠K/A Question tests knowledge of which procedural steps to execute, but does not test performance of steps. Question tests knowledge of procedure steps.
11N	H	2.5											x		S	
12B	F	2.0											N		U	Q ≠K/A Question tests operator knowledge of switchyard 125Vdc, but does not test an operator's ability to direct operator activities inside the control room. Additionally, ROs are not tasked with directing activities inside the control room. Replaced K/A with correct K/A.
13B	H	2.0											N		U	Q ≠K/A Question asks run status after station blackout, but does not address pressure gauge. Reference refers to a lesson plan, not a valid reference. Replaced/reworked distractors.
14B	H	2.0											x		S	
15B	F	2.5						x					x		U S	Not an RO task. ROs required to know entry conditions from memory, not actions. Question is higher cognitive, not fundamental. T.S. being provided with the examination, Station expectation is that operators know 1 hour T.S.
16B	H	2.5											x		S	
17B	H	2.5											x		U S	Q ≠ K/A. Refers to PRM, Question refers to ARM. Typo fixed.
18N	H	3.0											x		S	Not a good match for the K/A. Question asks which components have been lost. K/A asks flow rates. Station justified K/A - acceptable.

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19B	F	2.5											x		S	
20B	F	2.5											x		S	
21B	F	3.0											x		E	Question is higher skill.
22B	H	2.5											x		S	
23B	H	2.0											x		S	
24N	H	2.5											x		S	
25M	H	3.0											x		? S	Demonstrate that delta-T goes down. <i>Reworded question to ensure correct answer is correct, verified delta-T goes down.</i>
26N	F	2.0											N		⊕ S	Q ≠K/A Question asks why power supply is removed. K/A asks for knowledge of the power supply. <i>Question meets K/A. Knowledge of power supply is displayed.</i>
27B	H	2.0											N		U	Q ≠K/A Question asks occurrence in PZR. K/A asks for inter-relationships of ECCS. Show relationship of ECCS to this process. <i>Replaced Question.</i>
28B	F	3.0											N		U	Q ≠K/A Question asks for reason to maintain PRT level. K/A refers to directing personnel activities inside the control room. <i>Corrected K/A.</i>
29B	H	2.5											N		⊕ S	Q ≠K/A Question asks for the results of an automatic PORV opening. K/A refers to operating PRTS controls to prevent exceeding design limits. <i>After discussion of process, determined the K/A was adequate for the question being asked.</i>
30B	F	2.5											N		⊕ S	Q ≠K/A, since the question not associated with the physical connections and/or cause-effect relationships between the CCW system and the loads cooled by the CCW system, but is associated with what automatic actions occur on an SI signal in the CCW system. <i>In order to answer the question the applicant must understand the physical connections and cause-effect relationship between CCW and components served.</i>
31B	F	2.5											N		⊕ S	Q ≠K/A Question asks basis of an EOP transition. K/A refers to organization of operating procedures network for normal, abnormal, and emergency evolutions. <i>The question matches the K/A in a convoluted way explained by the licensee and accepted by NRC.</i>

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32B	F	2.0											x		E	Remove time from stem. The correct answer is the only distractor that refers to time. Not a good K/A match.
33B	H	2.5											x		S	
34B	F	2.5											N		U S	Q ≠K/A Question asks which procedure is more strict. K/A asks for interrelationship of PTS and facility heat removal systems. The applicant must understand the procedural requirements to enable s/he to correctly answer the question.
35B	F	2.5											x		E	Remove one of the two "required" that appear in distractor d.
36M	H												N		U	Although containment pressure is now 6 psig at step 12 of ECA-1.1, one could argue that containment pressure could have been > 8 psig in step 5, and thus one CTS pump would have been left running in step 5, and containment pressure is now 6 psig in step 12. Thus distractor D could also be a correct answer. Suggest adding to the question stem that containment pressure peaked at 6 psig and is steady at 6 psig. 2) Add the word "ONLY" to end of distractor D, and fully capitalize the word "ONLY in distractors A, B, and C. Q ≠K/A Question asks what pumps are running. K/A asks for operating characteristics during transient conditions, such as temp/press/reactivity. Question Replaced.
37B	F	2.0											x		S	
38B	H	2.0											N		U S	Q ≠ K/A, Question asks the effect of a loss of the PRT on PZR PORV outlet temp. K/A asks for the effect of a loss or malfunction of the PRT will have on the PZR Pressure Control System. This is the only way the K/A can be approached at the station. The question is valid and was accepted as matching the K/A.
39N	F	2.0											x		S	
40M	H	3.0											x		S	
41B	F	2.0											x		S	Check for double jeopardy w/question #9. Question #9 was replaced.
42N	H	2.5											x		S	
43N	H	2.5											x		S	
44N	H	2.0											x		S	
45B	F	2.5											x		S	

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46B	F	2.5											x		S	
47B	F	2.5											x		S	
48B	F	2.0											x		S	
49B	F	2.0											x		S	
50N	H	2.5											x		E	In all distractors exchange should for must.
51M	H	2.5											x		S	Provide steam tables.
52B	F	2.0											x		S	
53M	F	2.0		x			x						x		U	Distractor a. and b. contain no reference to opening valves referred to in the stem (...opening the TACW valves...). This makes the two distractors implausible. Modified Stem to make distractors plausible.
54M	H	2.0											x		S	
55N	H	2.5											x		E	Add the following condition as a bulleted item: "Unit 2 has tripped from 100% power."
56B	H	2.5					x						x		E	By symmetry considerations, distractor d. is not plausible in that both RCP Bus 2C and 2D would have an underfrequency condition, and yet only one RCP Bus would be affected.
57N	H	3.0											x		S	
58N	H	3.0											x		U	Distractors a. and b. are not plausible in that the EDG would auto restart after the Emergency Trip Pushbutton has been depressed. Replaced distractors.
59B	F	2.0											x		S	
60N	F	2.5											x		S	
61B	F	2.5											x		S	
62N	H	3.0											x		S	
63B	H	2.5											x		S	
64B	H	2.5											x		S	

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65B	F	2.5											x		S	
66B	F	2.5				x							x		U S	Distractors c. and d. are not plausible in that the Low Pressure alarm would not occur first. Common misconception at the plant. Distractors determined to be acceptable.
67B	H	3				x							x		U	Distractor a. is not plausible in that Containment Operability would exist, but refueling must be stopped. Distractor c. is not plausible in that Containment Closure capability does NOT exist, but refueling may continue. Reworked distractors.
68B	H	2.5											x		S	
69N	H	2.5				x							x		U S	Distractors b. and d. are not plausible in that the concern would be excessive cooldown in the Presssurizer loop which could lead to a loss of level (i.e., that it makes a difference which loop is cooled down, since all the loops are connected). Justified distractors with explanation of how flow works in this vintage Westinghouse plant.
70B	F	2.0											x		S	
71B	F	2.0											x		S	
72B	F	2.5											x		S	
73B	H	2.5											x		U	Q ≠ K/A Q asks for effects on an isolation signal. K/A asks how to perform a containment purge. Replaced question.
74B	H	1.0				x							x		E	The question is not difficult, especially when distractors b. and d. can easily be dismissed because neither will cause a rise in containment pressure (plausible distractors). Reference to containment pressure was deleted making the distractors plausible.
75B	F	2.0											x		S	
76N	H	2.5											x	x	S	
77B	F	2.0						x					x	x	U	Not an SRO ONLY. ROs are required to know entry conditions to technical specifications. All other distractors are RO required knowledge items. Replaced Question.
78B	F	2.0											x	x	E	Clarify leakage in bullets in stem so it is apparent what leakage is being addressed.

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79B	H	2.0				x							x	x	E	Distractor c. is not plausible in that a transition to the SGTR procedure would be required. Suggest changing the distractor to say: "None. Remain in 02-OHP-4023-E-2, Faulted Steam Generator Isolation." Also, make the following conforming change to the question stem: Add "(if any)" after "... procedural transitions is required)"
80B	H	2.0	x											x	E	In the question stem, to provide more focus to the question asked, change to: "Which one ... the restoration (or non-restoration) ofand the reason for restoration (or non-restoration)." In distractor a. add at the end of the distractor: "to minimize the potential for warping of the RCP shaft." Make the following editorial changes to the question stem: - In the first sentence, correct the spelling of "occurred." - In the 2 nd bullet, change "starts" to "started." - In the 3 rd bullet, delete the word ", actions."
81N	H	3.0												x	U	This question is only at the RO level, since it is not associated with 10 CFR 55.43 (b) for an SRO level question. 2) In the question stem, in the first sentence, change the word "in" to "on." Question replaced.
82B	H	2.0				x								x	E	Distractor A is not plausible, since it says " $<10E^{-7}$ μ Ci/gram", which is equivalent to an undetectable, 10^{-13} Ci/gram. In the question stem, make the following editorial changes: - In the first sentence, change the word "in" to "on." - In the 1 st bullet, delete the first word "The."
83N	F	2.0											x	x	S	
84B	F	2.0											x	x	S	Change from Fundamental to a Higher Cognitive Level.
85B	F	2.0												x	S	Change from Fundamental to a Higher Cognitive Level.
86B	F	2.0											x	x	S	
87N	H	2.5				x							x	x	S	

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88B	H	3.0				x							x	x	E	Distractor d is not plausible in that an ATWS condition would occur. Suggest changing distractor D to: "A General ... in opening the Reactor Trip A breaker and the Reactor Trip Bypass Breaker B only. Enter O2-OHP-4023-E-0, Reactor Trip or Safety Injection to stabilize the plant." In distractor b., change the 3 rd sentence to: "Initiate a Manual reactor trip and enter O2-OHP-4023-E-0, Reactor Trip or Safety Injection, since 2 trains of Reactor Trip are inoperable. Editorial: In the question stem, in the first sentence, change "in" to "on." Editorial: In distractor a. change "TS 3.03" to "TS 3.0.3." and, in distractor c. change "receive" to "receive."
89B	H	3.0											x	x	S	How can it be assured that the circuitry for the Unit 2 Control Air Compressor from the Unit 2 Hot Shutdown Panel will still work to start the compressor? This would depend on how the damaged Unit 2 Control Air Compressor control switches affected the circuitry. Would need to see electrical prints of the circuitry to verify that distractor B would in all cases be a correct answer.
90N	H	2.0											x	x	E	In the question stem and in the distractors, change the word "should" to "must."
91B	F	2.0											x	x	E	Change from Fundamental to a Higher Cognitive Level.
92N	F	2.5												x	E	In the question stem, in the 2 nd bullet, add "Unit 2" before "Control Room." In distractor C, Capitalize the word "Up." Change from Fundamental to a Higher Cognitive Level.
93B	F	2.5											x	x	S	
94N	H	2.5												x	S	
95B	F	2.5											x	x	S	
96B	F	2.5												x	E	In the question stem, make the following changes: - Change the question to "Which ONE ... action(s) and the reason(s) for this (these) action(s)? - The Unit Supervisor is required to ... (i.e., instead of "should").
97N	H	2.5				x								x	S	Distractors a. and d. are not plausible that the only running FW pump should be tripped, since this would result in a Reactor Trip. Does valve 2-CRV-224 have any Main Control Board position indication? Added material to stem requiring evaluation and making distractors plausible.

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98B	H	2.5											x	E	In distractors B and D, fully capitalize the word "ONLY."
99N	H	2.5											x	E	Add another bullet to the question stem as follows: "It is estimated that the 1CD EDG will not be restored to OPERABLE status for 7 days. In the question stem, just say: "(TS 3.8.1 is provided)", instead of saying to refer to the attached Tech Spec.
100B	H	2.5	x										x	U	Distractor b. (correct answer) may not be correct either, since the question stem states that only the immediate actions of FR-S.1 have been completed. The immediate actions of FR-S.1 are steps 1 and 2, which are to verify Reactor Trip (step 1) and verify turbine trip (step 2). However, step 3 to Check AFW Pumps Running has not yet been performed. If no AFW pumps are running, then step 3 would manually start AFW pumps. If step 3 is successful (in manually starting AFW pumps), then a transition to FR-H.1 at the end of Fr-S.1 would not be necessary (Need to see the Cook procedure for FR-S.1 to check the first few steps of the procedure to check if they are consistent with the WOG ERGs as described above). Distractor c. is not plausible, since it says that the reactor is now tripped, and yet the question stem never stated that the reactor was tripped. <i>Extra step in Cook EOPs. Distractor b. (correct answer) is correct as written. Made some modifications to the question to improve clarity.</i>