

## Instructions

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

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question using a 1 to 5 (easy to difficult) rating scale (questions in the 2 to 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
  - a. The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
  - b. The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
  - c. The answer choices are a collection of unrelated true/false statements.
  - d. The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
  - e. One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
4. Check the appropriate box if a job content error is identified:
  - a. 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).
  - b. 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).
  - c. The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
  - d. The question requires reverse logic or application compared to the job requirements.
5. 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).
6. Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
7. 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?  
Place the answer letter here  
Place the 55.41 or 55.43 item here
8. At a minimum, explain any Unsat ratings (e.g., how the Appendix B psychometric attributes are not being met).

	1. LOK	2. LOD	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6	7	Ans Letter	CFR	8
Q#	(F/H)	(1-5)	stem focus	cueing	T/F	cred dist	partial	job link	minutia	# / units	back- ward	K/A	SRO- only	B/M/N	U/E/S	A/B/C/ D	55.41x55 .43y	Explanation
1	F	2												B	S	B	41.10	ON 2012 NRC EXAM.
2	F	3												B	S	A	41.7	ON 2015 NRC EXAM.
3	F	3	X			X								N	E	B	41.8	Delete last sentence in stem and replace with "Circuit breaker 152-1511 should..." Delete "Will" from A. Distractor C appears implausible. How could the circuit breaker be available to energize bus 15AA but not be capable of remote or any local operation? <a href="#">Revised. Q now SAT</a>
4	H	2	X			X								N	E	B	41.5	Delete "one" in stem. A is subset of D. Add "and stabilizes" after "constant" in A to fix. <a href="#">Revised. Q now SAT</a>

5	F	2	X											B	E	A	41.6	<b>ON 2013 NRC EXAM.</b> In stem, change "would" to "should." Add "without performing a calculation" at end of stem. <a href="#">Revised. Q now SAT</a>
6	F	2	X											B	E	C	41.10	<b>ON 2015 NRC EXAM.</b> In stem, change "it isolates" to "it should isolate." Delete "Isolates" from all four distractors. <a href="#">Revised. Q now SAT</a>
7	H	3	X											B	E	C	41.4	In stem, change "will" to "should." <a href="#">Revised. Q now SAT</a>
8	H	3				X								N	U	D	41.7	<b>FIRST TEN. ON 2008 NRC EXAM.</b> A not plausible (nothing happens; i.e. "none of the above"). How could B and C ever occur (PV=nRT)? <a href="#">Replaced. Q now SAT.</a>
9	F	3												B	S	B	41.2	<b>ON 2007 NRC EXAM.</b>
10	F	2				X								N	E	B	41.10	Delete periods at end of C and D. <a href="#">Revised. Q now SAT</a>
11	F	2	X											N	E	D	41.7	In stem, change the "a's" to "an's." Change "actions coincides with" to "actions should coincide with." <a href="#">Revised. Q now SAT</a>
12	H	4	X											B	E	B	41.14	<b>ON DEC 2017 NRC EXAM. REFERENCE PROVIDED.</b> In (1) add "should have" before "initially." In (2) change "is" to "should be." <a href="#">Revised. Q now SAT</a>
13	F	3	X											N	E	A	41.10	In stem, change (1) to "At what suppression pool temperature should the CRS call for SBLC injection?" <a href="#">Revised. Q now SAT</a>

14	F	2				X								B	U	A	41.10	<b>ON 2008 NRC EXAM.</b> Correct answer obvious. Containment damage or challenge to equipment operability <u>may</u> occur at any time. (D is always correct for almost any given conditions) Replace? <b>Q Replaced.</b> In A and B, change "Enter" into "Entry into" <b>Revised.</b> <b>Q now SAT</b>
15	F	2												B	S	D	41.10	<b>ON MAY 2017 NRC EXAM.</b>
16	F	2	X											N	E	A	41.10	In stem, add "the MINIMUM above which is" before "required." <b>Revised.</b> <b>Q now SAT</b>
17	F	2												N	S	C	41.10	
18	H	4	X											N	E	B	41.1	In stem, change "is to" to "should." Add "approximately" after "in." <b>Revised.</b> <b>Q now SAT</b>
19	F	3	X			X								N	E	B	41.12	Stem focus - change to "Per procedure 03-1-01-1, IOI, Cold Shutdown to Generator Carrying Minimum Load, to prevent high offsite release the Mechanical Vacuum Pumps (MVPs) should be secured prior to exceeding a MAXIMUM of ____ (1) ____% power and the Steam Jet Air Ejectors (SJAEs) should be placed in service at approximately ____ (2) ____psig." <b>Revised.</b> <b>Q now SAT</b>
20	F	3	X			X								N	E	C	41.10	Change "will" to "should" in stem. Add "Per 05-1-02-I-4" before "If EFS" in stem. Subset issue - IF 496 Kv was correct, there would be two correct answers. Eliminates 496Kv as plausible. Add "MINIMUM voltage" before "definition" in stem (should fix). <b>Revised.</b> <b>Q now SAT</b>
21	H	3	X											N	E	B	41.10	Change "will" to "should" in stem. <b>Revised.</b> <b>Q now SAT</b>
22	H	3												B	S	A	41.7	<b>First ten.</b> Question OK - but avoid having second half of two distractors the same unless using 2X2 format.

23	H	3	X			X								B	E	C	41.7	All distractors are grammatically incorrect (fix). Change "will's" to "should's" in distractors. Move common distractor information to the stem. <a href="#">Revised. Q now SAT</a>
24	H	3	X			X								N	E	A	41.9	In stem, change "A RO" to "An RO." Distractor B not plausible. How could the RO report level stable if the guage was maxed out? Also, is there any plant parameter that ends its high range at "XX.3?" Need new B. In C, add "received" after "water." <a href="#">Revised. Q now SAT</a>
25	H	3	X			X	X							N	E	A	41.7	<b>REFERENCE PROVIDED.</b> In stem, change (1) to just "When should automatic actions initiate?" Change "will" to "should" in (2). With provided reference, question answer is a direct look up (not believable that someone would ED while still having safe temperature values). OK if delete reference and make distractor temperatures closer to actual values. As written, correct answer is shortest time with highest temperatures. <a href="#">Revised. Q now SAT</a>
26	H	3				X								N	E	D	41.7	Distractors B and C appear to employ "impossible physics." Please explain why not (or change). <a href="#">Replaced. Q now SAT</a>
27	H	3	X			X								N	E	A	41.7	In stem, change "from" to "for" and "will" to "should." In distractors, what is the difference between "operate all sump pumps" and "manually start sump pumps?" If the same thing, delete that portion of answer. <a href="#">Revised. Q now SAT</a>

28	H	3	X			X								N	E	A	41.7	Change "will" to "should" in stem. In stem and in D, specify "wide range reactor water level." <a href="#">Revised. Q now SAT</a>
29	H	3	X											N	E	A	41.7	Change "will" to "should" in stem. <a href="#">Revised. Q now SAT</a>
30	H	3	X											N	E	D	41.7	Change stem to ask "What action(s) should be procedurally performed FIRST?" Need to add (s) to action since A and B are singular. <a href="#">Revised. Q now SAT</a>
31	H	3		X		X								N	U	B	41.7	Change "would" to "should" in stem. Second half of A and B, "system damage could occur," is almost always correct, even during normal system operation. This automatically cues that either A or B is the correct answer and renders distractors C and D implausible. Second half of C and D don't appear plausible on their own. <a href="#">Replaced. Q now SAT</a>
32	F	3		X		X								B	U	C	41.7	<b>ON 2007 NRC EXAM.</b> Correct answer only one that has two parts (cause and effect), cueing it as the correct answer. Delete second half of C, as the applicant does not need to be told that the min flow valve closes, since this would occur automatically. Also, D not credible - assuming that an inoperable light bulb would render a system inoperable is not plausible (need new D). How RO knowledge? <a href="#">Revised. Q now SAT</a>

33	F	3	X			X								B	U	C	41.8	ON 2017 NRC EXAM. Applicant only needs to know second half of question to arrive at correct answer, i.e. if the >-217 level is known, A would only be correct if there were two correct answers, thus eliminating it as a plausible distractor. Restructure Q to ask for which meets MINIMUM requirements for flow and level. Also, giant disparity between flow rates of A and B vice C and D (discuss). <a href="#">Replaced. Q now SAT</a>
34	F	2												N	S	D	41.8	
35	H	3	X											N	E	D	41.9	Change "will" to "should" in stem. <a href="#">Revised. Q now SAT</a>
36	H	3				X								B	U	B	41.8	REFERENCE PROVIDED. A and D do not appear plausible. No half scram is the same as "nothing happens" (i.e. "none of the above"). Can't see how anyone would come up with full scram (discuss). <a href="#">Revised. Q now SAT</a>
37	F	2				X								N	E	C	41.7	RPS seems a bit far-fetched. Discuss a better distractor for A. <a href="#">Revised. Q now SAT</a>
38	H	3	X			X								B	U	C	41.7	B and D do not appear plausible. Why would anyone think SRMs would provide a rod insert block or that they are tied to the detector motor? <a href="#">Revised. Q now SAT</a>
39	F	3	X											N	E	B	41.7	Change second "is" to "should be" in stem. <a href="#">Revised. Q now SAT</a>
40	H	3												N	S	D	41.7	
41	H	3				X								N	U	C	41.7	Change "would" to "should" in stem. It appears that all one needs to know to answer this Q correctly is that a RCIC isolation signal will isolate RCIC. Q does not appear to have discriminating value. <a href="#">Revised. Q now SAT</a>

42	H	3												N	S	B	41.14	
43	H	3	X											N	E	B	41.9	Change "is" to "should be" in stem. <a href="#">Revised. Q now SAT</a>
44	H	3	X											B	E	A	41.7	<b>ON 2014 NRC EXAM.</b> Change "would" to "should" in stem. <a href="#">Revised. Q now SAT</a>
45	F	3	X											B	E	C	41.7	<b>ON 2015 NRC EXAM.</b> Change "will" to "should" in stem. <a href="#">Revised. Q now SAT</a>
46	F	2	X	X		X								B	U	C	41.11	<b>ON 2014 NRC EXAM.</b> Change "will" to "should" in stem. Rad monitor groupings in distractors don't make sense. A has b and d, B and C have b and c, D has a and c. This cues b and c are probably in the correct answer. Restructure distractors to eliminate cueing. <a href="#">Revised. Q now SAT</a>
47	H	3	X	X		X								N	E	C	41.7	Change "is" to "should be" in stem. 16AB is in three of four distractors, cueing it is probably in the correct answer. Need to restructure distractors such that the question is more like a 2X2. <a href="#">Revised. Q now SAT</a>
48	H	3												B	S	A	41.7	
49	F	2	X											B	S	D	41.7	Change "is" to "should be" in stem. <a href="#">Revised. Q now SAT</a>
50	H	3												N	S	B	41.7	
51	F	2	X			X								B	U	C	41.4	<b>ON MAY 2017 NRC EXAM.</b> Change "is" to "should be" in stem. There is absolutely no value in asking where parameters can be read in the control room on the written examination. The simulator and operating test accomplishes this (eliminate that portion). This leaves only normal operating IA pressure, which in of itself doesn't have much dicriminating value (Replace Q). <a href="#">Replaced. Q now SAT</a>

52	H	3												B	E	A	41.10	ON 2015 NRC EXAM. Delete "(1)" in stem. Add "should" between "that" and "still" in stem. Revised. Q now SAT
53	H	3	X											B	E	A	41.10	Change "will's" to "should's" in stem. Why would student think auto Xfer back to CST might exist (distractors B and D)? Revised. Q now SAT
54	H	3												N	S	C	41.7	
55	H	3	X											N	E	D	41.7	In stem, change "are" to "should be." Revised. Q now SAT
56	F	2												N	S	C	41.7	
57	H	3												N	E	C	41.6	Delete period at end of D Revised. Q now SAT
58	H	2	X				X							N	E	A	41.7	Change "will" to "should" in stem. Add "on the indicator" at end of stem and eliminate "of the indicator" in D. Change C to "unchanged" to be consistent with other distractors. Revised. Q now SAT
59	H	2												N	S	B	41.7	
60	F	3					X							N	U	D	41.5	Don't see how A, B, or C could possibly be plausible. Replaced. Q now SAT
61	F	2					X							N	E	D	41.7	Add "CST" to A and C to be consistent with B and D. If the CST has no level control system, what makes A and C plausible? Revised. Q now SAT
62	H	2					X							B	E	D	41.4	ON 2013 NRC EXAM. Add "Less than" at beginning of A to make it match "More than" in D. Revised. Q now SAT
63	H	3												B	S	B	41.7	



64	H	3	X	X		X								N	U	D	41.7	Change "is" to "should be" in stem. C and D indicate "possible" control rod drop (almost anything is possible), cueing C or D is correct. It doesn't appear that performing a local single control rod scram is ever a corrective action, so how plausible? Renders D as the only plausible answer. Replace? <a href="#">Restructured. Q now SAT</a>
65	H	3				X								N	U	D	41.7	Stem obviously indicates flooding. Knowledge that merely stopping a pump will not isolate the flooding is LOD=1 knowledge and eliminates B and C as plausible. The fact that all distractors have EOP entries except for A renders A implausible, leaving D as the only plausible answer. <b>Q Replaced.</b> Add "MAXIMUM" to (1); "minutes" misspelled in stem. <a href="#">Revised. Q now SAT</a>
66	F	2	X	X										N	U	D	41.10	"Scram" in stem cues "reactor protection" in D immediately as the correct answer. Change "will" in stem to "should." Change Q to require a different attachment? Tier 3 Q - possible to make more generic? May have to replace K/A. <b>Q Replaced with Q on May 2017 NRC EXAM.</b> <a href="#">Q now SAT</a>
67	F	2												N	S	A	41.10	
68	H	3												N	S	C	41.10	
69	F	2												N	S	C	41.10	
70	F	2												N	S	B	41.10	

71	F	2	X											B	E	A	41.13	<b>ON 2008 NRC EXAM.</b> Stem examples should be more specific. In stem, move "during normal plant operations" to the beginning after "processes." Add "effluents" at the end of 2. <b>Revised. Q now SAT</b>
72	F	2	X				X							N	E	C	41.13	<b>First Ten.</b> Revise stem: An event has occurred that requires entry into E3, "Containment Control," due to rising containment pressure. What is the MINIMUM containment pressure at which venting is procedurally required? Change "will arise" to "should occur." Delete "Before reaching" from all four distractors. <b>Q replaced with Q of low or no discriminating value. Please retain original Q with above guidance. Original Q revised. Q now SAT</b>
73	F	2												N	S	D	41.10	
74	H	3	X				X	X						N	U	D	41.5	<b>First Ten.</b> B not plausible ("none of the above") C and D both correct as written (C is a correct statement and is a subset of D). What drove the selection of the drywell pressure and the reactor water level parameters in the stem? Restructure distractors to have one true statement and three false ones. <b>Revised.</b> Tier 3 Q - possible to make more generic? May have to change K/A. <b>Replaced. Q now SAT</b>
75	F	3												N	S	B	41.5	
76	H	3	X				X							N	E	A	43.5	Why are Rev. 1 and Rev. 2 additions to stem necessary (discuss). In (1) and (2) in stem, change "is" to "should be." How is distractor B(2) plausible? <b>Revised. Q now SAT</b>

77	H	3				X								B	E	C	43.5	In distractor B, change "Restart" to "Restarting" to be consistent with other distractors. <a href="#">Revised. Q now SAT</a>
78	H	3	X											M	E	B	43.5	<b>ON MAY 2017 NRC EXAM</b> (root question). <b>REFERENCE PROVIDED.</b> Would like discussion on the differences between this Q and the 2017 Q to fully understand how it is a modified bank Q. Change "will" to "should" in stem. <a href="#">Discussed and revised. Q now SAT</a>
79	F	2												B	S	B	43.2	<b>ON 2013 NRC EXAM.</b>
80	F	3	X											N	E	B	43.5	<b>First ten.</b> Discuss how this is SRO only knowledge. In stem, add "procedurally required" before "RPV." <a href="#">Revised. Q now SAT</a>
81	F	3												N	S	C	43.4	
82	F	3	X			X								N	E	C	43.5	1. (dispatch to RSP) in stem too obvious. Replace with Defeat LSS to make distractors more credible? (discuss) <a href="#">Revised. Q now SAT</a>
83	H	3												N	S	D	43.5	What is you definition of ATWS (discuss). Make sure applicable to Q. <a href="#">Discussed. Q SAT</a>
84	H	3												B	E	B	43.2	<b>ON 2009 NRC EXAM.</b> Q would be much better if the stem asked for which of the following is the MAXIMUM amount of time allowed by tech specs to perform the surveillance and go with 4, 8, 12, and 24. Would still be a bank vice modified question because Q and A remain the same (just better distractors). <a href="#">Revised. Q now SAT</a>
85	F	3	X											N	E	C	43.5	<b>First ten. REFERENCE PROVIDED.</b> Capitalize "MIMUMUM" in stem. Add "procedurally" before "require." <a href="#">Revised. Q now SAT</a>

86	H	3				X								N	E	A	43.5	Revise (2) in distractors to be consistent (The CRS must call for only Att XXXX, and delete the "now's") <b>Revised. Q now SAT</b>
87	H	3	X											N	S	A	43.2	In stem, change "DIRECTS" to "should DIRECT," and "is directing" to "should direct." <b>Revised. Q now SAT</b>
88	H	3	X			X								N	E	D	43.5	<b>First Ten.</b> In all four distractors add "A-RPS" after "transfer." <b>Q Replaced. Q now SAT</b>
89	H	3												N	S	D	43.5	
90	H	3												B	S	C	43.5	<b>ON 2011 NRC EXAM. REFERENCE PROVIDED.</b> Validate with licensee during validation week.
91	H	3	X											N	E	B	43.6	In stem, what is "CRS has been maximized for pressure?" In stem, change "action to be directed" to "required action." <b>Revised. Q now SAT</b>
92	H	3												N	E	C	43.5	Change "will" to "should" in stem. <b>Revised. Q now SAT</b>
93	H	3				X								N	U	A	43.5	<b>First ten.</b> B and C don't appear plausible, as the procedure does not "go" with the associated action. This makes only A or D plausible. Restructure to have believable actions with reasonable procedures to accompany those actions for B and C. <b>Revised.</b> Is Q still valid if only one switch failure triggers the alarm? <b>Re-revised. Q now SAT</b>

94	F	2	X	X		X								N	U	D	43.5	<b>First ten.</b> Somewhat confusing - who are you referring to as "the SRO." SM? CRS? Both? Change stem to ask, "In accordance with procedure EN-OP-115, "Conduct of Operations," which of the following can ONLY be a responsibility of an active licensed SRO? Distractors also need some reworking, as stem numbers 2 and 4 are both in three out of four distractors, cueing that the correct answer is probably C or D. Stem 3 should be revised to say "required to be in the main control room at all times when fuel is in the reactor" to make it more discriminating. Delete typo in stem. <b>Revised;</b> Stem 3 not revised per above and does not match the explanation. <b>Re-revised. Q now SAT</b>
95	H	2												N	S	B	43.5	
96	F	3	X			X								B	U	D	43.7	<b>First ten.</b> Distractors need some reworking, as stem numbers 1 and 2 are both in three out of four distractors, cueing that the correct answer is probably C or D. All distractors have "only" except for distractor D. Is this a bank or new question? <b>Revised. Q now SAT</b>
97	H	3					X							B	E	B	43.5	<b>ON DEC 2017 NRC EXAM. REFERENCE PROVIDED.</b> What reference needs provided? <b>Reference removed. Q now SAT</b>
98	F	2												B	S	D	43.4	<b>ON 2010 NRC EXAM.</b>
99	H	3												N	S	C	43.7	<b>REFERENCE PROVIDED.</b> Validate with licensee during validation week.
100	F	3												N	E	A	43.5	Change "will" to "should" in stem. <b>Revised. Q now SAT</b>

**Results Table**

RO LOK -H	40		Avg RO LOD	2.67
RO LOK-F	35		AVG SRO LOD	2.84
SRO LOK - H	16		Overall LOD	2.71
SRO LOK - F	9			
		%		
RO Bank	26	34.67	SRO Bank	7 28
RO Mod	0	0	SRO Mod	1 4
RO New	49	65.33	SRO New	17 68
		%		
Total Bank	33	33		
Total Mod	1	1		
Total New	66	66		
		%		
RO Sat	22	29.33	SRO Sat	9 36
RO Unsat	15	20	SRO Unsat	3 12
RO Edit	38	50.67	SRO Edit	13 52
		%		
Total Sat	31	31	Total Unsat	18 18
Total Edit	51	51		

**Flaws**

Stem focus	49
Cues	7
T/F	0
Cred Dist	39
Partial	3
job link	0
units	0
minutia	0
backward	0
KA	0
SRO-only	0
LOD = 1	0

**10 CFR Distribution**

41.1	1	43.1	0
41.2	1	43.2	3
41.3	0	43.3	0
41.4	3	43.4	2
41.5	4	43.5	17
41.6	2	43.6	1
41.7	33	43.7	2
41.8	4		
41.9	3		
41.10	18		
41.11	1		
41.12	1		
41.13	2		
41.14	2		

**Answer Dist ( in %)**

RO-A	18	SRO-A	5
RO-B	19	SRO-B	7
RO-C	20	SRO-C	7
RO-D	18	SRO-D	6

### **Question Overlap with the Previous Two NRC Exams**

QA form ES-401-6 item 4 requires 4 or less questions on RO exam from previous two NRC exams, SRO portion two or less questions from previous two NRC exams\*

\* if this is exceeded, the region shall call NRR to explain why/reasons.

RO overlap from previous two NRC exams

4

SRO overlap from the previous two NRC exams

2

### **Questions Requiring References to Answer**

6-10 questions rule of thumb on SRO portion of exam are allowed to be open reference, while the RO exam is generally none

RO Questions that require hand-outs

3

SRO Questions that require hand-outs

4



## STP 2019-07 Initial Written Exam Statistics

