

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
1	H	2												B	E	B/10
2	F	2	X											N	U	A/5 - EOP-00 (SPTA) step 11 has the operators close the block valve. This question assumes operation in EOP-03 (LOCA); however, the crew had to go through EOP-00 first. There is no caution in EOP-00 about solid plant conditions and PORV operation. The applicant would correctly assume the PORV block is already closed, and there would be no correct answer. <a href="#">Revised question</a>
3	H	2										X		B	U	A/5 - Doesn't address KA – time available for action. Also, what is reference SHB: 07-15-12? Also, ref states thumb rule is 10%/deg F – is it 10% or 1%. Also, ref is for uncomplicated reactor trip but KA applies to SBLOCA. <a href="#">Replaced question</a>
4	H	3												N	E	D/5 - Handout
5	H	2												B	E	C/7 – Reword to operational event. Plant is in Mode 4. SDC is in operation per procedure XXX, with LPSI pump XX in service. A loss of off-site power occurs. EDGs operate as designed. What action (if any) ... (or something similar). Also, STM-15, para 3.19 on page 71 is a better reference. <a href="#">Fixed</a>
6	H	3	X											B	U	D/10 – What is the reactor trip criteria? What is the failure? A leak (surge tank level 8" and lowering) and/or trashed pump (loud rumbling noise)? <a href="#">Revised question</a>
7	H	3	X											N	U	D/14 - Rewrite into bullet format and let applicant determine system response <a href="#">Done</a>

Instructions

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

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

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8	H	2	X											M	E	D/10
9	F	2												N	U	B/11 - The references do not support the correct answer or explain why the others are incorrect. Nothing in the lesson plan 7-15-33 or SO-G-105 supports the correct answer. The material states that RM-54 MAY alarm first for small leaks IF blowdown is in service. <a href="#">Revised</a>
10	H	3												N	E	C/10
11	H	3												N	E	C/10 – Need ref for the why part of question. Also, need procedure reference in stem. Also, revise stem to remove conclusions. <a href="#">Done</a>
12	H	3												M	E	B/7
13	H	2												B	S	D/5
14	F	3												N	E	B/10 - Rewrite in bullet format as it would be more operationally valid. <a href="#">Done</a> Also, are FCS RO applicants expected to know AOP bases? <a href="#">Facility Rep accepts question as acceptable for RO applicants</a>
15	H	3												N	E	C/10 – If Panel 1 is lost, will the low voltage annunciator also alarm? <a href="#">Yes added to stem</a> Also, according the AOP reference provided, this is one pushbutton on 1A1-1A3 Aux Power Compartment. <a href="#">Revised</a>
16	H	3												N	S	D/7
17	F	2												B	E	D/10 - The AOP states that MFPs are stopped to prevent the RCS cooldown following the trip, not overfilling the generators (although overfilling would have the effect of overcooling.) Prefer to follow wording of the AOP. <a href="#">Done</a>
18	H	3												N	E	B/10
19	F	3												B	E	A/7
20	H	2												B	E	A/5 – Handout.
21	F	3									X	X		N	U	B/6 – Doesn't address KA - startup termination on SR loss. Backwards logic – asks a question about what is needed prior to s/u yet a s/u is already in progress. <a href="#">New KA</a>
22	H	2												N	E	B/6
23	F	2										X		N	E	D/13
24	F	2				X						X		B	U	B/13 – Doesn't address KA – same as above but for accidental gaseous radwaste release. Distractors C and D are not credible. <a href="#">Revised</a>
25	H	3												M	E	D/7 – Worksheet says Source: NEW – should this be MODIFIED BANK? <a href="#">Yes</a>
26	F	2									X			N	U	B/5 - Backward logic. Give parameter(s), then choose a procedure. <a href="#">Revised</a>
27	H	3												N	E	A/3

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
28	H	3												N	E	C/10
29	H	3												N	E	D/7
30	H	2												N	S	C/11
31	F	2												N	S	B/10
32	H	3	X										X	N	E	B/5 – Stem doesn't state reactor is critical. <a href="#">Fixed</a>
33	F	2												B	E	C/10 - Question has not been modified significantly. It is a BANK question. <a href="#">Updated</a> Ref for venting NCG's to the PQT or VCT? <a href="#">OI-CH-3</a>
34	H	3												B	E	A/5
35	F	3	U					U						N	E	B/10 –The way this question is worded, the operator could assume that the prerequisite checklist is being performed, and the discharge valve for AC-3A is being opened as required by OI-CC-1-CL-A (Page 29 of OI-CC-1). This would make C the correct answer. Add to stem – prerequisites for OI-CC-1 are complete. <a href="#">Fixed</a>
36	H	3												N	S	B/7 – Ref not adequate to support answer <a href="#">provided</a>
37	H	3												N	E	D/10
38	H	3												N	E	C/6 - Stem – provide CR indications of a loss of 125 VDC power and ask impact on DSS. Otherwise cognitive level is LOW. <a href="#">Fixed</a>
39	H	3												N	E	B/10 - Cognitive level is HIGH. <a href="#">updated</a>
40	H	3										X		B	U	D/7 – Doesn't address part b of KA – use procedures to correct, control, or mitigate. Also, refs do not detail impact of 10 sec drop in voltage. <a href="#">fixed</a>
41	F	2												M	E	B/4 – Reword stem to read "From where do the CEDM Cooling Fans, VA-2A and VA-2B, take suction? Then remove the phrase "The CEDM cooling fans take (cool) air." from each of the answers. <a href="#">done</a>
42	H	3												N	E	C/10
43	F	3												N	E	C/5
44	H	2										X		N	U	A/10 - Does not address auto operation of MFW and level programming. This addresses AFW and safety function checks of the EOPs. Also, to meet the safety function, must be feeding the S/Gs – stem states BOP stopped feeding. <a href="#">Rewrote question</a>
45	F	3												N	E	C/10 - The words "prior to:" in the stem would make the correct answer incorrect. The continuous action step (15) of the EOP states that once through core cooling is performed if there is a rise of >5F. Revise the stem. <a href="#">Fixed</a>
46	H	3	X	X		X								N	U	D/10 – Assuming Step 8 of AOP-31 is performed sequentially, bus 1A4 is deenergized first, and 1A4 loads are started manually after EDG start. Then bus 1A3 is deenergized and operators ensure loads started after EDG start. Answers C & D

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																state that both buses are deenergized and then loads are started. Reword C & D. Also, eliminate values of 3750 and 430 volts as they could be used to assist in answering Q87 (state "less than minimum bus voltage"). <a href="#">Fixed</a>
47	F	2										X		B	U	B/10 - Does not address 2 <sup>nd</sup> part of the KA. <a href="#">Fixed</a>
48	F	2												N	E	D/7
49	H	2												N	E	A/5
50	H	3									X			M	U	A/11 – Backward logic (see 1021 Appendix B). Give the alarm and have applicant determine system response. <a href="#">New KA</a>
51	H	3												B	E	C/11 -
52	F	3									X			M	U	B/7 - Backward logic. <a href="#">Rewrote question</a>
53	H	3												N	E	B/7 – Ref provided doesn't contain info on sequencer starting AC-10C. <a href="#">ref provided</a>
54	H	3												N	E	D/7
55	F	2												N	E	B/9
56	H	3												M	E	C/10
57	F	2												B	E	A/9
58	H	3												N	E	C/10
59	H	3												M	E	D/5 - Does the reactor have to be > 60% for the valves to stroke full open? <a href="#">Yes</a> If so, add initial power to stem. <a href="#">Done</a>
60	F	2												N	E	B/7 – Ref provided doesn't contain info on 43/FW switch or trip signals to FW-8A. <a href="#">Ref provided</a>
61	H	3										X		N	U	D/7 – Doesn't address 2 <sup>nd</sup> part of KA – use procedures to correct, control .... <a href="#">Fixed</a>
62	F	2										X		B	U	D/13 – Doesn't address the KA – loss or malfunction of Rad Monitor on Liquid Radwaste System (this is an admin type question). Also, this is not a significant modification. SOURCE is BANK. <a href="#">New KA and question</a>
63	H	3												N	E	B/13
64	F	2												N	E	D/6
65	F	3				X								N	U	A/10 - Distractors B and C are not credible. Also, this is not a significant modification. SOURCE is BANK. <a href="#">New KA</a>
66	F	2												N	E	A/10
67	F	3				X								N	E	C/10
68	F	2												B	E	D/10

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69	H	2												N	E	B/5
70	H	3				X								N	E	B/5 – Add power statement to stem. <i>Done</i>
71	F	2				X								N	U	D/12 – Distractor A is not credible. <i>Fixed</i>
72	F	3												B	E	A/11 - This is not a significant modification. SOURCE is BANK. <i>Fixed</i>
73	F	2												N	E	A/13
74	F	2												N	E	B/10
75	H	3												N	E	B/6 - The training manual states that the zero power mode bypass automatically removed when power is above 10-4%. The answers B and D state the Rx would trip when power reaches 10-4%. This is contradictory. Change B and D to read "exceeds 1 x 10-4%." <i>Fixed</i>
<b>RO TOTALS:</b>			B= 18 (24%)		F= 31 (42%)		E= 52 (69%)		<b>Additional Notes:</b> 1. Any performance data available on Bank questions? 2. DRAFT submittal should include explanation of why answers are correct and why distractors are incorrect but credible. 3. Average difficulty is lower than normal (2.57 vs 2.8).							
			M= 10 (13%)		H= 44 (58%)		U= 18 (24%)									
			N= 47 (63%)				S= 5 (7%)									
<b>GENERAL COMMENTS:</b>																
1. Bank questions are indicated by B; Modified are indicated by M; New questions are indicated by N. 2. Chief Examiner comments are indicated in <i>blue</i> . 3. Average difficulty is <u>2.57</u> on the RO exam. 4. The 10CFR55.41 distribution is: 41.1 = 41.11 = 5 41.2 = 41.12 = 1 41.3 = 1 41.13 = 5 41.4 = 1 41.14 = 1 41.5 = 13 41.6 = 5 41.7 = 14 41.8 = 41.9 = 2 41.10 = 27 5. The answer distribution is: RO A = 14 (19%) B = 25 (33%)																

C = 15 (20%)  
D = 21 (28%)

6. There are 2 questions with handouts (Q4, Q20).

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76	F	3												N	S	A/2 - Note: second question on PDIL (Q20)
77	H	3												N	E	C/5 - How credible are distractors A & B – are there any EOP or EOP Attachment transitions to the TDBs? <a href="#">Changed to EOP-AOP Attachment 2</a> How credible is distractor D – what is PRC? <a href="#">Plant Review Committee - acceptable</a>
78	H	3										X		N	U	C/5 - Doesn't address loss of RC flow as identified in the KA – cause of RCP failure. <a href="#">Modified stem to ensure operationally valid for Plant Operator response</a>
79	H	3												N	E	A/5
80	H	3	U											N	E	D/5
81	F	2										X	X	N	U	C/5 - RO knowledge. Also, doesn't address KA for ability to determine and interpret. No assessment of plant conditions to determine course of action. <a href="#">Revised question</a>
82	H	3										X		N	U	D/5 - Doesn't address KA – using incore/excore instrumentation, incore or loop temperature measurements <a href="#">Revised question</a>

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83	H	3												B	E	C/2
84	H	3												N	E	C/7 - Having all answers contain "within one hour" adds no discriminatory value. <a href="#">Moved to stem</a>
85	H	3												N	E	A/5
86	H	3												N	S	A/5
87	H	3												N	E	A/5 - AOP-32 not credible distractor since loss of bus is required for entry. <a href="#">Changed to AOP-31</a> Also, would operator expect to receive "SHUTDOWN COOLING FLOW HI-LO" alarm (CB-1,2,3; A2)? <a href="#">Yes – add to stem</a>
88	H	4												N	E	C/5
89	H	3												N	E	B/5 - Distractor C – is the FC not already in 3 element control? <a href="#">Yes – change to single element</a> Distractor D – Feed Reg Bypass Valve already in auto <a href="#">Changed to DCS controller</a>
90	H	3				X								N	U	A/5 - Any annunciator alarms expected for this condition? <a href="#">Yes – add to stem</a> . How would the operators in the CR know of the condition? <a href="#">annunciators</a> Any entry conditions for AOP-18? <a href="#">Yes</a> Distractor C – credible given stem identifies reduced flow in RW system only? <a href="#">Changed to AOP-18</a> Consider two Distractors with AOP-18 with different actions (section IV and section V). <a href="#">Done</a> Add to stem which RW pumps are running? <a href="#">yes</a>
91	H	3												N	E	B/2 - Is the immovable CEA misaligned from its group (info needed in stem)? <a href="#">Yes</a> Are applicants expected to memorize 6-8 hr actions (KA states entry-level conditions)? <a href="#">Determined by Facility Rep to be okay.</a>
92	F	3												N	E	B/5 - Add "100% relative humidity" to stem since it is a pre-req to correcting the H2 conc. <a href="#">Done</a>
93	H	3												N	S	D/5
94	H	2												N	S	D/2 - Handout
95	F	2												N	E	A/7
96	H	2												N	E	D/2 - Add to stem that all SIT's contain refueling boron concentration. <a href="#">Done</a>
97	H	3												N	E	D/2 - Add to stem " ... has just been declared inoperable by the Shift Manager." <a href="#">Done.</a> Why is Distractor B credible? <a href="#">Changed to 20,000 lbm/hr to match procedure</a>
98	H	2	X					X					X	M	U	C/4 - RO system level knowledge. Also not operationally valid since the procedure directs alignment to preferred power supply if available. Marginal KA match. <a href="#">Revised question.</a>

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99	F	2												B	S	B/5
100	H	4												N	E	B/5 - Add procedure in effect to stem. <b>Done</b> . Is the correct terminology EOP floating step or EOP/AOP floating step in A, B, C, D? <b>Fixed</b>

<b>SRO TOTALS:</b>	B= 2	F= 5 (20%)	E= 15 (60%)	<b>Additional Notes: Higher number of cognitive questions than normal – supported by random KA selection.</b>
	M= 1	H= 20 (80%)	U= 5 (20%)	
	N= 22		S= 5 (20%)	

**GENERAL COMMENTS:**

- Bank questions are indicated by B; Modified are indicated by M; New questions are indicated by N.
- Chief Examiner comments are indicated in *blue*.
- Average difficulty is 2.84 on the SRO exam.
- The 10CFR55.41/43 distribution is: RO / SRO  
 43.1 =  
 43.2 = 6  
 43.3 =  
 43.4 = 1  
 43.5 = 16  
 43.6 =  
 43.7 = 2
- The answer distribution is: SRO  
 A = 7 (28%)  
 B = 5 (20%)  
 C = 7 (28%)  
 D = 6 (24%)
- There is 1 question with HANDOUT provided (Q94).