

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
1	H	2										X		N	U S	1. K/A asks for problems with RCP motors, but question is testing on the effects of a mechanical shaft shear. 2. Why would Reactor Trip Recovery not be diagnosed given the info in the stem? Replaced question
2	F	2												B	S	1. Why is there a Reduced Inventory Condition ref? Procedure attached as a ref because it explains why distractor "C" is plausible.
3	H	3												B	E	Rearranged distracters for length.
4	H	3												N	E	Consider stating at what rate 3LT226 fails low. Done
5	F	2												B	E	1. Add "per 3-2.16" in stem. 2. Rearranged distracters for length.
6	H	2												B	E	1. For "A" – should loss of SDC pumps be listed first, thus resulting in a loss of all SDC flow? 2. For "C" – how do you differentiate between this and "A?" New plausibility statements for A and C. Slight mods made for exam consistency. Added System Description info.
7	F	3												B	S	
8	H	2												M	S	The Modified question and the Original question have the same stems but different answers – why? Error in Bank question. Changed distractor B to 228°F and fixed plausibility statement.

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 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
3. 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).
4. 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.
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?
8. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

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9	H	3												B	S	
10	F	2												N	S	
11	F	3												B	E	For "C" – change to 20 seconds. Done Rearranged distractors for length
12	H	3												B	S	Verify overlap with SRO exam – knowledge of one question doesn't provide help on the other. Done
13	H	3												N	E	Is this an event on any of the scenarios? No overlap Rearranged distractors for length
14	H	3										X		B N	U S	1. Is FHIS considered ESF Actuation System? No 2. Reduce down to 2 choices per answer. Only need to know the first two to get the right answer. Replaced question
15	F	2												B	E	1. Change "which of the following <u>are</u> " to "which of the following <u>is</u> ." fixed 2. Is this an event on any of the scenarios? No Rearranged distractors for length and replaced one distractor
16	H	2				X								N	E	1. Distractors C is implausible. replaced 2. Is SFP cooling lost due to loss of SFP pumps or CCW flow to the heat exchanger? Not clear in stem. Revised stem Added System Description info in references.
17 2009	H	2												B	E	Rearranged distractors for length
18	H	2				X								B	E	1. Applicant only needs know the position of "3"& "4" to answer question. Revised answers 2. Position of MSIV is not discriminatory since it's CLOSED in all 4 answers. Revised answers 3. Refs don't provide MSIS setpoint. Added Sys Description info

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19	F	2				X								B	E	1. Position of Reg Vlv response is not discriminatory since it goes fully closed in all 4 answers. Revised answers 2. What is position of bypass valve at 100% power? If closed, "C" and "D" are not plausible. Bypass valves are full open at 100% power. Rearranged distractors for length.
20	F	3												B	E	Rearranged distractors for length.
21	H	3										X		B N	U S	Question does not test on the effect of a malfunction of the AC system on the EDG (it tests on what the malfunction doesn't affect on the EDG). Replaced question.
22	H	3												M	E	1. Remove the words "has occurred" from the answers. Done 2. For Explanation D - it is NEVER acceptable to use the simulator to validate plant parameters! It is always the other way around. Revised 3. Refs don't include link from 4160 VAC bus to 480 VAC MCC. Added Rearranged distractors for length.
23	F	2				X								N	E	Distractor D too large a value to be credible. Changed distractor D from 2.0 MWe to 0.5 MWe.
24	F	2												B	S	
25	F	2												B	E	Rearranged distractors for length.
26	F	2												M	S	
27	H	3												B	E	Changed distractors A & D by removing pressure values.
28	H	3												M	E	1. Since each answer only contains one action, stem doesn't need the action(s) is (are). Reworded Stem. Rearranged distractors for length.
29	H	2												N	E	Rearranged distractors for length.
30	H	3				X								B	E	1. In third bullet – remove "which provides input to the Loop 1 Tave calculation" since the applicant should know this. Fixed

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31	F	2										X		B	U S	KA requires knowledge of the NI system. If applicant knew the effects of a pressure transmitter failing low, they would not have to know anything about the effects on DNBR from NI's (since there is only one correct answer). Change pressure failure to high and NI failure high. Fixed
32	H	3				X								B	U S	1. "A" and "B" are not plausible. Controlling on the high channel with a high failure and no effect; controlling on a low channel with a high failure that opens the valve... Revised answers 2. Both Control channels have "controls on the higher indicating channel" and both Safety channels have "controls on the lower indicating channel." No discrimination value. Revised answers 3. No value in the "two Steam Generator Pressure" in each distractor. Put in stem. Revised answers 4. Refs don't identify Control vs Safety channels. Revised answers only include safety channels
33	H	2				X								B	E	1. Explanation for "A" is misworded (Fuel Handling Spent Fuel Pool?) Corrected plausibility statements as required. Rearranged distractors for length.
34	F	2												B	S	
35	H	2												B	E	1. Stem "which of the following <u>are</u> ..." to "which of the following <u>is</u> ..." since there is only one action per answer. Fixed
36	F	4												B	E	1. This looks like an SRO question. Are RO's required to know from memory rad release requirements (Attachment 17 to an OI?) Licensee concurs this is definitely RO level knowledge. 2. Explanations for distractors "C" and "D" imply that flow monitor FI-7643 is inop, but stem does not say that. Corrected plausibility statements Rearranged distractors for length. Added proc ref to stem.
37	F	4												B	E	1. Distractor A references "-0.5 HgA" ... not possible. Also, other 3 answers reference PSIG. Reworded distractors A & C
38	H	3				X								N	S	

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39	H	2												B	E	Difference between 20 min and 180 min seems excessive... consider a smaller time delta. Reworded distractors B & C (changed 180 minutes to 60 minutes).
40 2010	F	3												B	S	
41	H	3												B	E	1. Shortest answer first, longest answer last (move C to A) Reworded Stem and underlined 286 and 186 in distractors B & D. Rearranged distractors for length.
42	H	3				X								B	E	Distractor "C" – not plausible. Additional loss of inventory is not a damage mechanism to the RCPs. Reworded Stem and all distractors.
43	H	2												B	S	1. Explanation for "A" make sense? Corrected plausibility statement for distractor A.
44	H	3												N	S	
45	H	3												N	S	
46	F	3												B	S	
47	F	2												N	S	
48	F	3												B	E	Add per SO23-14-5 to stem. Reworded stem
49	H	3												M	E	1. Is it plausible to have an ADV open with a LBLOCA (primary at 600 psig, HPSI injecting)? Yes – promoting natural circ Rearranged distractors for length.
50	H	3												B	E	In correct answer: how can REP CET temp be lower than Thot if temps are stable? Changed REP CET to 560F
51	H	2				X						X		B M	U S	KA is knowledge of the reasons, not just the actions. Also, the identified Learning Obj states the basis for each step, not just the action required. Also, MFW not credible. Reworded stem and distractors.
52	H	4												B	E	1. Stem confusing regarding all 3 charging pumps started. Reworded stem

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
53	F	3										X		N	U S	Question doesn't test on the REASON for actions contained in EOP for a loss of DC. Modified distractors C & D and added "... due to loss of Train A(B) control power" to each distractor.
54 2009	H	4												B	E	1. Overlap with an In-Plant JPM? No – this is "reason for" 2. Since the stem states the procedure is in "progress," is "C" correct until Attachment 2 is complete? How does the applicant know the FIS has been placed in LOCAL? Added bullet for Fire Isolation Switches to stem.
55	H	3												M	E	Review potential cueing with Q-27 as it gives values for Nitrogen pressure and SA pressure. Removed pressure values from Q27. Rearranged distractors for length.
56	F	3												B	E	1. Distractor "C" – what is a "permanently connected bus load?" Removed "...permanently connected..." from distractor C. Rearranged distractors for length.
57	H	3												B	E	1. KA states the Rod In-Hold-Out switch, not the CEDMCS Manual Control Switch. Same thing at SONGS 2. Explanation for "A" states that Critical Data was just taken but that isn't identified in the stem. Corrected plausibility statement for Answer and distractor D
58	H	2												B	S	
59	H	3												B	E	1. Modify stem to read "Which ... action is required per ARI xxx" Done 2. In answer D: change reason from "shutdown margin" to "restore CEAs above PPDIL" to match procedure. Done
60	F	3												B	E	1. Add "In accordance with SO23-8-14, which of the following..." Done
61	H	3												N	E	1. Should the stem include any Containment parameters? Added bullet for Containment Normal Sump level. 2. Explanation for distractor D is incomplete. Fixed 3. Isolating letdown is not next step. Revised stem Rearranged distractors for length.

[illegible]

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71	H	2												M	S	Explanation for “D” is wrong. 2 REM would be 16.67 hrs. Corrected plausibility statement for distractor D.
72	H	3												B	E	For “B” – provide noun name for valve. Added procedure title to Stem and valve name to distractor B.
73 2009	F	2												B	E	Rearranged distractors for length.
74	F	2												B	E	1. Add “in accordance with AOI xxx” to stem. Added procedure title to Stem. 2. For “B” and “C” – the AOI states pre-fire plan, not fire pre-plan. Fixed
75	F	2											X	B N	U S	1. Fourth bullet – does “”could NOT be opened manually” mean by depressing trip buttons in the CR or locally? From the CR 2. For “C” – “alternate DC supply <u>breaker</u> ? yes 3. Add “in accordance with AOI xxx” to stem. Replaced question 4. Don’t need to know Loss of Annun, only RNO of Step 2 of SPTAs. Replaced question

Comments:

1. Bank – 45 (60%), New – 21 (28%), Modified – 9 (12%).

2. LOK: H – 43 (57%), F – 32 (43%).

3. LOD: 2.61 average

4. Questions from last two NRC exams: 4

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
76	H	3												B	S	
77	H	3												B	E	<p>1. Add selection of appropriate procedures. Modified all distractors to new format.</p> <p>2. For 'B' – why use 320F? With 100% plenum, doesn't the procedure skip the step for using rep CETs? Modified all distractors to new format.</p> <p>3. Change Thot to REP CET on "B" and "D" to match procedure. Done</p> <p>4. Add "in accordance with procedure SO23-12-3" to stem. Done</p>
78	H	3	X											M	U S	<p>1. Step 3c RNO is controlled plant shutdown but isn't step 3c answered 'yes' since CBO is less than 4 gpm? Yes - Changed leakage to 6 GPM</p> <p>2. Add "in accordance with procedure SO23-13-6" to stem. Done</p> <p>3. For 'B', procedure states "Containment entry," not "Emergency Containment entry." Fixed</p> <p>4. For "D" – where does the "5 seconds after CEAs have been inserted" come from? Is this plausible? Revised distractor</p>
79	F	3												B	E	How is question related to p2r press control malfunction? Added bullet for controller failure.
80	H	3												N	E	<p>1. Explanation for "D" refers to FR procedure, but question is about SFSC procedure. Revised explanation.</p> <p>2. What is the significance of the second bullet? If you added to the question, "During an ATWS, which of the following satisfies... : would you need any of the bullets? Loss of busses affects available charging pumps.</p> <p>3. Distractors only require knowledge of 1, 2, 3, 4 (not 5). Revised all distractors to selections for 1-4.</p>
81	H	3												N	E	Need to assess facility conditions. The conclusion that DC Bus 1 is lost is given in the stem. Modified conditions in Stem to reflect loss of DC Bus

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82	H	2												M	E	1. Does the stem imply voltage is higher on all safety channels? If so, would they all agree within ½ decade? Changed 2nd bullet to singular condition 2. What ref verifies the statement in the stem that the NI's will shift from Count Rate Circuit to Campbell Circuit? added reference for Campbell
83	F	3												N	E	If the answer is the ODCM, should it not be listed as a ref? Was it included in the ref material? Added reference to ODCM. Rearranged distractors for length.
84 2010	H	3												B	E	Distractor "A" wording doesn't make sense (... within 14 days of the plan...). Also, not aware of any 14 day NRC report – change to 8 hours. Modified distractor A Reworded stem for clarity
85	H	3												M	E	Selection of appropriate procedures doesn't provide much discrimination since it is just the first CSF listed in part 1) of each question. Modified Stem and removed procedure reference from all distractors
86	H	2												N	E	Change stem to read "Which one of the following identifies the correct Technical Specification Condition, Required Action and Completion Time" Modified Stem
87	H	4												N	E	1. "A" – assessing water level in Plenum region with PZR level at 10% not plausible. Also, why would you transition to FR-5? Modified distractor A 2. Explanation for "B" not correct. Revised explanation and included reference. Removed ref pertaining to SITs. 3. ". Answers as written don't flow from stems question of what the CRS's top priority would be. Revised stem and format of distractors

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88 2009	H	4 3	X			X								B	U S	<p>1. Distractor "C" marginally plausible. Changed to Mode 3 in 6 hrs.</p> <p>2. Would failure of one Matrix Channel cause an inadvertent SI? No-revised stem.</p> <p>3. Stem question needs rewording – failure of a channel doesn't "impact" TS's. Fixed</p> <p>4. Is Explanation for "A" correct? Procedure should be 13-6, not 13-7.</p> <p>5. From Tech Refs on Worksheet: why is SO23-13-17, step 5 applicable? Removed step 5, added LCO 3.3.5.</p>
89	H	2				X								B	E	Distractor "A" is not plausible – if Turbine Inlet Steam Supply was disabled, pump could not trip on overspeed. Changed procedure entry in distractors A and B and rearranged for length
90	H	3											X	B N	U S	<p>1. 1 hour Tech Specs are considered RO knowledge. Replaced question</p> <p>2. No ref that shows effect of Relay K-1 and control power. Replaced question</p>
91	H	3												M	E	<p>1. What defines small vs large oscillations? Could affect Distractor B if it's not procedurally defined. Modified stem</p> <p>2. Add procedure SO23-5-1.7, Power Operations, to the stem. Done</p> <p>3. What is the significance of MOC? None – removed from stem</p> <p>4. Explanations for "A" and "C" are incorrect regarding use of PLCEAs or GR6 rods. All explanations should address both parts of the question. Revised all explanations.</p>
92	H	2											X	B	U S	<p>1. Since this question is written in "4X4" format, it can be answered by only knowing ½ of the correct answer. Therefore no knowledge of procedures is required. Revised all distractors</p> <p>2. Where in SO23-5-1.7 does it explain the effect of a neg ITC? Added ref for ITC</p>

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93	H	2		X		X								B N	U S	<p>1. Is there anything in the stem that might indicate that there might be plenum or tube voiding? What is the max core delta T allowed during natural circ?</p> <p>2. Don't need to know second part to answer the question since first part is unique for all distracters.</p> <p>3. Is Reactor Vessel Head level the same as Reactor Vessel level? When is level in the Plenum?</p> <p>4. In the stem, should ask for action(s) and then the reason for the actions.</p> <p>5. For "B" – per FS-10, is the response for SG tube voiding to steam the affected generator (thus increasing the cooldown rate)?</p> <p>6. For "B" - where in SO23-12-11, Attach 3, is direction given to reduce cooldown rate and increase safety injection flow?</p> <p>7. For "D" – should the second column of SO23-12-11, Attach 5, be highlighted instead of the third column (for the direction given to raise steaming and feeding rates)?</p> <p>Replaced question</p>
94	H	2												N	E	<p>1. Stem asks for requirements regarding the Shift Composition and required action... answers are only required answers. Revised stem</p> <p>2. For the 4th bullet – change to 2 hrs remaining on shift. Done</p> <p>Replaced distractor "B"</p>
95	H	3												B	E	<p>1. Explanation for "C" – is it also incorrect since Condition D is only applicable during Modes 5 and 6? Modified plausibility statement</p> <p>2. Explanation for "D" is also in error. Modified plausibility statement</p> <p>3. For Distracter "A" – why is it plausible to place the Unit in Mode 2? Changed MODE in distractor A</p>
96	F	2												B	E	<p>For "B" – only if <u>dual</u> redundant components are available? Also, not sure "can perform the <u>protected components</u> function" is correct.</p> <p>Modified distractor B</p>
97	F	3												B	S	
98	F	3												B	E	<p>In the stem - capitalized DOSE EQUIVALENT and changed 1 to 1.0</p>

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99	H	3												B	E	1. Distractor "D" doesn't address Unit 3. 2. For "C" – doesn't specify whether a Mode change is considered like "A" and "B." Modified wording in Stem (removed spuriously). Removed Unit 3 actions from all distractors.
100	H	3												B	E	Modified all distractors with procedure references and added reference for Step 8.c.

Comments:

1. Bank – 13 (52%), New – 8 (32%), Modified – 4 (16%).

2. LOK: H – 20 (80%), F – 5 (20%).

3. LOD: 2.76 average

4. Questions from last two NRC exams: 2