

Facility:		Date of Exam:	Exam Level:	RO	SRO		
Item Description				Initial			
				a	b*	c#	
1.	Questions and answers are technically accurate and applicable to the facility.						
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.						
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401						
4.	The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office).						
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input type="checkbox"/> the audit exam was systematically and randomly developed, or <input type="checkbox"/> the audit exam was completed before the license exam was started, or <input type="checkbox"/> the examinations were developed independently, or <input type="checkbox"/> the licensee certifies that there is no duplication, or <input type="checkbox"/> other (explain)						
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank	Modified	New			
		/	/	/			
7.	Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	Memory		C/A			
		/		/			
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.						
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.						
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.						
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.						
				Printed Name / Signature		Date	
a.	Author _____			_____		_____	
b.	Facility Reviewer (*) _____			_____		_____	
c.	NRC Chief Examiner (#) _____			_____		_____	
d.	NRC Regional Supervisor _____			_____		_____	
Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.							

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	Backward	Q=K/A	SR Only			
1	F	3	X	X											E	Stem says RCS temperatures, need to delete words "on RCS temperatures". This is misleading because bearings are part of RCPs. This is a "none of the above" answer. 1021 doesn't allow.
2	H	5													?	Too difficult?
3	F	3				X	X		X						U	The stem is written in a confusing way to me. A and B parts should be avoided in stem, because candidate may confuse these with answer choices. Answers A and D should be grouped together. A and D are correct in the way they worded. If the 1-01 pump was not stopped or flow reduced, excess flow could occur? I don't understand why B is credible.
4	F	?	X			X	X								U	Just because water is 23 ft. above core doesn't mean it will NEVER boil. Answer A could be incorrect. Answer D IS correct. One train trips, one still running, the water will not boil. C is an incredible distracter. B could be argued correct because the crew will start the other train. Is the stem supposed to read differently?
5	H	3					X								E	Again, stem is written in confusing way. C could be correct if liquid only leaked into accumulator. Draining it could theoretically clear both alarms. A and D should be grouped together.
6	F	2													S	Can PRT pressure be lowered? I think so.
7	H	4		X											E	Because stem asks about PRT, C distracter becomes incredible.
8	F	3				X									E	D is incredible. Even if RMWP shut off or diverted from CCW, tank levels would not shut off, just stop raising.
9	H	2										X			U	I don't believe this is what the KA intended. But it may be okay.
10	F	3													S	Fundamental, not higher. Maybe think about All-Caps "Normal" or bold, so the reader isn't tricked.
11	H	4													E	Need to add word ONLY in front of answers to match other parts of exam.

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SR O Only		
12	F	3		X										E	Because distractor A doesn't match B, that could be a cue that it affects diesel A, and lead to the candidate picking C. Would be better if B followed A.
13	H	2										X		E	Comment: The bank Q that this was modified from doesn't match KA. Modified Q may not match KA, because not correcting or controlling consequences. Change answer to return switch to original position, and no other actions.
14	F	4												S	
15	H	2												?	Is this discriminating? Also, is asking a most effective question leaving this item open to challenge?
16	H	3												S	I am not sure if this question is technically accurate because we got the wrong reference.
17	H	3					X							U	Distractor A is correct, RWST water could be colder than from recirc. I believe B is correct also because CSS helps move water which provides more NPSH. C is also correct, because more water means more iodine can dissolve in the water.
18	F	4												S	
19	H	2												S	
20	H	2												S	
21	F	2												S	May want to change the word "conditions" in the stem. May want to add words about no failures, normal conditions, etc... so that the question is less challengable. Also, if desirable, BOS O/L can be moved from answers to stem.
22	F	2												?	Could any of this be interpreted as "starting major plant equipment", as cited in the reference procedure? If so, then this question is challengable.

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SR O Only			
23	H	3	X				X		X				X		U	Stems can't have the words "most probable", because that is a best answer question. The way that the stem is worded doesn't preclude the candidate from arguing that all answers are correct, because second alarm was caused by some other condition. In addition, I am not sure if it matches KA intent, and are alarm causes required to be memorized?
24	F	3	X				X								U	This question will be less challengable if the stem makes it clear that ALL receivers for that diesel are 145 psig. In addition, reference says that at APPROXIMATELY 150psig, DG will accept start signal, but DG will not start. This might make A partially true. This could be corrected by lowering the air pressure in the stem? C distractor "or" should be changed to and, or this distractor is partially correct. Then B distractor needs to match. Reference is not clear on consequences. Is this question technically correct?
25	H	4							X						E	Is the color of alarm required to be memorized? I think it would be better to add a title.
26	H	3				X							X		U	Does ABN meet the intent of the KA? Why would you need to stop CCW pump to start SSWP? This doesn't seem credible.
27	F	4													?	Will maximum speed on governor trip pump?

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutes	#/units	Backward	Q=K/A	SRO Only			
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.	<p>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. • 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.	<p>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. 															
5.	Check questions that are sampled for conformance with the approved K/A and those that are <i>designated SRO-only</i> (K/A and license level mismatches are unacceptable).															
6.	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?															
7.	At a minimum, explain any “U” ratings (e.g., how the Appendix B psychometric attributes are not being met).															

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
28	F	3												S	Is the licensee sure that B distractor is not correct? Seems like it might be partially correct.
29	F	3												S	
30	F	3												S	
31	H	3						X						U	C is correct, that is the purpose of the anti-siphon hole. As exam comment points out, B is also correct.
32	H	3												S	
33	H	3												S	
34	F	3	X											E	Stem needs to change to include that candidate is in EOP-0.0A.
35	F	4												S	
36	F	2									X			U	This question is testing knowledge of what cools what equipment as opposed to operating or monitoring.
37	H	2						X						?	Is this GFES? If so, is that okay? This could be made into a systems question.
38	F	2						X			X			E	The way that distractor B is worded makes it correct. It states that the trip occurs, then states that the valves immediately open. This could be interpreted to be correct. Reword recommended. In addition, candidate can narrow down answer choices to two just by knowing whether Rx will trip on turbine trip, which is not part of the KA at all. Recommend changing distractors.
39	H	3	X									X		U	Distractor C is definitely SRO level. A can be argued SRO level also. EOP bases talks about emergency boration if all rods cannot be verified in. If this is true, then you could argue that A is not correct, because you would not continue in procedure until foldout page boration is underway.
40	H	?	X	X							X			U	It would be good to say which PZR instrument reads 100%. Stem asks which action will "control" RCS temperature, so both C and D are correct. Either that, or C can automatically be thrown out by candidate, because it is not "controlling". In addition, KA asks for turbine bypass control to maintain header pressure, not ARVs. Also, temperature given is superheated steam. Saturated temp for that condition is 561F.

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SR Only			
41	H	2											X		U	Question does not match KA. If question matches KA then sat.
42	H	2													?	Typo in stem. I believe it is "EOP-0.0A". Also, operator could also trip pump due to foldout page, but we don't have the reference for that. What is bases for trip on subcooling? If A is not correct from reference, then question is okay.
43	H	3					X						X		U	Question does not match KA. This KA is intended to test interrelations between loss of reactor coolant flow and RCP indicators and controls. In other words - some RCP malfunction that causes loss of RC flow. In addition, a candidate could argue that choice B is correct, because the RATE happened between 0500 and 0530, therefore, the earliest time was 0500. Suggest careful reword, or toss due to KA.
44	H	2													S	
45	H	3													?	Why is thermal environment curve on attachment 19 not a correct answer?
46	H	3	X				X								E - U?	It seems to me like there are quite a few RCP - CCW interaction questions. This would definitely be better served to ask a different question. Distractor A would be less challenging if "must" was changed to "is required to". How fast does the 4709 valve stroke? The setpoint would have only been reached 30 seconds prior to this snapshot. This question would be better if this temperature was higher so that there was no doubt that the valve was now closed. Technically, would RETURN temperature continue to climb after CCW is isolated? If flow was shut off, wouldn't flow past temperature element cease?
47	H	4											S		U	The KA intends knowledge of what the system's function is, not how it functions.
48	H	3													S	
49	F	4													E	The reference says nothing about the purpose of the depressurization is to initiate SI accumulator injection. In fact, it just warns not to go to 150 so as to not introduce nitrogen.

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50	H	3	X				X									Stem would be better if it gave actual PZR level and trend. Then it would not be copied straight out of foldout page. Technically, D distractor is correct. Need to reword stem to say which of the following actions is required at this time in the event, or something similar.
51	H	4												S		
52												X		U		Question doesn't relate to a loss of DC power.
53	H	3												S		
54	H	4												S		
55													X	U		The KA that is written on the question sheet doesn't match to the KA listed. The question as written is an SRO question.
56													X	U		This question is written as an SRO question.
57	F	1	X									X		U		The fact that the answer is "emergency borate valve" is a huge cue, and the question is too easy. Just my opinion. I don't believe the question matches the KA either.
58	H	3						X						E		This question would be more discriminating if there was no mention of letdown in the answers.
59	H	3												S		
60	H	2		X										E		Since the cue says latest, it is a cue that immediately is not going to be the answer.
61	H	3	X				X							U		Distractors A and B don't match the rest of the question. You already said that control was at HSP, why ask a question about CR control? Procedure refers to it as RSP, not HSP. I don't understand technically between high PZR pressure and heaters energized. Sure C isn't partially correct? Recommend question rework.
62	F	3	X				X							E-U		Does this match KA? The second sentence in the stem doesn't really read well. I don't understand it. Why is B a plausible distractor? Why would the candidate believe RWST inventory might be lost? Why isn't A correct? Already exceeded 100F/hr. Procedure caution talks about PTS too.

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
63	F	4					X								E	Distractor B, an operator can isolate one dump valve by isolating them all. Can this answer be correct also? Distractor is not plausible the other way since a single valve can't be shut from CR. Also, procedure says isolate a steam dump valve, which is done with the MSIVs. In which case, you can isolate a single dump valve from the CR. Distractor B is correct. Is single SDV capacity larger than ARV? If not, you can still argue that SDV isolation is more effective because it can be accomplished faster than ARV. Possible reword of stem?
64	F	3													S	
65	H	3													S	Superb question. However, please confirm that safety function trees is RO knowledge.
66	H	3				X	X						X		U	The distractors are SRO knowledge, however the correct answer is RO knowledge. I believe this is an SRO question though. Also, B is either implausible because OJT wasn't mentioned, or correct, because the PEO hasn't completed OJT.
67	F	2	X												E	Delete that unit is in mode 3, extra info. Also, what does the Pressure Temperature Limits Report (PTLR) say? I found that there are limits for criticality, which could happen in mode 3, so that would be an alternate answer. May want to add it is mode 3 with reactor subcritical.
68	H	4-5													S	This is a very difficult question, maybe too much with the math?
69	F	3				X									E	Distractor B is not credible. A dropped rod will lower power locally, and only slightly raise power over the core.
70	F	2													S	
71	F	3													S	
72	H	3									X		X		E	SRO knowledge unless you are asking entry conditions. Change wording. Question gives accident and asks for symptoms, this is backwards. I think question would be more RO level if you give conditions, and then ask cause and procedure to be entered just based on entry conditions.
73	H	3					X						X		?	SRO knowledge? I believe D is correct, and B is not.

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74	F	2	X				X								E	D is also correct, because it is RPS and ESF. Recommend reword stem.
75 76	F H	2 3												X	SE	The stem needs to indicate that RCS temperature of 1205 is from CET. All of the answer choices include running the RCPs. Some distractors need to have a choice of not running the RCPs to test the knowledge of what to do in the procedure. Also, second part of Q can be answered with RO knowledge, if you delete the part about whether the RCPs were running or not, this would get rid of that.
77	H													X	U	This question can be answered by diagnosing the problem only because of the answer choices. RO knowledge.

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78	F	2					X		X						U	Last bullet says "operational status". Why not just say engineering report recommends valve inop and the SM agrees? Two correct answers. If valve is fixed in 4 hours, then TS is satisfied. Also, 6-hr TS statement should not be memorized. Provide TS.
79	H	1													?	Too easy?
80	F					X	X		X						?	B is worded as a correct answer. D and A are essentially the same answer. I don't understand the inverter relationship to the SR. Why is TS not provided?
81	H	3					X					X			U	I don't believe these are immediate actions. Throw out KA, or rework to immediate action. These are foldout page actions? First step after feed and bleed is to SI and step 22 is return to 0.0A. Is D correct?
82	H	3	X								X				E	candidate is asked to know symptoms instead of being given symptoms, backwards? Stem does not indicate whether it is reference or control leg leak. Again, this is a backwards question.
83	F	2				X			X						U	Reference should be provided. "None of the above" is not an acceptable distractor. This might be a little more difficult if the primary to secondary leakage is reduced to closer to the limit 150 gpd. Now it is approx. 500 gpd Why is answer A a credible distractor? Is PRT leakage enough to question PORV operability?
84	H	3													S	
85	F											X			U	The candidate can answer this question without knowledge that the KA asks for. Perhaps a radiation hazard question which requires evacuation would be better?
86	H	3				X							X		U	All of the procedure choices are the same. Candidate is not selecting procedure. In addition, saying that #1 seal is "degrading" when flow is off-scale high is not credible. When to trip the Rx is RO knowledge.

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87	H	4							X						E	Does it need to be said that break was outside containment? Is the specific step of realigning charging supposed to be memorized? Wouldn't it be better to test on reasoning for transition to 1.2A, or what will be done in 1.2A to recover? Good question.
88	H	4													S	No e-plan Q so far.
89	H	3	X									X			E	Does this match KA? Stem contains way too much info; it could be condensed. Something more like an RO report to SRO? It seems a little misleading to say a steam line break occurred. The knowledge needed to answer this question is not knowledge of when to notify personnel. This may be acceptable anyway.
90	H	2													S	
91	H	3											X		U	This is an RO level question. DB is RO, and there is no procedure selection.
92	F	3										X			S	This KA is asking for more generic - "who is responsible for what"?
93	H	2										X			U	This question does not deal with predicting the impacts on the SDS system, just the Rx.
94	F											X	X		U	Definition of terms is RO knowledge. Also, KA says to apply limits and precautions.
95	H	1					X								E	All distractors are not credible. How about some choices that are close to what the TS requires? I don't understand this from technical standpoint. How would this scenario happen? Too easy because of incredible distractors.
96	F	2											X		E	The setpoint of the alarm is RO knowledge.
97	F	3													?	Could the question be challenged because reference doesn't explicitly require quarterly walkdowns?
98	H	3										X	X		U	The first part of the answer is systems knowledge, which doesn't match the KA and is RO knowledge. This should probably be an admin question. I don't believe the technical reasoning behind the question is correct. Some of the explanation says release will terminate, some says continue. In addition, the effluents procedure, 6.2.12, doesn't say permit must be terminated if release is not terminated.

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99	H	3		X		X							X	U	Distractors C and D have too much information. Cut out second sentences in both answers. Answer A is not credible because the stem already told you that one bus was not available, and they are not in ECA-0.0A. the difference between A and B is RO knowledge - design bases. Perhaps give a scenario that lasts plant parameters that yield an orange, red, and then loss of power. Ask which procedure to go to and why, and list several FRPs and ERGs.	
100	H	3	X				X							E	Distractor A is partially correct according to reference. Reference says process will be slow. What is the reason that it is slow? Could A be challenged? The bullets could be deleted from the stem and question would be more focused.	

Generic Comments:

RO:

SRO:

No E-plan questions. Not many admin questions.

KA G2.1.14 was used 3 times, this seems like too many.

Too many of the questions can be whittled down to two choices with RO knowledge.