Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
1	F	2												N	~~E~~ S	NRC: • Questions should be written “at the highest level of knowledge reflected in the testing objective … try to write the question to reflect the higher level” (ES-4.2, C.4). ○ Revise the question to ask “what is the operational impact on thermal limits” (or something to that effect) … Then construct the distractors using the other thermal limits (APLHGR and LHGR) … such as: “MCPR is reduced to 1.08; MCPR is increased to 1.10; APLHGR is reduced/increased to ???; LHGR is reduced/increased to ??? … ensuring there are 2 “reduced” and 2 “increased” items. ○ Doing the above (or something similar) will then require the question pedigree to be changed to reflect the “higher” cognitive level. Response: We are allowed to have 37 Memory level questions. We agree that this question could be changed, similarly, to as recommended, to make it a higher order, high cog question, however we request to keep this question as-is until such time that the exam needs to be rebalanced. As of 1/3/2023, we have 35 memory level questions.
2	H	4												N	S	NRC: • In the question pedigree, “Distractor 1” (answer option ‘D’) and “Distractor 3” (answer option ‘A’) are swapped. Response: Fixed
3	F	4												M	~~E~~ S	NRC: • Explain how the bank question was significantly modified or include a copy of the original bank question (ES-4.2, B.6.c). Response: This is met via the explanation found under comments in “Answer Explanation:” section. For this question: Question significantly modified by changing the stem so that one of the distractors is now the correct answer. Question stem previously read: “What action (if any) is required to restore control power to 4KV Bus 23-1 from a safety related power supply?”
4	F	3												N	S	
5	H	3												N	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
6	F	2												N	~~E~~ S	NRC: • Please explain how parameter monitoring at the EOF is plausible. ○ It may be better to replace the EOF vs. TSC distractors with plausible distractors related to the transfer of operational control of equipment (FWRVs, DFCS, MSRVs, Recirc Pumps, MSIVs, RFPs, etc.). Response: Changed to control of equipment. Question modified.
7	F	2												N	S	
8	H	4												N	S	NRC: • Distractor 2 (answer option 'D') and distractor 3 (answer option 'C') are swapped. Response: Fixed.
9	H	3												B	~~E~~ S	NRC: • Why would the NSO close MO 2-1001-29A (INBD LPCI INJ VLV)? ○ If this isn't an action required by procedure, then consider revising the stem to indicate that it was done in error (whatever is realistic operationally). Response: The RHR Discharge valve (MO 1-1001-29A/B) is closed on a pump trip and/or pump shutdown to maintain the system fill, thereby preventing water hammer on a restart. This is in QCOP 1000-05 step F.6.a, for removing a SDC loop from operation. No change.
10	H	3												N	~~E~~ S	NRC: • Add statement about time after Mode 4 was achieved (a reasonable amount of time between Mode 4 and the middle of a full core offload). • Eliminate part 1 of the question (continuing with fuel movement is not plausible). • Revise distractor 'D' to be something like "The time after shutdown has been long enough to eliminate the possibility of releasing any detectable airborne activity". Response: Changed to recommendations.
11	H	2												N	S	
12	F	3												B	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
13	F	2												B	~~E~~ S	NRC: • Redact the values indicated on the HCTL curve (not required to answer this “bases”/”purpose” question). (ES-4.2, B.6.d) • Revise question pedigree to indicate that the question is a fundamental/memory level question (the applicant is only required to know the purpose/basis of the HCTL curve). (ES-4.2, C.4.a; App. B, A.1) • Revise question pedigree to reflect the existence of the embedded reference (HCTL curve … embedded references are still considered references given during the “closed-reference” examination). (ES-4.2, B.6.d) • Revise the second statement in the stem to read: “The HCTL curve is …” (ES-4.2, D.15.i) • Add “used to determine” at the beginning of Option ‘D’. (ES-4.2, D.15.i) Response: No information on the curve provides answers to any other question on the exam or aid in elimination of distractors (2.3-4) therefore, it does not need to be redacted. This curve is on a given (and credited via question 80 and 81) reference already (QGA 200) and it is not redacted there either. Bullets 2-5 fixed.
14	H	2				~~X~~								N	~~U~~ S	NRC: • Distractors ‘A’, ‘B’, and ‘D’ are all not credible because the reference given states plainly why they should not be used. (ES-4.2, B.6.d.3rd bullet) Response: We accept this unsat question. This question is being replaced.
15	H	2												N	S	
16	H	3												N	~~E~~ S	NRC: • Add the equivalent minutes/seconds to the end of distractors ‘B’, ‘C’, and ‘D’ respectively – 1 minute, 2 minutes, 50 seconds, and 9 minutes, 30 seconds. Response: Fixed.
17	F	3												B	S	
18	H	4												N	S	
19	H	3												B	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
20	H	3												B	S	NRC: • Revise question pedigree to reflect the existence of the embedded reference (pictures of the Field Volts and Stator Output Current meter faces). (ES-4.2, B.6.d) Response: We accept the NRC interpretation that this is a reference. This will be reflected.
21	F	~~4~~ 2				~~X~~								N	~~U~~ S	NRC: • The "correct option that differs from the distractors in favorableness, style, or terminology" … Answer option 'C' (the correct answer) is the only option that uses the term "flooding" … for a question related to QGA 500-4, RPV FLOODING. (ES-4.2, D.15.i) Therefore, all other distractors are not plausible. Revise question or request a different K/A. Response: Changed word flooding to filling. Fixed.
22	H	2												N	~~E~~ S	NRC: • It is assumed that there is a copy/paste error (jet pumps vs. recirc pumps) in the question stem (otherwise, this would be a K/A mismatch). • Questions should be written "at the highest level of knowledge reflected in the testing objective … try to write the question to reflect the higher level" (ES-4.2, C.4). • Revise the question. Potential solution: ○ Question – Something like "Unit 1 is operating at full power. Which of following operational changes RAISES the likelihood of Recirc Pump impeller cavitation?" ○ Answers – Revise as needed. Response: Bullet 1 is fixed to meet K&A. We are allowed to have 37 Memory level questions. We agree that this question could be changed, similarly, to as recommended, to make it a higher order, high cog question, however we request to keep this question as-is until such time that the exam needs to be rebalanced. As of 1/3/2023, we have 35 memory level questions.
23	H	3												N	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
24	F	2												N	~~E~~ S	NRC: • Identifying an immediate operator action as the correct answer makes this a very low level of difficulty (LOD-1/2 … "…items where 100-percent of the applicants would be expected to get the answer correct, ... by design, would be meaningless, since they would fail to differentiate at any level because the expectation is that nearly everyone would answer the question correctly"). (ES-4.2, C.5) • Questions should be written "at the highest level of knowledge reflected in the testing objective … try to write the question to reflect the higher level" (ES-4.2, C.4). • Revise the question. Potential solution: ○ Question – Revise the given information to indicate a Recirc Flow Control failure (rise – to match the K/A). Include indications that rule out a FW Heater isolation, a spurious SRV opening, and a Turbine Pressure Regulator failure. ○ Answers – (Correct – Recirc Flow Control failure (rise – to match the K/A). (Incorrect – FW Heater isolation.) (Incorrect – spurious SRV opening.) (Incorrect – Turbine Pressure Regulator failure.). Response: Deleted Heater String isolates in stem and "immediate" in question. Answering this question requires interpretation of alarm and power level. The other actions are included in the procedure requiring a judgement of which action to take. With the key phrase of "immediate operator action" and interpretive steps to answer this question, we believe we've restored this question to a high cog question.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
25	H	3												N	~~E~~ S	NRC: • Stem – Revise the reactor water level bullet to be just above the HPCI/RCIC initiation setpoint (-59 inches) and “slowly rising”. • Stem – Add an alarm to indicate an Over-Current trip on a bus that will make RCIC non-functional (without impacting HPCI). • Distractor ‘B’ – To align with Distractor ‘C’ below: ○ Revise part (1) – “Continue HPCI and RCIC operation …”. ○ Revise part (2) – “HPCI and RCIC operation is required to maintain adequate core cooling”. • Distractor ‘C’ (“To minimize moisture buildup and overheating in the Standby Gas Treatment System charcoal beds”) ○ Revise part (1) – “Maximize RCIC injection flow, THEN trip HPCI and close both Steam Isolation valves”. ○ Revise part (2) – “RCIC operation is required to maintain adequate core cooling”. • Distractor ‘D’ (“To minimize moisture buildup and overheating in the Standby Gas Treatment System charcoal beds”) ○ Revise part (1) – “Continue HPCI and RCIC operation …”. Response: RPV water level bullet changed to -50 inches and rising to make distractors 1 and 3 more plausible. Adding information about RCIC is irrelevant because conditions lead to RPV blowdown and ECCS initiation. This change has enhanced the distractors to make them more plausible.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
26	F	3												N	~~E~~ S	NRC: • All questions related to implementation of (decisions or activities while in) the SAMG procedures are NOT APPLICABLE on an Initial License Exam (ILE). Any questions that are not related to the 3 Generic K/As associated with the SAMGs in NUREG-1123, Rev. 3 (BWR KA Catalog) are Licensed Operator Requalification (LOR) level questions. These are the 3 K/As from NUREG-1123, Rev. 3: ○ G2.4.16 Knowledge of emergency and abnormal operating procedures implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, or severe accident management guidelines ○ G2.4.51 Knowledge of emergency operating procedure exit conditions (e.g., emergency condition no longer exists or severe accident guideline entry is required) ○ G2.4.52 Knowledge of the lines of authority during implementation of the emergency plan, emergency plan implementing procedures, emergency operating procedures, or severe accident guidelines • Revise the stem to read as follows (or similar): An accident has occurred on Unit 1 requiring operation of the CAM system to monitor for Hydrogen in the primary containment. At time 0800, the 'CAM/ACAD PWR CONT' Control Switch on the 901-56 panel has been moved from 'AUTO' to 'ON'. Response: New question written. This was previously sent in e-mail. See new question for comments.
27	F	3												N	S	
28	H	3												B	S	
29	H	3												N	S	
30	H	3												N	S	
31	H	3												N	~~E~~ S	NRC: • Delete the last bullet in the stem (re: Alarm 902-3, C-15) because it gives away the answer. • Is there a “2A Core Spray Pump Running” annunciator (or something similar)? If so, please add that as a bullet in the stem (instead of the one mentioned above). Response: Deleted last bullet. No further information is required to assess plant status. No standalone 2A Core Spray alarm exists.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
32	~~F~~ H	2				~~X~~								N	~~U~~ S	NRC: • Distractors 'B', 'C', and 'D' are not plausible – there is no connection/relationship with SBLC. (ES-4.2, D.15.b) • Revise question. Potential solution: Unit 1 is at 30% while starting up after a refueling outage. An error resulted in the 'B' SBLC Pump suction valve being left in the CLOSED position. Subsequently, the plant experienced rapidly degrading condenser vacuum and a hydraulic ATWS. The Standby Liquid Control System A AND B PUMP SELECT switch on the 901-5 panel is placed in the SYS 2&1 position. Which of the following is expected to occur? 'B' SBLC Pump will START and RUN. ['B' Squib Valve designator & nomenclature] will NOT OPEN. 'A' SBLC Pump will START and TRIP. [RWCU valve designator & nomenclature] will CLOSE. • Revise question pedigree to correct the K/A to read "211000 A4.06 Ability to manually operate and/or monitor the STANDBY LIQUID CONTROL SYSTEM in the control room: RWCU system isolation" (this is a recognized typo/oversight for SBLC system A4 K/As in NUREG-1123, Rev. 3). Response: Revised K/A. New question selected to meet this K&A and establish this question as high cog.
33	H	3												N	S	
34	F	2												N	S	
35	H	3				~~X~~								N	~~F~~ S	NRC: • Revise question pedigree to reflect the existence of the embedded reference (Period Meter picture). (ES-4.2, B.6.d) • Distractor 'D' is not plausible ("indicate a positive period because the detectors are being withdrawn from the core"). (ES-4.2, D.15.b) ○ Revise distractor 'D' to "indicate off scale negative" (or something else that is plausible). (ES-4.2, D.15.b) Response: Changed question 35 to reflect this picture as a reference. For Distractor D, a positive period is plausible because its bottom peaked at power operation. This makes it a good distractor if candidate assumes or misinterprets the question setup, because it is still plausible.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
36	F	3												N	~~E~~ S	NRC: • Revise the stem question – "Which of the following conditions would result in all of the above indications?" (The intent is to remove ambiguity and make the stem more declarative – ES-4.2, C.3) • Revise distractor 'B' to "Low 24/48 Bus A voltage" (ES-4.2, D.15.i) Response: Fixed
37	F	2												N	S	
38	F	2												N	~~E~~ S	NRC: • Revise the stem and answer choices as follows (or similar): Which of the following actions will stop an Automatic Depressurization System (ADS) Blowdown once the logic has automatically initiated (BEFORE any SRV has opened)? 1. Raising RPV water level to -45 inches. 2. Lowering Reactor pressure to 400 psig. 3. Placing the ADS INHIBIT switch to INHIBIT. 4. Placing ALL ADS valve control switches to OFF. A. 1 or 2 B. 2 or 3 C. 3 ONLY D. 4 ONLY Response: There is no difference at Quad Cities between ADS initiation and SRVs opening. This question is examining the student's knowledge of the ADS logic scheme and what is required to close the SRVs.
39	H	3												B	S	
40	H	3												N	~~E~~ S	NRC: • Revise answer options 'B' and 'D' to – "… operated as needed because …" (to enhance homogeneity – ES-4.2, D.10) • Reorder the answer options to be from shortest to longest (to ensure clarity – ES-4.2, D.10) Response: Fixed
41	F	2												N	~~E~~ S	NRC: • Revise answer option 'A' to – "…125VDC via UPS …" (to enhance homogeneity – ES-4.2, D.10) • Revise answer option 'D' to – "…Unit 2 Essential Service Bus via UPS …" (to enhance homogeneity – ES-4.2, D.10) Response: Fixed
42	H	3												N	S	
43	H	4												N	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
44	F	2												N	~~E~~ S	NRC: • Revise the stem – Delete "instead of ONLY tagging its control switch" (ES-4.2, C.3) • Revise answer option 'A' to – "To allow local operation of the breaker for testing" • Revise answer option 'B' to – "To activate remote indication of breaker position" • Reorder the answer options to be from shortest to longest (to ensure clarity – ES-4.2, D.10) Response: Providing the options in the question stem make the distractors plausible. The distractors that are requested require the control switch option in the stem.
45	H	3												B	~~E~~ S	NRC: • Move the common wording to the stem (ES-4.2, D.6): Unit 1 is in cold shutdown. Electrical Maintenance has just finished performing an inspection of the ESS UPS Inverter. • Annunciator 901-8 E-9, ESS SERV BUS ON EMERG SPLY, is in alarm and acknowledged (solid). • The ESS UPS is in a normal lineup and ready to accept load. • An EO has closed the ASCO Switch Normal Supply Breaker, supplying the output of the ESS UPS to the ESS ABT. AFTER the EO places the ESS ABT 'TRANSFER CONTROL' switch in the 'RETRANSFER TO NORMAL' position? Annunciator 901-8 E-9, ESS SERV BUS ON EMERG SPLY, _____(1)_____ AND 901-8 E-8, ESS SERV UPS ON DC OR ALT AC, _____(2)_____ A. (1) REMAINS in alarm (solid) (2) is NOT in alarm B. (1) is NO LONGER in alarm (slow flash) (2) is NOT in alarm C. (1) REMAINS in alarm (solid) (2) IS now IN alarm (fast flash) D. (1) is NO LONGER in alarm (slow flash) (2) IS now IN alarm (fast flash) Response: Fixed to suggested revision.
46	H	3												N	S	
47	F	2												N	S	
48	H	3												N	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
49	F	3												N	S	
50	H	3												N	~~E~~ S	NRC: • Revise the stem question to – "What impact, if any, will the loss of RBCCW have on fuel movement in the Spent Fuel Pool?" (ES-4.2, C.3) Response: The question is about the actions required to continue fuel moves, not the impact of a loss of RBCCW. Verbiage about the trip of RBCCW still exists in stem.
51	F	2												N	S	
52	H	3												N	~~E~~ S	NRC: • Revise the stem question to – "Unit 1 is operating at full load in a normal Service Water lineup with the 2A Service Water (SW) pump in operation. Subsequently, 2A SW pump discharge pressure begins to lower at 2 psig per minute." Response: Fixed
53	H	4												N	~~E~~ S	NRC: • Revise the answer options 'A' and 'B' to – "… and restart the 1A CRD pump …" Response: Fixed
54	H	4												N	S	
55	H	4												N	S	
56	F	2												N	S	NRC: • Revise question pedigree to indicate that the question is a fundamental/memory level question (the applicant is only required to recall what cause a rod block). (ES-4.2, C.4.a; App. B, A.1) Response: Revised to indicated it is a memory level question.
57	H	3												N	~~E~~ S	NRC: • Revise question stem to – "A valving error resulted in an improper isolation of Reactor Water Level Instrument LT 2-0263-58B." (ES-4.2, C.3) • Is it possible to have a Main Turbine Trip without a Reactor Feed Pump Trip due to high Reactor Water Level? ○ If not, replace one of these (ES-4.2 D.15.b). Response: Removed extraneous information from the stem. Second bullet is correct. We removed the Reactor feed pump trip, which is redundant and replaced it with a HPCI trip actuation.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
58	H	3												N	~~E~~ S	NRC: • Is it technically accurate/possible to revise question stem to have Torus Pressure BELOW the LOCA signal (2.5#?) and Drywell Pressure ABOVE the LOCA signal (to make Answer Option 'A' more plausible)? Response: Would be difficult conditions to meet without including a containment malfunction. Left Distractor A as-is.
59	H	~~2~~ 3												N	S	NRC: • Is use of the reference (electrical drawing 4E-1411) necessary? Response: E-Prints must be interpreted which requires analysis. Validators rated this a 3.5 average for LOD. This is a high cognitive question based on the analysis. Not a direct look up as both prints have to be analyzed together using several relays and components from both prints.
60	F	3												N	~~E~~ S	NRC: • Use of the reference (DEHC screen with CLOSE VALVES lineup) is not necessary (valve positions are stated in the stem … no additional information is provided from the reference picture). Delete the reference. (ES-4.2, B.6.d) Response: Revised question to remove the redundant information in the stem. We prefer candidates to interpret the reference to extract required information than just take it from the stem.
61	H	3												N	~~E~~ S	NRC: • Revise the stem question to – "Which Reactor Feed Pumps are available?" (ES-4.2, C.3) Response: Fixed
62	~~H~~ F	~~4~~ 3				~~X~~								N	~~U~~ S	NRC: • Use of the reference (P&ID M-39, Diagram of Residual Heat Removal RHR Piping) makes this question fundamental knowledge and LOD-1 because it is a "direct lookup". As such, the question is structured like a JPM. Delete the reference. (ES-4.2, B.6.d) • In addition to the flaw described above, the inclusion of the reference renders distractors 'A', 'B', and 'C' implausible (NO connections to other systems are shown between 'A' loop or 'B' loop LPCI injection valves. The "M-27" (Fire System P&ID number) line clearly connects to the 'A' DW Spray line NOT the 'B'. (ES-4.2, B.6.d) • Consider using other Fire System connections to other Alternate Injection Systems (CRD, Condensate, etc.) and rewrite the question to not require use of a P&ID. Response: Deleted reference and incorporated 3rd bullet using CRD, Condensate and Core Spray as other ALT injection systems options. See revised question for any new comments needed.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
63	F	2												B	S	
64	H	3												N	~~E~~ S	NRC: • Revise Answer Options 'A', 'B', and 'C' – Add "of any rod" before "from". (ES-4.2, D.12 and D.15.d) • Revise Answer Option 'D' – Add "ONLY" between "peripheral rods" and "may". (ES-4.2, D.12 and D.15.d) • Consider using other Fire System connections to other Alternate Injection Systems (CRD, Condensate, etc.) and rewrite the question to not require use of a P&ID. Response: Incorporated bullets 1 and 2. Bullet 3 appears to be copy paste error from Q.62.
65	H	2												B	S	
66	F	2												B	S	
67	F	2												N	S	NRC: • Revise question pedigree to indicate that the question is a fundamental/memory level question (the applicant is only required to recall the definition of Mode 5 from the table). (ES-4.2, C.4.a; App. B, A.1) Response: Fixed
68	H	4												N	S	
69	H	3												N	~~E~~ S	NRC: • There seems to be a copy/paste/revision error. Answer Option 'A' (902-7 A-4, TURBINE TRIP) is not listed in the stem (all other answer options are listed in the stem). Response: Fixed
70	F	3												N	~~E~~ S	NRC: • Tier 4 questions need to "focus on operationally valid knowledge of reactor theory and/or thermodynamics. (ES-4.2 B.2.d) Revise question to make it more "operationally valid to Quad Cities". Idea: Unit 1 is in Mode 4 conducting a heat up. As reactor coolant temperature rises, its moderator characteristics are as follows: The macroscopic absorption cross section is ___(1)___ and the average neutron energy loss per collision is ___(2)___. - (1) large (2) small - (1) large (2) large - (1) small (2) small - (1) small (2) large Response: Fixed

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q-K/A	License Level			
71	F	3												N	~~E~~ S	NRC: • Tier 4 questions need to "focus on operationally valid knowledge of reactor theory and/or thermodynamics. (ES-4.2 B.2.d) Revise question to make it more "operationally valid to Quad Cities". Idea: Unit 2 was steady at 100% power when Control Rod 30-31 drops. Reactor power undergoes a prompt drop that… Response: Fixed. In validation remark was made about how a control rod drop accident is a positive addition of reactivity. The wording was changed to an individual rod scramming for BWR clarification in the terminology.
72	F	3												N	~~E~~ S	NRC: • Tier 4 questions need to "focus on operationally valid knowledge of reactor theory and/or thermodynamics. (ES-4.2 B.2.d) Revise question to make it more "operationally valid to Quad Cities". Idea: A startup to 100% power is in progress on Unit 1. The plant is currently at 45% power and withdrawing rods. The POSITIVE reactivity from pulling rods is dampened by the NEGATIVE reactivity added due to an increased void fraction, which _____. Response: Fixed
73	F	2												N	~~E~~ S	NRC: • Tier 4 questions need to "focus on operationally valid knowledge of reactor theory and/or thermodynamics. (ES-4.2 B.2.d) Revise question to make it more "operationally valid to Quad Cities". Idea: The Unit 2 licensed limit for reactor power is measured by percent _____ power. Response: Fixed
74	F	3												N	~~E~~ S	NRC: • Tier 4 questions need to "focus on operationally valid knowledge of reactor theory and/or thermodynamics. (ES-4.2 B.2.d) Revise question to make it more "operationally valid to Quad Cities". Idea: The fuel installed in Unit 1 and Unit 2 is designed with a radial gap between the UO_2 fuel pellet and Zircalloy cladding to _____. Response: Fixed

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
75	F	3												N	~~E~~ S	NRC: • Tier 4 questions need to "focus on operationally valid knowledge of reactor theory and/or thermodynamics. (ES-4.2 B.2.d) Revise question to make it more "operationally valid to Quad Cities". Idea: Identify an operational condition that requires a rapid cooldown at less than 100 °F/hr THEN ask what the concern is for exceeding the limit. Response: Fixed
76	H	4												N	~~E~~ S	NRC: • The reference (T.S. 3.8.7) should not be redacted … T.S. information "below the line" is NOT required to be memorized (references must provide "an effective and objective way for the applicant to demonstrate knowledge of the topic or concept"). (ES-4.2, B.6.d) • Consider adding a failure of an "important" yet non-T.S. D.C. bus to the stem … this may make Distractor 'C' more plausible (without giving anything away once the reference is given without redaction). (ES-4.2, B.6.d) Response: 1-hour or less action statements are required to be memorized for ROs and SROs. This is per 1021 section ES-4.2 "SRO-only knowledge generally cannot be claimed for questions that can be answered solely based on knowledge of ≤ 1-hour action statements and the safety limits since ROs are typically **required to know these items**." Those and the above the line information is all that is redacted on T.S.'s. We will leave this question as-is.
77	H	2												N	S	
78	H	3												B	S	
79	H	3												N	~~E~~ S	NRC: • For the explanation, why is vacuum not present in the main condenser? • For the explanation for Distractor 'A', why is raising RPV water level to a band of 90 to 100 inches to establish natural circulation the wrong action to take? Response: Stem states Unit is in Mode 4 and SDC is being placed in operation. SDC requires <100 psig RPV press. Mechanical vacuum pump can't be started until after >100 psig. => No vacuum in condenser during SDC operation. It wouldn't be incorrect. It is stating that the distractor, which states "maintain reactor water level at 30 inches" is wrong since the procedure states to raise level for natural circulation if you trip both recirc pumps.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
80	H	3				~~X~~								N	~~U~~ S	NRC: • Distractors 'C' and 'D' are not plausible ('C' is not plausible because the DW temperature "design limit" is a memory fact and is effectively given in Step DWT-3 of the reference (QGA 200). 'D' is not plausible because DW to Torus Vacuum Breakers are designed specifically for operation when "spraying the DW" … to "break vacuum" and relieve pressure from the Torus "air space" back into the DW to protect the LOCA downcomers). (ES-4.2, B.6.d) • What is the reference document that provided the bases for the answer explanation? Response: Operators must discern they are below this limit. We will censor the 280 degrees from step DWT-3 in QGA 200 to fix any issues. Distractor three and its explanation replaced. Fixed to state: Initiating drywell sprays under these conditions… Could cause of failure of the drywell due to negative pressure. Distractor 3: Plausible because the drywell has a negative pressure design limit that is possible to be exceeded. Incorrect because lowering Drywell pressure to 3.5 psig by initiating Drywell sprays would open the torus to drywell Vacuum Breakers in order to equalize pressure. The primary containment would not fail. Reference is the TSG manual. If it was not included in our procedures upload that is an oversight on our part. I have uploaded an additional folder with some references we link in our questions that I know are hard to find. 3.3.8 is about spray initiation (DSIL curve) and states: Drywell spray initiation is normally restricted by the Drywell Spray Initiation Limit to **avoid negative containment pressures and deinertion** resulting from a rapid evaporative cooling pressure drop. If the primary containment atmosphere is already saturated, a large evaporative cooling pressure drop will not occur. 5.5 specifies issues if spraying incorrectly and states: • Possible consequences of drywell spray initiation ○ Deinertion of the primary containment atmosphere resulting from: ○ Air intake through vacuum breakers if primary containment pressure drops below 0 psig. ○ Condensation of steam under steam-inerted conditions.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
81	H	4												N	~~E~~ S	NRC: • The references given (QGA 101 and QGA 200) makes the question feel more like a JPM or an open-reference Licensed Operator Requalification (LOR) question. (ES-4.2, B.6.d) • Revise the confusing language in the first sentence of the stem ("… has a small break Torus ECCS Suction Header break on the Torus …"). (ES-4.2, B.6.d) • Revise distractors 'C' and 'D' to avoid the overlapping answer options ("let reactor water level DROP to -142 inches" and "maintain RPV water level between -35 and -162 inches"). (ES-4.2, D.12) • Revise distractor 'C' to use "RPV water level" instead of "reactor water level" (i.e., make it look like the other 3 answer options). (ES-4.2, D.15.i) • The answer explanation and the question stem contain conflicting statements (stem – "Reactor pressure is 900 psig and stable" … answer – "Reactor pressure and torus temperature are both rising"). Response: Fixed confusing stem. We are not revising choices C and D due to making them less plausible. They are different steps in the EOPs/QGAs changing one or the other or both gives away too much information. These are distinct decisions, and despite having overlapping bands, represent different choices the operators should choose between. Switched C to RPV water level. Changed Stem to 900 psig and SLOWLY RISING vice STEADY.
82	H	2												N	S	
83	H	2												N	~~E~~ S	NRC: • IF the decision between tripping the Recirc pump and starting additional Drywell cooling is based on priority ONLY (both are done just one BEFORE the other), THEN the stem and/or answer options should be revised to remove any ambiguity. (ES-4.2, B.6.d) Response: Changed Stem prompt for clarification. Added additional info to answer explanations regarding order of operations requirements. Changed to "The NSO will FIRST be directed to (1).".

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
84	H	3												N	~~E~~ S	NRC: • Verify the verbiage for annunciator 901-4 C-14 (the verbiage from the question stem and distractor 1 don't match). Response: That is due to the indicator for the alarm tile being slightly different than the name of the alarm itself. This is correct. **DESCRIPTION** HIGH RCIC TURBINE EXHAUST DISCHARGE PRESSURE **SETPOINT** **Actual:** High RCIC Turbine exhaust pressure; 30.67(25.57) psig. (Accounts for head correction associated with PS to ensure Turbine trip within design limit of 25 psia). RCIC TURBINE EXHAUST DISCH HIGH PRESSURE
85	F	2					~~X~~							N	~~U~~ S	NRC: • Distractor 'C' is also correct (the Shift Manager is the Station Emergency Director until the ERO is activated). • Distractor 'A' could also be considered correct because the Unit Supervisor notifying the NRC Resident Inspector could be considered as satisfying the "notifying the NRC" statement in the stem. ○ Revising the final statement in the stem can eliminate this issue (to read something like – "Who has the responsibility for making a 10CFR50.72 notification, if required?"). Response: At Quad Cities the Shift Manager is the Shift Emergency Director, not the Station Emergency Director. This is reflected in EP-AA-112 as shown below. 2. **TERMS AND DEFINITIONS** 2.1. Command and Control: When in Command and Control, the designated Emergency Response Facility (ERF) has overall responsibility for Exelon Nuclear's emergency response efforts: • Shift Emergency Director (Control Room), • Station Emergency Director (TSC), or • Corporate Emergency Director (EOF) Additional comments fixed to recommendation.
86	H	4												N	S	
87	H	3												N	~~E~~ S	NRC: • Fix the confusing language in the first bullet "… with a startup is in progress". • Distractor 'C' explanation is written like an opinion. If there is no written guidance identifying why this course of action is the wrong course, then this distractor must be revised or replaced. Response: Fixed first bullet. Added info for distractor 2: Per QCGP 1-2 APRM calibration at low power (<~10%) should only be performed when operationally necessary (e.g. rod block or downscale). The given conditions do not meet this requirement.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
88	H	3												B	S	
89	F	2												N	~~E~~ S	NRC: • Reduce unnecessary/excessive verbiage in the stem. Consider "Who's permission is required to change SR 3.6.1.3.6, QCOS 0250-04, MSIV CLOSURE TIMING, frequency from every 2 years to every 4 years?" (ES-4.2, C.3) Response: Changed stem per recommendation.
90	F	2												N	~~E~~ S	NRC: • Revise the final bullet in the stem to add a rate at which Torus temperature is rising that makes it unreasonable to continue doing action … that it is impossible for the action to be taken BEFORE Torus temperature gets to 95 °F. (ES-4.2, C.3) • Revise question pedigree to indicate that the question is a fundamental/memory level question (the applicant is only required to recall the major steps of the Stuck Open SRV procedure). (ES-4.2, C.4.a; App. B, A.1) Response: Revised to ~5°/minute. We made this a two-part question to ensure it is high cog.
91	H	2												N	S	
92	H	3												N	~~E~~ S	NRC: • Distractors 'A' and 'D' explanations are written like opinions. If there are no written guidance documents identifying why those courses of action are wrong, then these distractors must be revised or replaced. • Distractor 'B' explanation claims that the "U-1 EDG will exceed maximum loading with both RHR and RHRSW pumps running. Response: Added procedural statements in explanations for clarification. QCOP 6500-28 states loading values. The stem/distractor does not list load shedding prior to starting the pump and the examinee should not assume you will do so.

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
93	H	3												N	~~E~~ S	NRC: • Including a 19-page reference is too much for a "closed-reference examination" (references must be "easy to read" … 19 pages makes this look more like a JPM than a written exam question). ○ Consider revising the question to narrow the focus to shorten/eliminate the reference. Response: The reportability portion of the question maintains it as an SRO only question. Most of the pages are the SAF sections, which are all required to make that determination. The references are easy to read, they just are numerous. This question, although it does have a lot of reference material did not take an excessive amount of time for validators to complete.
94	H	3												N	S	
95	H	4												N	~~E~~ S	NRC: • The question tests 2 separate concepts topics (primarily the implementation of the SAMG procedures and secondarily the selected K/A). This could be considered a K/A mismatch. Limit the question to one concept or topic. (ES-4.2, C.6). ○ In addition, implementation of the SAMG procedures IS NOT a Knowledge or Ability identified in the NUREG-1023, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Rev. 3 (SAMG implementation questions are suitable for LOR exams NOT initial license examination). Response: This question has already been replaced per an earlier remark from the NRC to avoid SAMGs. It was sent to the NRC in a separate document.
96	F	3												B	S	

Q#	1. LOK (F/H)	2. LOD (1–5)	3. Psychometric Flaws					4. Job Content Flaws				5. K/A Use Flaws		6. Source (B/M/N)	7. Status (U/E/S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job Link	Minutia	#/Units	Logic	Q–K/A	License Level			
97	F	4										~~X~~		N	~~U~~ S	NRC: • This is a K/A mismatch. The question tests applicant knowledge of T.S. “action criteria” while the K/A is about T.S. “entry criteria”. (ES-4.2, C.2) • In addition, T.S. information “below the line” is NOT required to be memorized (question concepts must have “a direct, important relationship to the ability to perform the job”). (ES-4.2, C.1) • Consider using T.S. 3.5.2, 3.7.6, 3.7.8, and 3.7.9 and/or give a set of parameters (Rx Mode, Rx Pressure, etc.) and equipment lineups with only one required T.S. entry. Response: We accept this unsat comment and are replacing it with a new question. Please provide comments on new question, as needed. In validation new question called for a reference.
98	F	2												B	S	
99	H	3												N	S	NRC: • Is passing through 0 inches (and, therefore, getting the Group III isolation) a guarantee on any/all reactor scrams from 100% power? Response: Yes.
100	F	3												B	S	

Refer to ES-4.2 for the definitions of terms used in this worksheet for the written examination. Review each question (Q) as submitted and as subsequently revised and document the following in the associated worksheet columns:

1) Enter the level of knowledge (LOK) as either (F)undamental or (H)igher cognitive level.
2) Enter the level of difficulty (LOD) from 1 (easy) to 5 (difficult); mark direct lookup questions (applicant can directly determine the answer from the provided reference) as LOD 1. A question is (U)nsatisfactory if it is LOD 1 or LOD 5.
3) Check the appropriate box if a psychometric flaw is identified:
   - "Stem Focus": The stem lacks enough focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information). This is an (U)nsatisfactory question.
   - "Cues": The stem or one or more answer choices contains cues (e.g., clues, specific determiners, phrasing, length). This is an (U)nsatisfactory question.
   - "T/F": All of the answer choices are a collection of unrelated true/false statements. This is an (U)nsatisfactory question.
   - "Cred. Dist.": The distractors are not credible; single implausible distractors require (E)nhancement, and more than one noncredible distractor in the same question results in an (U)satisfactory question.
   - "Partial": One or more distractors are partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by the stem). This is an (U)nsatisfactory question.
4) Check the appropriate box if a job content flaw is identified:
   - "Job Link": The question is not linked to the job requirements (i.e., the question has a valid knowledge or ability (K/A) but, as written, is not operational in content). This is an (U)nsatisfactory question.
   - "Minutia": 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). This is an (U)nsatisfactory question.
   - "#/Units": The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons). This is an (U)nsatisfactory question.
   - "Logic": The question requires backward or reverse logic or application compared to the job requirements. This is an (U)nsatisfactory question.
5) Check the first box if a K/A mismatch flaw exists. Check the second box if the question is flawed because it is written at the wrong license level. Either condition results in an (U)nsatisfactory question.
6) Enter the question's source: (B)ank, (M)odified, or (N)ew. Verify that (M)odified questions meet the criteria of ES-4.2.
7) Based on the review performed in steps 2–5, mark the question as (U)nsatisfactory, in need of (E)nhancement, or (S)atisfactory.
8) Fully explain the reason for any (U) in column 7 (e.g., how the psychometric attributes are not being met).
9) Save the initial review comments and detail subsequent comment resolution so that each exam-bound question is marked by an (S) on this form.