

Facility: QUAD CITIES NUCLEAR POWER STATION

Exam Date: March 2020

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	U S	<p>Reference Provided – Actual vs. Indicated Fuel Zone Level</p> <p>NRC: The level of difficulty of this question is not sufficiently high. Specifically, this question can be answered by applying the stem information to the provided chart without requiring any specific systems or procedural knowledge on the part of the applicant. Additionally, this question does not address the listed K/A and only relates to it in a superficial manner (e.g. recirc pumps being tripped in the stem).</p> <p>Response: Revised to add an additional bullet in the stem including a second RWL instrument (Medium Range RWL). The candidate will be required determine which indicator is used and if it must be corrected utilizing the provided chart. The candidate must analyze which indication to use with the given information that Recirc pumps are off as not all RPV water level detectors are usable in this condition.</p> <p>NRC: The question is satisfactory with changes made.</p>
2	H	2												B	E S	<p>Quad Cities 2012 NRC Exam</p> <p>NRC: The distractor justifications do not match the order of the provided answer choices for A and C.</p>

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 (easy) to 5 (difficult); questions with a difficulty between 2 and 4 are acceptable.
- Check the appropriate box if a psychometric flaw is identified:
 - “Stem Focus”: The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
 - “Cues”: The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length).
 - “T/F”: The answer choices are a collection of unrelated true/false statements.
 - “Cred. Dist>”: The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
 - “Partial”: One or more distractors 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:
 - “Job Link”: 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).
 - “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).
 - “#/Units”: The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
 - “Backward”: 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 “SR-only.” (K/A and license-level mismatches are unacceptable).
- Enter question source: (B)ank, (M)odified, or (N)ew. Verify 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” status ratings (e.g., how the Appendix B psychometric attributes are not being met).

Facility: QUAD CITIES NUCLEAR POWER STATION

Exam Date: MARCH 2020

13	H	3												B	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
14	F	2												N	E S	<p><u>NRC:</u> Distractor "D" is not plausible. There appears to be no basis for why an applicant would have the misconception that recirculation pumps require actions to protect them during EOP implementation. There are actual EQ components such as containment isolation MOVs inside the drywell which would be plausible. Additionally, the distractor analysis for Distractor "B" appears to contain a typo. Specifically, TS 3.6.1.5 lists a drywell temperature limit of 150F, while the distractor analysis lists a temperature value of 180F.</p> <p><u>Response:</u> Distractor 'D' revised to state Recirc Pump discharge valve motors which are a qualified component the drywell but do not apply to this case.</p> <p>Distractor 'B' revised to state maximum normal operating temperature vice LCO limit.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
15	H	3												B	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
16	H	3												B	S	<p>Reference Provided – RPV Level Criteria from the EOPs</p> <p><u>NRC:</u> None</p>
17	H	2												B	U S	<p><u>NRC:</u> The combination of distractor options presented creates a cue that potentially allows an applicant to logically eliminate Distractors "C" and "D" without applying systems or procedural knowledge. Specifically, the stem does not ask for what <i>minimum</i> action or set of actions is necessary. Therefore, since Answer "A" is comprised of a combination of the actions contained in Distractors "C" and "D", an applicant could reason that selecting "A" would constitute a correct answer even if part of it was incorrect, thus preventing the need to even consider Distractor "C" or "D". This flaw also has the effect of lowering the level of difficulty of this question unacceptably. The stem should be modified to ask "[w]hat MINIMUM action(s) will permit..." (or words to that effect).</p> <p><u>Response:</u> "Minimum" added to stem question.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
18	F	3												B	S	<p>Quad Cities 2011 NRC Exam</p> <p><u>NRC:</u> None</p>

Facility: QUAD CITIES NUCLEAR POWER STATION

Exam Date: MARCH 2020

19	F	2												B	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices for A and C.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
20	F	2												N	E S	<p><u>NRC:</u> The stem of this question should be specific in asking that “[w]hat is the reason for this action per QCOA 6000-02 and QCOA 6000-03” (or words to that effect).</p> <p><u>Response:</u> Question revised to include “What is the reason for this action?” and the applicable procedure names.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
21	F	2												N	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
22	F	2												B	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
23	H	3												B	E S	<p>“Free Look” Question</p> <p>Reference Provided - Steam Flow vs. Feed Flow Indications</p> <p><u>NRC:</u> Explain in greater detail how the various level inputs affect DFLWC. Specifically, a LT has failed upscale which will initially cause DFLWC to see a high RPV level and close FRVs which will result in an actual low RPV level. How do the unaffected level channels override the failed LT and cause the FRVs to come back open? Explain the logic.</p> <p><u>Response:</u> Reference provided clarification added. Answer explanation improved to include detailed effect of failure.</p> <p><u>NRC:</u> There still appears to be a disconnect in the stem between the information provided regarding the failed level transmitter/single element mode and what is ultimately being asked (which trace shows level rising? Are you asking which trace shows how the system would respond in single element if 1 input to DFLWC failed upscale? If so the answer justification should describe why feed flow initially goes below steam flow (presumably that the failed level instrument shows level increasing so the feed reg valve starts to close.) The inflection point then occurs as feed flow increases because other level instruments inputting to DFLWC see level lowering due to the initial FRV response. The full shape of the correct answer should be</p>

Facility: QUAD CITIES NUCLEAR POWER STATION

Exam Date: MARCH 2020

42	F	3												N	E S	<p>“Free Look” Question <u>NRC:</u> Spelling errors in justification for Distractor 3 ('speed' and 'valve'). Correct alignment of Trip Throttle Valve position indication so that all four answer choices look like answer A. <u>Response:</u> Spelling and formatting errors fixed. <u>NRC:</u> The question is satisfactory with changes made.</p>
43	H	2												B	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices. <u>Response:</u> Distractor justifications and answer choices aligned in correct order. <u>NRC:</u> The question is satisfactory with changes made.</p>
44	H	4												N	E S	<p><u>NRC:</u> The distractor justifications do not match the order of the provided answer choices. <u>Response:</u> Distractor justifications and answer choices aligned in correct order. <u>NRC:</u> The question is satisfactory with changes made.</p>
45	H	3												N	E S	<p>“Free Look” Question <u>NRC:</u> Question does not address the KA statement. KA is associated with the air supply for the safety/relief valves. This question is focused on reactor, TBV, and tailpipe temperature response for operation of the S/RVs. Recommend a question concerning the pneumatic supply to the Target Rock S/RV. Additionally, question pedigree does not indicate the source of this question. <u>Response:</u> Question source, New, added to pedigree. K/A match is from operating the keylock switches which actuate the valves. No controls are utilized directly with the air system. <u>NRC:</u> KA was changed to A1.04 as indicated in the ES-401-4. Update to correct KA in question summary. Potential cueing with three answers having RPV = 300 psig. Recommend Distractor A have RPV pressure = 280 psig this would indicate the TBVs remained unchanged (2 VALVES FULL OPEN) with additional steam flow through SRV. <u>Response:</u> KA updated to A1.04. Distractor A updated to 280 psig. <u>NRC:</u> The question is satisfactory with changes made.</p>
46	H	3												N	E S	<p><u>NRC:</u> The question pedigree does not indicate the source of this question (i.e. bank). Additionally, since the stem indicates that RPV level is currently at 26 inches, the first half of Distractor “C” is essentially saying the same thing as the first half of Answer “D”. This question may potentially be constructed in a more effective manner by modifying it into a balanced two-part question format. Finally, the distractor justifications do not match the order of the provided answer choices.</p>

Facility: QUAD CITIES NUCLEAR POWER STATION

Exam Date: MARCH 2020

72	F	2												B	E S	<p>Quad Cities 2012 NRC Exam NRC: Distractors "C" and "D" may potentially be considered as second correct answers due to an applicant being able to make unstated assumptions that are not contradicted by stem. Specifically, the offsite release rates provided in Distractors "C" and "D" both exceed the QGA-400 entry criteria threshold, thereby making these distractors potentially correct answer options. The stem should instead ask the applicant to select the <u>minimum</u> EAL/offsite release rate condition that would require entry into QGA-400. Due to the previous usage of this question on an NRC license examination, this question is being categorized as an "enhancement" rather than being "unsatisfactory."</p> <p><u>Response:</u> "LOWEST" clarification added to the stem.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
73	F	2												B	E S	<p>NRC: The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
74	F	2												N	S	<p>"Free Look" Question NRC: None</p>
75	F	3												B	E S	<p>NRC: The distractor justifications do not match the order of the provided answer choices. Additionally, there is a typo in the distractor analysis for Distractor 3. Specifically, the word "with" is misspelled in the last sentence.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order. Spelling error corrected.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
76	H	3												N	E S	<p>Reference Provided – TS 3.8.4 and 3.8.5 NRC: The correct answer justification is inaccurate. For the operating unit (Unit 1), you should have entered TS 3.8.4, Condition E due to the opposite unit 125 VDC electrical subsystem inoperable. This is also a 7-day LCO, so the answer is correct, but the justification needs to be reworded.</p> <p><u>Response:</u> Question revised to reflect correct Tech Spec conditions.</p> <p><u>NRC:</u> The question is satisfactory with changes made.</p>
77	H	3												N	E S	<p>"Free Look" Question NRC: The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response:</u> Distractor justifications and answer choices aligned in correct order.</p>

Facility: QUAD CITIES NUCLEAR POWER STATION

Exam Date: MARCH 2020

81	H	3											N	E S	<p><u>NRC</u>: There is a typo in the distractor analysis for Distractor 1; specifically, the word "scram" is misspelled in the last sentence.</p> <p><u>Response</u>: Spelling error corrected.</p> <p><u>NRC</u>: The question is satisfactory with changes made.</p>
82	H	3											N	E S	<p>Reference Provided - EAL pages: QC 2-9, 2-11, 2-13</p> <p><u>NRC</u>: The word "following" is misspelled in the stem. The distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response</u>: Spelling error corrected. Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC</u>: The question is satisfactory with changes made.</p>
83	H	2											N	U S	<p>Reference Provided – QGA 200 Redacted</p> <p><u>NRC</u>: The question pedigree indicates that QGA 200 (Primary Containment Control) is to be provided as a reference in its entirety. Since a considerable amount of this procedure's content would be considered to be closed-reference knowledge (i.e. entry criteria, overall mitigative strategies, etc.), it is not acceptable to provide this entire reference as a handout. When taken in conjunction with the current reference, this question becomes largely a "direct-lookup," with only minimal knowledge being required on the part of the applicant to answer it (refer to NUREG-1021 ES-401, section D.2.g). As a result, the level of difficulty of this question is unacceptably low. Additionally, the distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response</u>: Provided reference is redacted with the information that would make the question direct look up or from memory removed. Distractor justifications and answer choices aligned in correct order.</p> <p><u>NRC</u>: The question is satisfactory with changes made.</p>
84	H	2											B	E S	<p>Reference Provided – QGA 400 section embedded in stem Quad Cities 2003 NRC Exam</p> <p><u>NRC</u>: This question does not test at the SRO license level. Specifically, the stem includes an embedded reference that provides the criteria for transitioning to QGA 500-1. The only knowledge required on the part of the applicant is to evaluate which of the answer choices constitutes a primary system that is discharging outside of both the primary and secondary containments, which is systems-level knowledge. NUREG-1021 ES-401, Attachment 2, section E, provides guidance that questions that can be answered solely by knowing systems knowledge (i.e. flowpaths, component locations, etc.) are RO-level questions. Due to the previous usage of this question on an NRC license examination, this question is being categorized as an "enhancement" rather than being "unsatisfactory." Additionally, the distractor justifications do not match the order of the provided answer choices.</p> <p><u>Response</u>: Discussed with NRC, question marked as sat. Distractor justifications and answer choices aligned in correct order.</p>

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Exam Date: March 2020

RO TOTALS:	B= 50 M= 0 N= 25 (15 with H Cog)	F= 33 H= 42	E= 58 U= 6	Additional Notes: 8% of RO Questions assessed as unsatisfactory.
SRO TOTALS:	B= 10 M= 0 N= 15 (14 with H Cog)	F= 3 H= 22	E= 16 U= 5	Additional Notes: 20% of SRO Questions assessed as unsatisfactory.
<u>GENERAL COMMENTS:</u>				
<p>1. There are 5 (RO) / 11 (SRO) questions with references/attachments provided. The number of questions on the RO/SRO section containing provided reference materials exceeds the FAQ 401.53 guideline of ~5% (4 questions) on the RO exam and ~ 20% (5-6 questions) on the SRO exam. Chief Examiner assessed the number of RO/SRO questions with attached references as not adversely affecting the LOD of the exam or cueing other questions.</p> <p>2. Questions from the previous 2 NRC Exams: 1 (RO) / 0 (SRO)</p> <p>3. Average difficulty is 2.45 on the RO exam and 2.36 on the SRO exam.</p> <p>4. As a general comment, question pedigree information does not list the facility learning objectives that are associated with each question. NUREG-1021 ES-401, section D.2.g states "[i]f the facility licensee has a learning objective applicable to the question, it should also be referenced."</p>				