Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
1	H	3	X			X								N	~~E~~ S	NRC: Distractor D does not appear to be plausible given the conditions specified in the stem. There is nothing in the stem that would lead the assumption that a high RPV water level 8 condition had occurred and that a HI SEAL IN RESET would be required. Stem Focus: • It is questionable as to whether HPCS Pump Discharge Pressure would be stable at 1400 psig while operating on minimum flow (~625 gpm)? HPCS lesson plan states that sustained operation on minimum flow can cause hydraulic instability. Suggest enhancing the stem by specifying a time condition for the set of parameters that have been identified. • Is it reasonable to assume that RPV Pressure would be rising with a LOCA and Reactor Water Level lowering at 5 inches/minute? Also, amplifying information needs to be added to the answer explanation regarding the availability of HPCS (a motor driven pump) during a SBO. Response: • With HPCS Discharge to RPV differential pressure at 518 psig and RPV level at -56 inches and lowering, it can be determined that 1E22F004 is

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 (easy) to 5 (difficult); questions with a difficulty between 2 and 4 are acceptable.
3. 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).
4. 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.
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. Verify 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" status ratings (e.g., how the Appendix B psychometric attributes are not being met).

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																closed. 1E22F004 automatically closes on RPV Level 8. The Level 8 lockout is sealed in and will not automatically reset unless RPV level reaches level 2. Distracter D is plausible because HPCS response during a small break LOCA is to start and inject until RPV level reaches level 8 at which time 1E22F004 automatically closes. At this point, the HPCS pump will run on minimum flow until 1E22F004 is reopened (either automatically or manually). • Plant and simulator response for the HPCS pump is to run at stable discharge head (~1400 psig) when operating on minimum flow. The lesson plan discusses hydraulic instability, but discharge pressure fluctuations are not evident in the simulator when operating for short periods of time (60 minutes or less). • Established conditions in the simulator with a small break LOCA in progress where RPV level lowered ~ 5 inches per minute while RPV pressure rose due to decay heat. • According to CPS 4200.01 Loss of AC Power step 1.1, Station Blackout (SB) is defined as a total loss of offsite AC power sources (including main generator), and failure of Div 1 & Div 2 DG power sources. Div 3 AC power source is in excess of the number required to meet the minimum redundancy requirements (i.e., single failure) for safe shutdown and is designated as an alternate AC power source. [HPCS - Case 1; RCIC - Case 2]. Information added to the answer explanation as requested.
2	H	2												N	S	
3	F	2	X											N	~~E~~ S	NRC: Need to specify the nature of the event that resulted in the automatic initiation of low pressure ECCS systems, i.e., initiating event information (I&C error, electrical fault, actual LOCA, etc); AND extent of affected system information (DIV I, DIV II, DIV I& II low pressure ECCS system(s)). Context is needed to enhance the overall plausibility of the event (given the limited information in the stem) that assumedly has resulted in the automatic initiation of all low pressure ECCS systems and nothing else. Does the LOCA 10-minute timer need to be accounted factor in this Question? Timer ensures full flow through the RHR HX for at least 10 minutes following the LOCA initiation signal (F048 valve interlocked open). Will not be able to close the F048 for 10 minutes. Do the stem conditions need to be enhanced to address this item? Response: • Changed the stem to read, "A loss of coolant accident has resulted in automatic initiation of the Div 1 and Div 2 low pressure ECCS systems. • Added the statement that 15 minutes have elapsed since the LOCA initiation occurred.
4	H	3												B	S	

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

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			
5	H	2												B	S	
6	H	2												N	S	
7	F	2												B	S	***NRC 2015 Exam***
8	H	3												N	S	
9	H	3												N	S	
10	F	2												B	S	
11	H	3												B	S	
12	H	3												B	S	NRC: Question is HCL. Question requires the recall and integration of two or more pieces of data. Response: Changed as requested.
13	H	3												N	S	
14	H	3		X										N	~~E~~ S	NRC: Equivalent/synonymous options which rule out both options: Other than the sequence of manipulation, the actions prescribed by Distractors C and D, and the associated outcome, are the same. Note that the need to perform Actions 1 AND 2 is highly plausible and make for a good distractor. However, with both C and D available as options, the applicant only need recognize that the actions and result are the same in order to easily eliminate both distractors. Accordingly, there is an inherent / inadvertent element of cuing in this Question, as presently written. Response: Added new Distractor D (Depress Hi DW press A and B Seal-in reset PBs) as Action 3. Option C becomes 1 AND 3, and Option D becomes 2 AND 3. Revised the plausibility statements for Options C and D.
15	F	2												B	S	
16	F	2												B	S	
17	H	4												B	S	
18	H	4												N	~~E~~ S	NRC: Revise the stem statement to read: "The EARLIEST time that the reactor will be brought to a cold shutdown condition is between _____." Cold shutdown condition is the terminology used in the SLC lesson plan to describe the design of the system, as cited below:

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																"The system is designed to bring the Reactor from rated power to a cold shutdown condition at any time in core life, with the control rods remaining withdrawn in the rated power pattern." Also, use of the phrase "under all conditions" leaves room for interpretation. Response: Changed as requested.
19	H	3												N	S	
20	H	3		X										N	S	NRC: Equivalent/synonymous options which rule out both options: Other than the sequence of manipulation, the actions prescribed by Distractors C and D, and the associated outcome, are the same. Note that the need to perform Actions 1 AND 2 is highly plausible and make for a good distractor. However, with both C and D available as options, the applicant only need recognize that the actions and result are the same in order to easily eliminate both distractors. Accordingly, there is an inherent / inadvertent element of cuing in this Question, as presently written. Response: C and D are not equivalent responses. Clarified the response in Distractor C to explain the difference between C and D.
21	F	2												B	~~E~~ S	NRC: Suggest replacing the word "immediate" with the word "direct" in the stem. Response: Changed as requested.
22	F	2												B	S	
23	H	2		X		X								B	~~E~~ S	NRC: Distractor A does not appear to be plausible. Why would the RPV Level 2 (Signal #1) and High DW Pressure (Signal #2) isolation signals be defeated by Containment HVAC Isolation Valve Radiation Interlock switches? Distractor B, which states: "All signals (1-6)," would appear to be implausible for the same reason. Separately, the applicant only needs to determine that one of the 6 signals is incorrect to eliminate Distractor B. The use of "All" as a distractor provides an inadvertent cue in this respect. Response: • Distractor A is plausible on the basis of student statistical data. Of the 105 students who have experienced this question, 8 students have chosen Distractor A. The facility further contends that a candidate could choose Distractor A by correctly reasoning that Distractor A is a valid Group 10 isolation signal and that the Group 10 isolation signals other than the radiation isolation signals are bypassed by the keylock switches in the stem.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																• The same reasoning applies to the plausibility for Distracter B. • Replaced the word "All" in Distractor B with "1, 2, 3, 4, 5, and 6" and moved this distractor to position D to maintain answer symmetry. Revised the distractor plausibility statements. Distractor D does not provide inadvertent cuing because the total bypass position makes isolation signals 1-6 a plausible alternative.
24	F	2				X								B	S	NRC: Is there indication of RCIC Pump Room Supply Fan operating status in the MCR? If not, Distractor A would be implausible. Response: 1VY04C status is indicated on MCR panel 1H13-P801-5050. Added this information to the plausibility statement for distracter A.
25	F	2												B	S	
26	H	3												N	S	
27	H	3												B	S	NRC: Specific knowledge of Fuel Handling Technical Specifications / SRM Operability requirements is required to correctly answer the Question. Is this information considered to be RO level knowledge? ***Additional information required to make this determination.*** Response: In accordance with the clarification guidance for SRO-only questions, if the question can be answered solely by knowing ≤ 1 hr TS/TRM actions, then the question is an RO question. Since ITS 3.3.1.2 requires immediate suspension of core alterations if the required SRMs are inoperable, the question is RO level knowledge.
28	H	2												B	S	
29	H	2												N	~~E~~ S	NRC: Suggest modifying the Question as follows to enhance the plausibility of Distractors C and D: Revise the stem to indicate that either the F011 or F010 valve failed closed during the surveillance. This failure results in HPCS Operation on Minimum Flow. The applicant needs to deduce that the HPCS flowpath has changed (this information is not to be provided in the stem). Insert the F011 / F010 failure information immediately above the line item pertaining to the 200 gpm leak. Note: This will change the answer from Option B to Option D. Basis: HPCS lesson plan states: "When suction is taken from either the RCIC Storage Tank or Suppression Pool, the minimum flowpath from the HPCS Pump discharge is routed to the Suppression Pool via the HPCS Pump Minimum Flow Valve, F012." Response: Changed as requested.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
30	H	2												B	S	NRC: Question is HCL. Question requires the applicant to assess indications, predict the impact, and determine the correct mitigative action. ***NRC 2015 Exam*** Response: Changed cog level ranking and justification statements as requested.
31	H	3												B	S	
32	H	3												N	~~E~~ S	NRC: Stem condition states: "Mode 1 has just been entered." Need to specify a power level (e.g., 28%) slightly below the power at which RR Pumps are procedurally shifted from slow to fast speed (~30%), rather than the 8-9% range where the Mode Switch is typically placed in RUN. This accomplishes two things: (1) makes the correct answer less obvious, and (2) precludes the possibility of an applicant being able to easily eliminate Distractors C and D on the basis of the following information provided in the stem of Question 36: • Reactor Power is 22% • RR Pumps are running in slow speed Response: Changed reactor power to 22% in the stem and removed RR Pump status from Q36.
33	H	3												N	S	NRC: Is there any significance associated with the stem condition that states: "A Group 3 control rod is currently at position 46 for cooling."? Response: Yes - It does two things: (1) explains why the Group 1-4 Full Out light is lit on the Rod Pattern Controller (RPC) Mode indications (normally extinguished with power above the LPSP), and (2) enhances the plausibility for Distractor A if the candidate misdiagnoses the lights and determines that the RPC is still enforcing pattern constraints.
34	F	3												N	S	
35	F	2												B	S	
36	H	3												N	S	Note: Stem conditions revised to remove the item *"RR Pumps are running in slow speed,"* to address the NRC's comment pertaining to Question 32 (as stated in the Licensee's response to Question 32 above).
37	F	2												B	S	
38	F	2												N	S	
39	H	3						X						N	S	NRC: Question, as written, does not appear to be linked to any job requirements. Is Emergency Depressurization actually performed from the Remote Shutdown Panel (RSP) at Clinton, and has this been proceduralized? Note that the following information, which has been obtained from the Clinton Remote Shutdown System (RSS) lesson plan, does not appear to support this activity:

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																Purpose The Remote Shutdown System (RSS) is designed to provide remote control for reactor systems needed for prompt hot shutdown from outside and independently of the Main Control Room (MCR). In addition, the RS System can bring the reactor to a subsequent cold shutdown in a safe and orderly fashion. **Design Bases** • The RSS provides the capability outside of the MCR for a prompt hot shutdown of the reactor and provides sufficient instrumentation and controls to maintain it in a safe condition. In addition, the RSS provides the capability for achieving and maintaining a subsequent cold shutdown of the reactor. • The RSS, by itself, does not perform any safety related function. It does, however, interface with several safety related systems and meets the design criteria for these systems. **Assumptions** • No design basis accident (except LOOP) is assumed so that complete control of the Engineered Safety Feature (ESF) System is not required. Response: While the conditions stated in the stem are outside of design, EOPs and Off-Normal procedures are both considered Emergency Response Procedures and are performed based on the hierarchy relationships described in CPS 1005.09, "EOP and SAG Program," section 8.12.1. A controlled set of EOP flowcharts are staged at the Remote Shutdown Panel. Suppression Pool Level is also indicated at the RSP. It is expected that operators will enter and execute the EOPs if required when operating RSP controls. If a blowdown were required at the RSP, SRVs and RCIC would be operated IAW CPS 4003.01C001, "RSP – Pressure Control." In addition, EOP-3, "Emergency RPV Depressurization," lists SRVs from the RSP as an alternate depressurization system.
40	H	3	X											N	~~E~~ S	NRC: Stem Focus Issue: In addition to the information presently provided in the stem, the stem should also state that EOP-3 entry was required and that crew has returned to ATWS Level Control in EOP-1A. For Part 2 of Distractors A and C, suggest using LPCS instead of HPCS for re-initiating injection to make the correct answer less obvious. All applicants should know that HPCS is not preferred during an ATWS because it injects inside the shroud; Terminate and Prevent (T&P) of HPCS is the very first action taken in the Level Leg of EOP-1A. Further, LPCS is listed as an Alternate Injection Source in Table 'H' of EOP-1A. Response: Changed as requested.
41	H	4	X											N	~~E~~ S	NRC: Stem Focus issue: Part 1 of the Question should Specify "Primary Containment" ventilation, rather than just "Containment" ventilation," given that Group 19 has both "Primary" and "Secondary" Containment Isolation setpoints.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																Separately, knowledge of the following is necessary to correctly answer this Question. Is recall of this information considered to be RO level knowledge? • Containment Rad Level setpoint of 100 MR/hr for isolating the Continuous Containment Purge (CCP) Supply and Exhaust Fan flowpath (contained in the CPS Automatic Isolation Checklist), and • EOP Tech Basis information that states Wide Range indicated level is the most sensitive to containment temperature. ***Additional information required to make this determination.*** Response: • Clarified the question stem and answer explanation statements by specifying "primary" containment." • Knowledge of auto isolation setpoints and system response is RO level knowledge. • RO's are responsible for the information contained in the EOP Tech Bases. Knowledge of ITS bases required to make an ITS call is SRO only knowledge, but the RO's are responsible for the EOP Tech Bases information.
42	F	2												B	S	
43	F	2												N	S	NRC: Is recall of TS Bases information (ITS B3.3.7.1) considered to be RO level knowledge? ***Additional information required to make this determination.*** Response: According to the SRO clarification guidance, SRO exam items for 55.43(b)(2) are knowledge of TS bases that are required to analyze TS required actions and terminology. Since the question is asking for bases information pertaining to the design/purpose of the MCR Ventilation System Instrumentation, and not for information in the bases required to analyze TS required actions and terminology, the facility considers the question to be RO level knowledge.
44	H	3												N	~~E~~ S	NRC: Specify the Abnormal Procedure in the stem, i.e., "Which action is required in accordance with CPS 5040.01?" Response: Abnormal procedure added as requested.
45	F	2												N	S	
46	F	~~4~~ 3												N	~~U~~ S	NRC: LOD=1. Low Discriminatory Value. Question only requires knowledge of EOP entry conditions. All applicants should be highly knowledgeable of EOP entry condition parameters and associated values. Response: Question replaced. Randomly re-selected 295024 K2.19, "Feedwater and condensate," with Chief Examiner concurrence. New Question SAT.
"47	F	2												B	S	

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
48	H	3												N	S	
49	F	3												N	S	
50	H	3												N	S	
51	H	3												B	S	NRC: Explanations for the distractors are confusing. Explanations appear to be predicated upon a loss of 4160 Bus 1B, which is not reflected in the stem. In addition, Distractor A is incorrectly labeled as Distractor B on the pedigree sheet. Note that Option "B" is the correct answer according to the pedigree sheet. Response: Revised the distractor explanations.
52	F	2												N	S	
53	F	2												N	S	NRC: The stem specifies pressure transmitters B21-N401A, B, E, F, whereas the RPS/ARI lesson plan lists B21-N701A, B, E, F on Page 17 of 133. Which is correct? Response: B21-N401A, B, E, F are the transmitters providing input to Master Trip Units B21-N701A, B, E, F (refer to 9434.02A/E/B/F).
54	H	2												N	S	
55	H	3												B	S	
56	F	2		X										N	~~U~~ S	NRC: Answers, as written, provide Inherent / Inadvertent Cuing: Applicant need only determine that stem condition 2 is incorrect to eliminate the 3 distractors and easily identify the correct answer. Response: Revised the question to provide four stand-alone answer choices. Question SAT.
57	H	4							X					N	S	NRC: Minutia: Is the applicant required to know load list information from memory? Is this considered to be closed-reference RO level knowledge? Response: Question is not minutia. The knowledge of how a loss of a safety related DC bus impacts the plant is operationally valid at CPS.
58	H	4												N	S	NRC: Question: Will loss of the 6.9 KV Bus 1B result in the loss of 4.16 KV Bus 1B1 and/or 480 Volt Unit Substations 1B and B1? Response: No. 6.9 KV Bus 1B is a non-safety bus and 4.16 KV Bus 1B1 and 480 Volt Unit Substations 1B and B1 are safety related buses.
59	H	4												B	S	
60	H	3												N	S	NRC: Question is HCL. Question requires the applicant to recall the setpoint values of multiple functions, and to then compare these values with the associated data points in the stem, to determine whether automatic actions have occurred (i.e., recall and integration of two or more pieces of data).

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																Are RO applicants expected to know the setpoints of Radiation Monitoring Instrumentation listed in the stem from memory? Response: • Agree with the comment; changed cog level ranking in the pedigree table as requested. • Knowledge of Radiation Monitoring Instrumentation setpoints and system response is RO level knowledge.
61	F	3												N	S	NRC: Is knowledge of DW-to-Primary Containment differential pressure TS information (i.e., TS 3.6.5.4) considered to be RO level knowledge? ***Additional information required to make this determination.*** Response: Information above the double lines of ITS (such as LCO and applicability statements) is considered to be RO level knowledge.
62	H	3												N	S	
63	H	3												N	S	NRC: Any significance to the *"30 seconds after the pump trip"* information provided in the Question statement? Response: The time stamp was added to account for the time it takes for the FCV to respond to the loss of system flow.
64	F	~~1~~ 2												N	~~U~~ S	NRC: LOD=1. Low Discriminatory Value. Question only requires knowledge of EOP entry conditions. All applicants should be highly knowledgeable of EOP entry condition parameters and associated values. Response: Question revised to raise LOD from 1 to 2; Question SAT.
65	F	2												N	S	
66	F	2												B	S	***NRC 2014 Exam***
67	F	3												N	S	NRC: Explanation for Distractor D incorrectly states that the Mode Switch must be in MODE 5 for core alterations to be performed. Explanation should state that the Mode Switch must be in REFUEL for core alterations to be performed. Response: Changed "Mode 5" to "REFUEL".
68	F	2												N	S	NRC: Question is a Fundamental/memory test item, requiring only recall of discrete bits of procedural information. Note that the explanation associated with the "Additional Information" field under the "Other NRC Data" section, Page 227 of 248, does not describe the Question as written (appears to be a cut-n-paste error from Question No. 69). Response: Facility agrees. Changed the cog level ranking. Revised the "Additional Information" field to specify the correct information.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
69	H	2												N	S	
70	H	3												M	S	NRC: The last paragraph of the explanation for Correct Answer B (Page 232 of 248), states: "In the stem graph, the monitor counts increased to ~ 1100 cpm, (allowing for a small overshoot before counts trend down as the source is withdrawn) …" This statement appears to be in error given that the stem graph increased to a value of ~ 765 cpm, not 1100 cpm. Response: Value in the explanation changed to 780 cpm.
71	F	3												B	S	
72	H	2		X										M	~~U~~ S	NRC: Answers, as written, provide Inadvertent Cuing, as described below: Stem Action Item 1 appears in all of the answer options. Accordingly, the applicant is able to immediately deduce, without any knowledge of what the Question is asking, that Action Item 1 has to be correct, otherwise, none of the answers would be correct. With this information, the applicant: • Need only determine that Stem Action Item 2 is correct to easily eliminate Distractor A. • Need only determine that Stem Action Item 3 is correct to easily eliminate Distractors A and B. • Need only determine that Stem Action Item 4 is correct to easily eliminate Distractors A, B, and C. Response: Revised the stem conditions and answer choices to eliminate all cuing issues. Question SAT.
73	F	2												B	S	NRC: Explanation for the plausibility of Distractor B is confusing. Based on the explanation provided, unclear as to why Answer B would not also be a correct choice (in addition to correct Answer C). Clarification required. Response: Revised the explanation for Answer B to clarify that resetting the scram will not reduce the vessel cooldown rate following a HPCS initiation.
74	F	2				X								N	~~E~~ S	NRC: Distractor D does not appear to be plausible. Why would an Emergency Blowdown require the MCR to sound the Fuel Building Evacuation Alarm? Explanation on the pedigree sheet does not sufficiently address the plausibility of this distractor. Response: Revised the question to eliminate FB Evacuation Alarm as a choice.
75	H	2												B	S	
76	H	2		X									X	~~B~~	~~U~~	NRC: Question can be answered with RO level knowledge (i.e., integrated plant and system knowledge that is not unique to an SRO). Question lists four annunciators

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
														N	S	that are received simultaneously (3 that are similar and a 4th that is different and is the correct answer) and asks which would be prioritized the highest. This is also a cuing issue because correct Answer A differs from all of the distractors in favorableness and terminology and is a "Best" choice given the distractors. Suggest an approach requiring the applicant to select from options providing (a) the status of certain safety related IA System loads (i.e., from NUREG-1123, Page 4.2-33, APE 295019, AK2.1 - AK2.19) based on assessment of plant conditions resulting from the Partial or Total Loss of IA, and (b) selection of the appropriate procedure to mitigate/recover. In addition, the pedigree sheet states that the applicant has to analyze the conditions in the stem and then determine which action is prioritized as the highest. The stem provides no insight into the Question, i.e., states that all systems functioned as designed following the scram. Response: Question replaced. Randomly re-selected 295030 A2.01, "Suppression Pool Level," with Chief Examiner concurrence. New Question SAT.
77	H	2				X								B	~~E~~ S	NRC: Distractor A is not plausible. There is nothing in the bulleted stem information or in the description of Emergency Action Level HU1 that would lead an applicant to conclude that a "Confirmed SECURITY CONDITION or threat" had occurred or is in progress. Response: Stem revised to include a condition pertaining to security.
78	H	3												N	S	
79	H	4												B	S	***NRC 2014 Exam***
80	H	2					X							N	~~U~~ S	NRC: Part 2 of Distractors B & D are psychometrically flawed in that use of the "and/or" qualifier makes them partially correct. An applicant could potentially argue that the "or" alternative, which does allow for the use of feedwater as the only injection be source, makes the distractor correct. Feedwater (the correct choice) should not be specified as an injection system in all four of the answers. In addition, the option to use HPCS as an injection source during an ATWS (based on the stem conditions) makes it easy for any applicant to eliminate Distractors B and D. HPCS injects inside the core shroud and is Terminated & Prevented (T&P'd) early in the RPV Water Level Leg of EOP-1A. Every applicant should know the ATWS strategy / limitations regarding the use of HPCS when lowering RPV Water Level to reduce either subcooling or reactor power. One suggestion, given that RPV Level is lowered in Part 1 of the Question, would be to specify Level Band maintenance information for Part 2 based on the Control Strategy, rather than providing injection system options. Response: Question replaced with Chief Examiner concurrence. New Question SAT.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
81	H	4												M	S	NRC: Require further explanation with respect to which Suppression Pool Level Line on the Heat Capacity Limit Curve is assumed in order to confirm that the RPV pressure reduction to 500-600 psig is the correct range. Response: Enhanced the answer explanation to include that the 18'11" curve of Figure P is used with SP level at 19'3" and added the heat capacity limit values for 930 psig and 500-600 psig.
82	H	3												N	S	NRC: Explanations provided on the Pedigree Page for correct Answer C, and Distractors B and D are confusing (appear to conflict), and require clarification. Based on these explanations, it seems that Options B and C may both correct, given that 2 of 3 (i.e., more than ½) of the HPCS smoke detectors are NON-FUNCTIONAL. *References Provided:* *CPS 1893.01 provided in its entirety, with discussion of FM-200 on Page 26 redacted to eliminate cuing for Q49 on the RO exam.* Response: • Clarified why Distractors D and B are incorrect. With the requirement to establish a fire watch, there is no requirement to restore detector functionality within 14 days. • Corrected the SRO only justification. Performing Fire Protection Impairment evaluations is an SRO only task at CPS (189301.01).
83	H	3												N	~~E~~ S	NRC: Revise the stem statement to read: "The plant was operating at rated thermal power when a transient occurred resulting in a scram. Conditions are as follows: Also, the last sentence of the explanation for Distractor B states: "This 10 minute stay period does not apply to level at or below TAF." This appears to contradict what is described in CPS 4411.07 and does not sufficiently explain why Option B is incorrect. Suspect that this statement is in error. Clarification required. Response: Stem revised as requested. Clarified Distractors B and D to discuss why the 10 minute stay period is not appropriate based on the conditions listed in the stem. CPS 4411.07 discussion item 4.4.1 states that there are no allowances for even momentary level excursions below TAF when in EOP-1 and that a blowdown has to be initiated immediately.
84	H	3												N	~~E~~ S	NRC: In Part 2 of the Question, suggest changing the 2°F rise over the next 24 hours, to a 3°F rise. This will make Suppression Pool Temperature 100 °F instead of 99°F, which may lead the applicant to question the temperature at which the plant must be scrammed (i.e., 100°F versus 110°F). Response: Changed the stem to 3°F and changed the temperature value in the explanations for Distractors B and D from 99°F to 100°F.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
85	H	4		X										N	~~E~~ S	NRC: Specific determiner; Inadvertent Cuing. Distractors B and D are equivalent options, which rule out both choices for an applicant who recognizes the equivalence. Will need to change one of these distractors. Response: Replaced submittal version Distractor D, and moved the new distractor to C. Moved correct answer C to D due to the length of the answer choices.
86	H	3												N	S	
87	H	3												N	~~E~~ S	NRC: Question does not cover both aspects of the "coupled" A.2 K/A statement. Part (a) of the K/A statement is not tested (i.e., predict the impact). Part (a) reads: "Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF; …" Suggest a 2-part Question where (1) only ITS 3.3.6.1 Required Action A.1 is retained, together with the two date/time options currently specified, and (2) the "predict the impact" aspect of the K/A statement is addressed by testing the applicant's knowledge of whether the associated Function maintains isolation capability with 3 of the 4 channels still Operable. *References Provided:* *ITS 3.3.6.1, Pages 3.3-48 and 49 is currently listed. Would not need to provide any references if the suggested changes are incorporated.* Response: Revised the question as requested. No references will be provided based on the changes made.
88	H	3												N	S	NRC: Question SAT. Need clarification with respect to the following: Explanation for correct Answer A states that 6 IRM channels, including at least one IRM channel per trip logic division, are required for IRM OPERABILITY. Separately, ITS Table 3.3.1.1-1, Function 1, "Required Channels Per Function" column, specifies 4 in Mode 2. Is there a difference between the ITS Table and the Explanation provided on the Pedigree Sheet? No impact to the Question as written. *References Provided:* *ITS 3.0, Pages 3.0-1 and 3.0-2.* *ITS 3.3.1.1, Page 3.3-1.* Response: The table heading (Required channels per function) is consistent with other ITS 3.3 instrumentation tables, but is clarified in the bases for the IRMs since there are 8 IRMs total (with 2 channels inputting into each trip logic division). In this case, the term "trip logic division" and "required channels per function" are synonymous.
89	H	3												B	~~E~~ S	NRC: Part 1 of Options A and C should read "is OPERABLE"; Part 1 of Options B and D should read "is INOPERABLE."

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																Response: Changed as requested.
90	H	~~2~~ 3				X								~~N~~ B	~~U~~ S	NRC: Distractors B and D are implausible and can be easily eliminated. Stem provides information that DW Pressure is 1.1 psig and rising at 0.1 psig/min. How is it possible to conclude that the RCS is intact given the alarms received and the rising trend in DW Pressure? In addition, the explanation on the Pedigree Sheet states that the criteria for loss of the Containment (CT) Barrier is that a direct pathway to the environment exists OR DW Pressure at 1.68 psig. With DW pressure at 1.1 psig and rising at 0.1 psig/min, 1.68 psig will be exceeded in approximately 7 minutes. The correct answer indicates that the status of the CT Barrier is "Intact." However, it is reasonable to assume that loss of the CT Barrier is imminent (~7 minutes) based on the criteria noted above. Response: With Chief Examiner concurrence, replaced the question with a Bank question that was previously used on the ***NRC 2015 Exam***. Replacement Question SAT.
91	H	2												N	~~E~~ S	NRC: Part (1) of the question can be answered with RO level knowledge (i.e., integrated plant and system knowledge that is not unique to an SRO). Part (1) requires the applicant to predict the impact of a Turbine trip at 25% power by choosing a graphic that displays the expected breaker alignment post trip. While Part (2) of the question requires knowledge of specific procedural content contained in the subsequent actions of CPS 4005.01 Loss of Feedwater Heating, and CPS 4100.01 Scram, Section 4.1, "Electric Concerns Post Scram," the question can be additionally enhanced to improve the discriminatory validity by revising Part (2) of Distractors C and D to read as follows: *"... secure one of the three operating Circulating Water Pumps."* Response: Facility agrees that Part (1) of the question can be answered using RO level knowledge. Part (2) of Distractors C and D have been changed as requested.
92	F	3												N	S	
93	H	3												N	~~E~~ S	NRC: Replace the word "should" with will. Response: Changed as requested.
94	F	2												B	S	
95	F	2												N	~~E~~ S	NRC: Editorial. Revise the stem statement to improve its overall readability. Reads awkwardly as written. Response: Revised the stem to improve the readability.
96	F	2												N	S	

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
97	H	2												N	~~E~~ S	NRC: Change Part (1) of the answer choices from “may” and “may NOT,” to “will” and “will NOT.” Response: Changed Part (1) of the answer choices as requested.
98	F	2												B	S	
99	H	3												N	S	
100	H	3												N	S	NRC: Require additional clarification on the Case 4, 0845 Entry Time for ITS 3.6.1.7, Condition A – One RHR Containment Spray Subsystem Inoperable. The associated explanation on the Pedigree Sheet indicates that this LCO Entry Time should be 1245 (i.e., first bulleted item in the explanation for correct Answer D). *References Provided:* *ITS 3.8.1, Page 3.8-1 and 3.8-2 with the following redactions:* • *Everything above the double lines on 3.8-1 except the LCO title* • *Condition A Completion Time* • *Condition B.1 Completion Time* Response: Case 4 answer explanation was revised to provide the necessary clarification. Entry Time for ITS 3.6.1.7, Condition A, is 0845. Condition A was incorrectly referenced in the first bulleted item of the explanation for Answer D and has been removed.

Facility: CLINTON NUCLEAR POWER STATION **Exam Date: August 27 – Sept 7, 2018**

RO TOTALS:	B= 29 M= 2 N= 44	F= 31 H= 44	E= 12 U= 4	Additional Notes: 4 "U" (5.3%)
SRO TOTALS:	B= 6 M= 1 N= 18	F= 5 H= 20	E= 11 U= 3	Additional Notes: 3 "U" (12%)

GENERAL COMMENTS:

1. There are 0 (RO)/ 3 (SRO) questions with references/attachments provided.
2. Questions from the previous 2 NRC Exams: 3 (RO)/ 2 (SRO)
3. Average difficulty is **2.60** on the RO exam and **2.76** on the SRO exam.