

ORIGINAL ES 401-9,
FOR DRAFT WRITTEN EXAM

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
1	H	3												S	
2	L	2				✓								E	<p>Distractors C & D seem implausible.</p> <p>Consider deleting "to reduce burden on EDGs during design basis accident" from C.</p> <p>Consider deleting "to prevent damage to the pump" from D.</p> <p>Both of these phrases make those distractors easily eliminated.0</p>
3	H	2				✓								E	<p>The answer is the only choice that includes increasing. Please revise distractors B & C to include some variation of increasing. Suggestion: C: INCREASING STABLE</p> <p>What result if PZR Pressure < shutoff head to start?</p>
4	H	3										?		S	<p>Explanation of distractor B may be wrong. Saturation Pressure for 532°F is 900.34 psia.</p> <p>Distractor C may be more plausible as "NOT be stopped because adverse containment conditions [do NOT] exist".</p> <p>K/A is unclear - "Knowledge of the interrelations between the and the following Large Break LOCA: Pumps".</p>
5	H	2												S	<p>Uncertain if this is really difficult enough to be an RO/SRO question. Could be a GFE question.</p>
6	H	?												S	<p>Wrestling with LOD. Distractors A & C seem easy to eliminate while distractor D seems a little too close to a correct answer.</p>
7	L	3												S	<p>The answer is the shortest choice. This could be a specific determiner.</p>
8	L	2										✓		S	<p>The K/A reference s/b "APE.026.AA2.06" v. "APE026A2.06".</p>

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9	L	2		✓								✓		U	<p>Specific Determiner - the answer (C) is the only choice that refers to "Vital Instrument Power". Consider adding that phrase to distractors</p> <p>A. 120 VAC Vital Instrument Power from redundant inverters in the SSPS cabinets.</p> <p>B. 48 VDC Vital Instrument Power from power distribution busses in the SSPS cabinets.</p> <p>D. 15 VDC Vital Instrument Power from redundant power supplies in the SSPS cabinets</p> <p>The K/A tests "Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: 120V vital/instrument power system". This question asks for a power supply but does not test knowledge of the cause-and-effect relationship.</p>
10	H	3		✓										E	<p>Plausibility of distractor A seems weak. How about "Manually align valves and start pumps as necessary to increase EFW flow to greater than 880 gpm until at least two steam generators are greater than 25% wide range".</p> <p>Distractor C may be eliminated because it is grammatically incorrect - first it says one steam generator, then it says two steam generators.</p> <p>Shouldn't the distractors say "steam generator water levels" to be precise?</p>
11	L	3				✓								E	<p>C & D are easily eliminated because only high RCS pressure can worsen this accident. Consider the following:</p> <p>C. HIGH HIGH MINIMUM OPEN</p> <p>D. HIGH LOW MINIMUM SHUT</p>
12	H	2												S	<p>Distractor B is a bit weak. How about a stuck open PORV or PZR Safety?</p> <p>Fairly straightforward - too easy?</p>
13	L	2												S	<p>Be sure this portion of the Tech Specs is redacted.</p> <p>Is this the <i>normal</i> band or the <i>required</i> band?</p>
14	L	3	✓			✓								S	<p>Is this based on an actual event? If so, it may be too easy.</p> <p>Is it possible for an Applicant to argue that the stem does not clearly indicate that the normal battery charger (1-EDE-BC-1A) was NOT connected to buss 11A?</p> <p>Distractor C - any chance the EDG would start on a loss of DC?</p> <p>Distractor D - too easy to eliminate because the parenthetical "(fails open)" is implausible.</p>

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15	L	2				✓								S	Possible to eliminate A & B because they are safety related and D because it is not a SW load. Are there any non-safety related SW loads that could be a credible distractor?
16	H	3												S	If you know from an actual event that CW is the first affected by a loss of IA, why not amend the Loss of IA procedure to reflect that knowledge? The K/A is misstated as A1.03 v. AA1.03.
17	H	3												S	
18	H	3												S	
19	H	2										✓		E	Seems fundamental - GFE question May be vulnerable to a challenge on the meaning of "Final Reactor Power" and "Little Change". Uncertain about the K/A match - I interpret it to mean <i>given a rod drop, how does the effect of rod movement on reactivity and power differ?</i>
20	L	2				✓								S	Plausibility of B is weak. Why would you select channel 461/460 if LT-460 failed? OS1201.07, Step 5.c is not as simple as merely opening RC-LCV-460. Step 5.c.1) requires the Operator to align PCCW to the LDHX. Is this necessary given the question stem? Step 5.c.2) requires the Operator to close CS-HCV-189 & 190. What effect does this have? Note - I disagree with the LOK of this question. This is not the first one, only the first time I thought to mention it.
21	H	2												S	Consider making more difficult by stating the IR power level instead of giving it away as above P-6.
22	L	1				✓								E	A & C are easily eliminated because an AUTO reopening is implausible. This is the 2 nd or 3 rd question involved a liquid release; possibly a release of the Waste Test Tank
23	H	3												S	How can this be? You don't require the Operators to verify ΔT before calling NC!?

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24	L	2		✓		✓								E	<p>The answer is the longest choice and states the obvious condition that would require transition to ES-0.3 (RVLIS<100%).</p> <p>Concerning the note preceding ES-0.2, Step 12, how do you know if a cooldown and depressurization must be performed at a rate that may form a head bubble? This is really two issues. First, what would require a high CDR? Second, how do you know what CDR could form a head bubble?</p> <p>Both B & C can be ruled implausible and redundant because RC-PS are not available following a LOOP. Consider:</p> <p>B - <u>Auxiliary</u> Pressurizer Spray is unavailable . . .</p> <p>C - Subcooling Margin goes below 40°F ?????</p> <p>NOTE: this is the second test question involving R head bubble.</p>
25	L	2										✓		E	<p>The K/A tests knowledge of the reasons for procedures associated with high CTMT pressure. This question may not sufficiently ask for knowledge of the <i>reasons</i>.</p>
26	L	3												S	
27	L	2												S	
28	H	3		✓			✓							U	<p>Interesting question.</p> <p>GFE question ? Operational validity?</p> <p>The answer is the only choice not phrased in a lower/higher format. Please consider "The margin to Departure from Nucleate Boiling will be lower".</p> <p>B is arguable correct albeit negligible effect. How about degrading B pump?</p> <p>D is arguably wrong - Technical basis ? :</p> <ul style="list-style-type: none"> • T_{hot} unchanged - same as the other four loops - common disch • Variable heater demand s/b insignificant • S/G Pressure follows T_{cold} down • Lower $T_{cold} \rightarrow P_{bottom}$ rises $\rightarrow P_{top}$ lowers \rightarrow margin to DNB rises
29	H	3												S	
30	H	4												S	<p>Explanation to A says that pump flow increases but the answer says that pump flow is unchanged.</p> <p>Are we certain that none of the overflow would go to the PAB exhaust plenum per C? Any chance some would reach the vent and make this arguably correct?</p>

[illegible]

[illegible]

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49	F	2												S	<p>Redundant? This is the second question whereby knowing that a loss of DC power prevented an engine start was necessary. First one was in the back 50.</p> <p>What effect does a loss of DC have on a running EDG?</p>
50	F	2	✓			✓	✓					?		U	<p>Stem is confusing. Requires Applicant to assume that an EDG was running paralleled with a buss when the LOOP occurred. I think you mean, "how would one take the EDG off the buss once offsite power were restored and paralleled with the EDG?".</p> <p>Use of ECA-0.0 is easily eliminated because it's a LOOP not a LEAC. Therefore, distractors A & C are potentially implausible and redundant. Would it be more plausible to have one distractor unload and disconnect per the normal EDG OP?</p> <p>B c/b argued as correct - "I opened the output breaker only using the guidance of OS1246.01. That guidance required me to unload the machine first".</p> <p>K/A = Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Unloading prior to securing an ED/G.</p>

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51	F	2	✓		✓									E	<p>Question can be answered without reference to the stem by simply recognizing that RM-6503 closes WG-FV-1602.</p> <p>Potentially implausible to expect a radiation monitor to OPEN a component. Is closing another valve more plausible?</p> <p>Stem wording is "... at the Waste ...". Should it be "... in the Waste ...?"</p>
52	F	2				✓								E	<p>Per CP 4.1, § 4.2.7.5.a (page 10), there is no instance of a high effluent alarm condition that would permit resampling BEFORE terminating the release. Similarly, there is no condition that specifies a 15-minute time requirement. Therefore, the plausibility of the distractors is questionable.</p> <p>What is the ODCM requirement if the associated rad monitor is inoperable?</p> <p>Consider specifying the rad monitor instead of referring to it as the "associated" monitor.</p>
53	H	3												S	
54	F	2				✓								E	<p>Easy to guess correct answer by knowing that SA will be split from IA at the higher value (90 psig) and that automatic reopening is highly unlikely given the purpose of automatic closure. Can the distractors be made more plausible?</p>
55	F	3					✓					✓		E	<p>Potentially no correct answer because the plant can remain at Modes 1-4 indefinitely with an inoperable CIV closed. TSS 4.6.1.1 indicates that CONTAINMENT INTEGRITY is demonstrated if all valves are capable of being automatically closed OR ARE CLOSED. The definition of CONTAINMENT INTEGRITY at 1.7.a.2) makes a similar statement. TS 3.6.3.b. requires that the inoperable CIV be closed, deactivated and possibly secured. However, there are no facts indicating whether the CIV is deactivated or secured. Therefore, it is not certain that answer C (in Mode 2, an automatic containment isolation is SHUT and declared INOPERABLE) exceeds a LCO.</p> <p>The K/A requires knowledge of the effect a loss/malfunction of CTMT system has on CTMT during normal ops. This is probably close enough but is really more of a tech spec question than a system question.</p>

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56	H	1			✓	✓								U	<p>Somewhat easy. Distractor A is obviously incorrect based on fundamental knowledge. Distractor B is not so obvious and requires the Applicant to demonstrate knowledge of the RC-P seal package. Distractor D is easy since it's the letdown isolation valve - this distractor may become more plausible if seal leakoff is isolated (presuming that leakoff is then directed to the RCDT via a relief valve).</p> <p>The correct answer jumps out as obviously correct because it is a leak directly from the RCS to CTMT atmosphere.</p>
57	H	3		✓		✓								S	<p>Some T/F aspect because answers A & D can be ruled out by guessing you wouldn't raise the issue if MCC-531 had no effect on rod bottom lights.</p> <p>Consider the following:</p> <ul style="list-style-type: none"> in the third bullet of the stem, remove "... resulting in the reactor trip breakers opening". This points to the correct answer. add another bullet between the third and fourth indicating that all plant systems respond normally. the answer choices should have parallel construction. <ul style="list-style-type: none"> <input type="checkbox"/> Rod Bottom lights [are / are NOT] lit <input type="checkbox"/> Reactor Power [is / is NOT] decreasing <input type="checkbox"/> Reactor Trip Breakers [indicate / do NOT indicate] open <input type="checkbox"/> The crew should [verify turbine trip / go to FR-S.1] (this should logically follow the preceding choices)
58	H	3		✓		✓						?		S	<p>In distractors A & C, consider deleting the words "Do not damage RCPs by starting ...". This seems to give away the fact that RC-Ps should be started.</p> <p>Consider replacing distractor A because it is not sufficiently distinct from distractor C.</p> <p>Distractors B & D should have parallel construction.</p> <p>Uncertain about the K/A match.</p>
59	F	2				✓								E	<p>Direct recall question. Distractors may not be credible. B & C are not safety related MCCs and lack uniformity (don't appear train related). Can one or more distractors be safety related 480 VAC MCCs on parallel trains?</p>
60	F	2	✓									✓		E	<p>ES-401-5 indicates this is a modified bank question. The modifications leave the bank question essentially unchanged because they do not appear relevant to the Applicant's decision making (plant mode, alarms).</p> <p>K/A match may be loose. The question doesn't require the Applicant to "predict" or "monitor" changes in level - only to recognize that the RWST is an emergency source of makeup.</p>

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61	H	2												S	May be vulnerable to a question about K/A mismatch because the question concerns TBVs instead of ADVs. I think it's a good question. Hopefully, no one will get it wrong.
62	H	2												S	
63	F	3												S	
64	F	2												S	
65	F	1				✓								U	<p>Distractors A and D are easily ruled out because by the Fire Type/Class category. Consider making distractor A "Class A" and distractor D "Class C".</p> <p>Distractors A and D are easily rule out because the use of Halon outside doesn't make sense. Consider making the Fire Protection method "Wet-Pipe Sprinkler System".</p> <p>For technical accuracy, should "Dry-Pipe, Open-Head <u>Sprinkle</u> System" be "Dry-Pipe, Open-Head <u>Deluge</u> System"?</p>
66	F	2												S	Are we certain that there are no manual actions in the IMAs of E-0 that could arguably construed as "skill-of-the-craft" and make distractor C a second correct answer?
67	H	4	✓											E	Are we certain that C is a correct answer? The temperature reduction does add positive reactivity which reduces SDM. However, Xe concentration is rising simultaneously to add negative reactivity and raise SDM.
68	F	2						✓				✓		U	<p>Weak K/A link because it's too broad - relates to purpose of entire ECCS system rather than a major system component and control.</p> <p>Not operational in context because Operators have no control over the ECCS design basis or 50.46 acceptance criteria.</p>
69	F	3												S	
70	F	1												U	Too easy because not sufficiently modified to make it a different question.
71	H	3												S	
72	F	2												S	
73	H	3												S	<p>Question: are we certain that a train "A" radiation monitor will cause the train "B" CIV (COP-V-4) to close?</p> <p>Suggestion: revise distractor D to read "Control room operators must ensure COP-V-3 automatically closed and must manually close COP-V-4 to stop the release".</p>

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74	H	4												S	
75	F	3												S	
76	H	3											✓	S	
77	H	3		✓									✓	S	<p>Would distractor C be more plausible if SEAL DP > 220 PSID were Required rather than NOT Required?</p> <p>Similarly, would distractor B be more plausible if LIFT OIL INTERLOCK were NOT Required rather than Required?</p>
78	F	1		✓		✓						✓	✓	U	<p>Too easy because it is a fundamental knowledge item and because at least two distractors are implausible. Also concerned that it is not a good K/A match, that declaring the GE on the half-hour cues the Applicant to ward the answer and that this may be redundant with the Operating Exam.</p> <p>A is 00:25 after the SAE is declared. To be credible, this distractor s/b 00:15 or, preferably, 00:30 after the initial SAE is declared.</p> <p>B is the correct answer but is not discriminatory because it is an easy and widely known memory item.</p> <p>C is 00:30 after the GE is declared and may be credible.</p> <p>D is 1:12 after the initial SAE and 00:53 after the GE. Neither is credible time interval nor common misconception.</p> <p>K/A match is weak because this tests the time in which a PAR is required and does not test the Applicant's understanding of the substantive PAR.</p> <p>Using 12:30 as the time for which the GE is declared signals the correct response as B or C.</p> <p>Potentially redundant with the Operating Test if this examination includes a JPM to make an EAL and PAR determination.</p>
79	H	3		✓									✓	E	<p>The correct answer (D) is not grammatically complete.</p> <p>Distractor plausibility is weak but no suggestions.</p>

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80	F	2	✓				✓						✓	E	<p>An Applicant could select distractor C and argue that it is a correct answer because the stem only asks how the given conditions affect the cooldown. Could even argue that C is <i>more</i> correct than D based on ES-0.2, Step 8, which requires Operators to "Depressurize RCS to 1900 PSIG".</p> <p>Technical Question - is it possible to cooldown without lowering RCS pressure?</p>
81	H	3											✓	S	Check K/A match. Is this acceptable interpretation of "Ability to direct personnel activities inside the control room"?
82	H	2				✓							✓	E	Distractors A and B may not be plausible if the Applicant has a fundamental understanding of SDM (presumably, these Applicants have already passed the GFE).
83	F	1				✓						✓	✓	U	<p>Direct lookup from the reference provided. Therefore, no credible distractors.</p> <p>The K/A concerns RCS pressure, not temperature. It's unclear how this question is related to the chosen K/A.</p>

[illegible]

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90	F	3											✓	S	
91	F	1				✓							✓	U	Too easy because distractors B & D are implausible if the Applicant understands SDM. Please consider adding "When the reactor is at the point of adding heat" as one distractor.
92	F	2											✓	S	
93	F	3				✓							✓	S	Tough to choose between A & B but C & D seemed easy to rule out because entering OS1252.02 seemed implausible. I also suspect that the 120 hour limit could cue an Applicant to rule out distractors B & C.
94	H	3											✓	S	
95	F	2											✓	S	
96	F	4											✓	S	Is this sufficiently modified to be called modified? Will Applicants have a copy of Tech Specs during the exam? If so, these sections should be redacted. I'm struggling with the plausibility of "Notify the NRC as soon as possible". An Applicant who understands reportability may recognize that there are no ASAP NRC reports.
97	F	2			✓	✓							✓	E	Distractors A & B may be implausible because RCS pressure limits do not protect the fuel. Moreover, distractor A is implausible because it indicates that protecting the fuel prevents release of radionuclides in the RCS to CTMT. Distractors B & D are implausible because RCS pressure and fuel integrity have nothing to do with lifting of MS Safeties. The grammar of these distractors is also seems stilted. This question may be redundant with question 96.
98	H	2											✓	S	This may be a better K/A match as question 78. This is potentially redundant with both question 78 and the Operating Test if there is a EAL & PAR determination JPM or Scenario followup question.
99	F	2											✓	S	Need to verify technical aspects - From Attachment A of OS1201.09, it looks like both Train A & B PORV get open signals. From the stem, both Train A & B PORVs are impacted. The explanation of distractor B seems to indicate that only one train is affected.
100	H	3					✓						✓	S	Question: is the distinction between A (. . . on initial . . .) and C (. . . during follow-up . . .) sufficient to make C an incorrect selection? Could an Applicant conceivably read them as identical? Should those phrases be emphasized in some manner?

**ES 401-9's, WITH COMMENTS
FROM EXAM VALLIDATION WEEK**

Spahnke Jan 05

ES-401

Written Examination Review Worksheet

Form ES-401-9

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1														S	
2														E	E: ^{burden to load} remove reference to damaging pump
3														S	
4														E	C: adm. sent does not ... remove "do NOT" because it makes the dist too easy
5														S	
6				✓										E	B: remove "1/2 level" (covering)
7														S	
8														S	

Instructions

[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 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
- Check the appropriate box if a psychometric flaw is identified:
 - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
 - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
 - The answer choices are a collection of unrelated true/false statements.
 - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
 - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
- Check the appropriate box if a job content error is identified:
 - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
 - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
 - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
 - The question requires reverse logic or application compared to the job requirements.
- 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).
- 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" ratings (e.g., how the Appendix B psychometric attributes are not being met).

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9														E	A: add "vital" to distractor to keep it more plausible
10														E	cleaned up A, C, D to match procedure language
11														E	change distractor choices to make more plausible
12														S	
13														S	
14														E	in stem bullet 3 to conclusively state change not recommended to Bus D: remove parenthetical (Cue) by adding block value
15														E	D: make "cre chiller" due to excess London being part of PCW (distractor B)
16														S	
17														S	
18														S	
19			✓						✓					SE	drop "initial power" column - not needed
20														E	clean up stem to focus test on technical knowledge vs procedure knowledge
21														E	A: no TS action required (block of SR is not req'd); clean up stem accordingly
22														E	stem: remove automatic action since correct answer has manual action
23														S	
24														E	clean up stem to make sense of ES&C 1.0.3 usage change B to keep it from being redundant to C
25														S	
26														S	
27														S	
28														E	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
29														S	
30														S	
31														S	
32														S	
33														S	
34			✓											E	here → 40% → clean up exactly what last task is at
35			✓			✓								E	stem: add "sequence" to make answer more correct A: add cleaning and tech off value to maintain disfectin consistency
36														S	
37														S	
38														S	
39														S	
40		1												U	
41			✓	✓										E	remove ex c, unrelated info from stem
42			✓	✓										E	
43							✓							S	add MOL to preclude positive ATC consideration
44														S	
45														S	
46														S	
47														S	
48						✓								S	D: remove "reactor dip" to make defects more plausible

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
49														S	
50			✓											E	stem → BSC, current = loaded work on A+B re use of word "open" to mean open when under full
51						✓								E	impossible for vehicle to open → change open to indicate for A+C
52														S	
53														S	
54														S	
55			✓											E	clarify stem to indicate not meeting a TSA5
56						✓								E	change A to make more plausible
57				✓										E	remove "in trip but open" from stem (cur re)
58				✓										E	remove "change" from description A+C (ruining)
59														S	
60														S	
61														S	
62														S	
63														S	
64			✓											E	rethink stem question for clarity
65														S	
66														S	
67														S	
68														S	

local not only
open one binder

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
69														S	
70														S	
71														S	
72														S	
73														S	answer explanation needs correction/editing
74														S	
75														S	
76														S	
77						✓								E	balance the "NOT"s in distractors
78				✓		✓								E	LOD: edit format of stem and change some distractors to strengthen LOD and make the distractors more credible
79							✓							S	clean up grammar in D (answer)
80														E	edit C to make it more positively wrong
81														S	
82				✓										S	
83						✓								E	edit distractors to ensure knowledge of lowest/stk (info interpolating) pressure is used
84														U	no correct answer - "slightly higher" in stem does not allow determination of an acceptable SS level e. RSS panel
85														S	
86				✓										E	use same info language on distractor as answer (maintain vs ensure)
87														S	
88				✓		✓								U	stem makes CTS implausible → use value adjectives instead of adjectives alone in stem

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
89														S	
90														S	
91						✓								E	B not credible - replace
92														S	
93														S	
94														S	
95														S	
96														S	
97						✓								E	A
98			✓											E	make item in
99														S	
100														S	

Balian

ES-401

Written Examination
Review Worksheet

Form ES-401-9

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
1	H	3												S	
2	L	2				✓								E	<p>Distractors C & D seem implausible.</p> <p>Consider deleting "to reduce burden on EDGs during design basis accident" from C.</p> <p>C: "burden" to "load"</p> <p>Consider deleting "to prevent damage to the pump" from D.</p> <p>Both of these phrases make these distractors easily eliminated.</p>
3	H	2				✓								E S	<p>The answer is the only choice that includes increasing. Please revise distractors B & C to include some variation of increasing. Suggestion:</p> <p>C: INCREASING STABLE</p> <p>What result if PZR Pressure < shutoff head to start?</p>
4	H	3										✓		E E	<p>Explanation of distractor B may be wrong. Saturation Pressure for 532°F is 900.34 psia.</p> <p>Distractor C may be more plausible as "NOT be stopped because adverse containment conditions [do NOT] exist".</p> <p>K/A is unclear - "Knowledge of the Interrelations between the and the following Large Break LOCA: Pumps".</p>
5	H	2												S	<p>Uncertain if this is really difficult enough to be an RO/SRO question.</p> <p>Could be a GFE question.</p>
6	H	2 3				Swap	A E B							S	<p>Wrestling with LOD. Distractors A & C seem easy to eliminate while distractor D seems a little too close to a correct answer.</p>
7	L	3												S	<p>The answer is the shortest choice. This could be a specific determiner.</p>
8	L	2										✓		S	<p>The K/A reference s/b "APE.026.AA2.06" v. "APE026A2.06".</p>

← Guesser

c → inventory or (PZR LUT)

Accept cause no pattern

A to D
D to A

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
9	L	2		✓								✓		E E	Specific Determiner - the answer (C) is the only choice that refers to "Vital Instrument Power". Consider adding that phrase to distractors A. 120 VAC Vital Instrument Power from redundant inverters in the SSPS cabinets. B. 48 VDC Vital Instrument Power from power distribution busses in the SSPS cabinets. D. 15 VDC Vital Instrument Power from redundant power supplies in the SSPS cabinets The K/A tests "Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: 120V vital/instrument power system". This question asks for a power supply but does not test knowledge of the cause-and-effect relationship.
10	H	3		✓										E	Plausibility of distractor A seems weak. How about "Manually align valves and start pumps as necessary to increase EFW flow to greater than 880 gpm until at least two steam generators are greater than 25% wide range". → actually plausible misconception E-O Distractor C may be eliminated because it is grammatically incorrect - first it says one steam generator, then it says two steam generators. delete "at least one" Shouldn't the distractors say "steam generator water levels" to be precise?
11	L	3				✓								E	C & D are easily eliminated because only high RCS pressure can worsen this accident. Consider the following: C. HIGH HIGH MINIMUM May OPEN D. HIGH LOW MINIMUM SHUT
12	H	2												S	Distractor B is a bit weak. How about a stuck open PORV or PZR Safety? Fairly straightforward - too easy?
13	L	2												S	Be sure this portion of the Tech Specs is redacted. Is this the normal band or the required band? IAW = Reg. 2
14	L	3	✓			✓								S	Is this based on an actual event? If so, it may be too easy. Not Real Is it possible for an Applicant to argue that the stem does not clearly indicate that the normal battery charger (1-EDE-BC-1A) was NOT connected to buss 11A? Failed to note that... NOT Distractor C - any chance the EDG would start on a loss of DC? NO Distractor D - too easy to eliminate because the parenthetical "(fails open)" is implausible. delete (-) it becomes correct

make it implausible

Accept isolated instance

Balance

Loss of PZR Block Vv control

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
15	L	2				✓								S	Possible to eliminate A & B because they are safety related and D because it is not a SW load. Are there any non-safety related SW loads that could be a credible distractor? <i>D → Ctrl Rm Operators</i>
16	H	3												S	If you know from an actual event that CW is the first affected by a loss of IA, why not amend the Loss of IA procedure to reflect that knowledge? The K/A is misstated as A1.03 v. AA1.03. ✓
17	H	3												S	
18	H	3												S	
19	H	2			B	lower	Lower					✓		E	Seems fundamental - GFE question <i>underline plant ops</i> May be vulnerable to a challenge on the meaning of "Final Reactor Power" and "Little Change". Uncertain about the K/A match - I interpret it to mean <i>given a rod drop, how does the effect of rod movement on reactivity and power differ?</i>
20	L	2				✓								S	Plausibility of B is weak. Why would you select channel 461/460 if LT-460 failed? <i>unavoidable</i> OS1201.07, Step 5.c is not as simple as merely opening RC-LCV-460. Step 5.c.1) requires the Operator to align PCCW to the LDHX. Is this necessary given the question stem? Step 5.c.2) requires the Operator to close CS-HCV-189 & 190. What effect does this have? <i>→ Operator to remove</i> Note - I disagree with the LOK of this question. This is not the first one, only the first time I thought to mention it.
21	H	2			A →	No	Action	Reg'd.						S	Consider making more difficult by stating the IR power level instead of giving it away as above P-6. <i>(stem correct) "if any"</i>
22	L	1				✓								E	A & C are easily eliminated because an <u>AUTO</u> reopening is implausible. <i>→ expected in some places</i> This is the 2 nd or 3 rd question involved a liquid release; possibly a release of the Waste Test Tank
23	H	3												S	How can this be? <i>You don't require the Operators to verify AT before calling NC!</i>

accept A & B
delete D

Improve
Forum

delete init
pur col.

do it with
to
focus
reg'd to reg'd

places

To be
checked

WDL →

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
24	L	2		✓		✓								E	<p>The answer is the longest choice and states the obvious condition that would require transition to ES-0.3 (RVLIS<100%).</p> <p>Concerning the note preceding ES-0.2, Step 12, how do you know if a cooldown and depressurization must be performed at a rate that may form a head bubble? This is really two issues. First, what would require a high CDR? Second, how do you know what CDR could form a head bubble?</p> <p>Both B & C can be ruled implausible and redundant because RC Ps are not available following a LOOP. Consider:</p> <p><u>B - Auxiliary Pressurizer Spray is unavailable.</u> → because</p> <p>G - Subcooling Margin goes below 40°F ?????</p> <p>NOTE: this is the second test question involving R head bubble.</p>
25	L	2										✓		E S	<p>The K/A tests knowledge of the reasons for procedures associated with high CTMT pressure. This question may not sufficiently ask for knowledge of the reasons.</p>
26	L	3												E	E
27	L	2												E	E
28	H	3		✓										E E E	<p>Interesting question.</p> <p>GFE question ? Operational validity?</p> <p>The answer is the only choice not phrased in a lower/higher format. Please consider "The margin to Departure from Nucleate Boiling will be lower".</p> <p>E is arguably correct and its negligible effect. However about degrading pump?</p> <p>D is arguably wrong - Technical basis ? :</p> <ul style="list-style-type: none"> • T_{hot} unchanged - same as the other four loops - common dish • Variable heater demand s/b insignificant • S/G Pressure follows T_{cold} down • Lower T_{cold} = P_{bottom} rises → P_{top} lowers → margin to DNB rises
29	H	3												S	
30	H	4												S	<p>Explanation to A says that pump flow increases but the answer says that pump flow is unchanged.</p> <p>Are we certain that none of the overflow would go to the PAB exhaust plenum per C? Any chance some would reach the vent and make this arguably correct?</p>

operational situation

E

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
31	H	3												S	May match the K/A better if we ask how much longer to swap over if SI Pps failed.
32	H	2												S	
33	L	2												S	Is this really modified? Just swapped trains.
34	L	2				✓								E	Both distractors A & B can be ruled out by knowing that the Train B surge tank has no effect on Train A. <i>See B & A from</i> Would D be more plausible if you just said the Train B CIVs closed? <i>See, first page of the lesson plan.</i> May be safer to say level drops to some value BELOW 42% and above 36% in the stem. Do we know the tolerance?
35	H	3				✓		<i>Sequence in the stem close leakoff in A</i>						S	Both C & D can be eliminated by knowing that a plant trip is not required. How about changing D to: "Trip 'D' RCP, close the #1 seal leakoff valve after the pump has stopped [continue to operate up to 75% / commence a plant shutdown / continue to operate up to 50%]?" <i>accy</i>
36	H	4												S	
37	H	5	✓				✓	✓				✓		<i>4</i> <i>S</i>	Press 1 = Compress A Level 1 AND Orifice d/p 1 = Letdown 1 both effects cause makeup to rise to maintain PZR Lvl -- can VCT Level (distractor A) be arguably correct? <i>See my calc. indicating volume change of 300 to 500 gallons</i> Given that A may be correct, the stem asks for the parameter "MOST" affected. Can an Applicant make this determination? Operational Validity? How would Operator be expected to respond to PZR vapor space temperature changes? K/A match? Weak link to "expansion of liquids as temperature increases".
38	L	2												S	
39	H	3												S	
40	L	1		✓	✓	✓								U	The stem tells me that these are CIVs. All I need to know is that a "T" signal is the isolation signal. Any choice that leaves a valve open is implausible. May be answerable without reference to the stem. Is there a legitimate condition that could cause one valve to close and the other to remain open?
41	H	3												S	

To be critical

[illegible]

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
49	F	2												S	<p>Redundant? This is the second question whereby knowing that a loss of DC power prevented an engine start was necessary. First one was in the back 50.</p> <p>What effect does a loss of DC have on a running EDG?</p>
50	F	2	✓			✓	✓					?		U	<p>Stem is confusing. Requires Applicant to assume that an EDG was running paralleled with a buss when the LOOP occurred. I think you mean, "how would one take the EDG off the buss once offsite power were restored and paralleled with the EDG?"</p> <p>Use of ECA-0.0 is easily eliminated because it's a LOOP not a LEAC. Therefore, distractors A & C are potentially implausible and redundant. Would it be more plausible to have one distractor unload and disconnect per the normal EDG OP?</p> <p>B c/b argued as correct - "I opened the output breaker only using the guidance of OS1246.01. That guidance required me to unload the machine first".</p> <p>K/A = Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Unloading prior to securing an ED/G.</p>

ONLY ⇒ use wrong numbers

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stern Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
51	F	2	✓		✓			open to								<p>Question can be answered without reference to the stem by simply recognizing that RM-6503 closes WG-FV-1602.</p> <p>Potentially implausible to expect a radiation monitor to OPEN a component. Is closing another valve more plausible?</p> <p>Stem wording is "... at the Waste ...". Should it be "... In the Waste ...?"</p>
52	F	2				✓		within						E		<p>Per CP 4.1, § 4.2.7.5.a (page 10), there is no instance of a high effluent alarm condition that would permit resampling BEFORE terminating the release. Similarly, there is no condition that specifies a 15-minute time requirement. Therefore, the plausibility of the distractors is questionable.</p> <p>What is the ODCM requirement if the associated rad monitor is inoperable?</p> <p>Consider specifying the rad monitor instead of referring to it as the "associated" monitor.</p>
53	H	3												S		
54	F	2				✓								E		<p>Easy to guess correct answer by knowing that SA will be split from IA at the higher value (90 psig) and that automatic reopening is highly unlikely given the purpose of automatic closure. Can the distractors be made more plausible?</p>
55	F	3												S		<p>Potentially no correct answer because the plant can remain at Modes 1-4 indefinitely with an inoperable CIV closed. TSS 4.6.1.1 indicates that CONTAINMENT INTEGRITY is demonstrated if all valves are capable of being automatically closed OR ARE CLOSED. The definition of CONTAINMENT INTEGRITY at 1.7.a.2) makes a similar statement. TS 3.6.3.b. requires that the inoperable CIV be closed, deactivated and possibly secured. However, there are no facts indicating whether the CIV is deactivated or secured. Therefore, it is not certain that answer C (in Mode 2, an automatic containment isolation is SHUT and declared INOPERABLE) exceeds a LCO.</p> <p>The K/A requires knowledge of the effect a loss/malfunction of CTMT system has on CTMT during normal ops. This is probably close enough but is really more of a tech spec question than a system question.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
56	H	2			✓	✓								U E	<p>Somewhat easy. Distractor A is obviously incorrect based on fundamental knowledge. Distractor B is not so obvious and requires the Applicant to demonstrate knowledge of the RC-P seal package. Distractor D is easy since it's the letdown isolation valve - this distractor may become more plausible if seal leakoff is isolated (presuming that leakoff is then directed to the RCDT via a relief valve).</p> <p>The correct answer jumps out as obviously correct because it is a leak directly from the RCS to CTMT atmosphere.</p>
57	H	3		✓		✓								S	<p>Some T/F aspect because answers A & D can be ruled out by guessing you wouldn't raise the issue if MCC-531 had no effect on rod bottom lights.</p> <p>Consider the following:</p> <ul style="list-style-type: none"> • in the third bullet of the stem, remove "... resulting in the reactor trip breakers opening". This points to the correct answer. • add another bullet between the third and fourth indicating that all plant systems respond normally. • the answer choices should have parallel construction. <ul style="list-style-type: none"> <input type="checkbox"/> Rod Bottom lights [are / are NOT] lit <input type="checkbox"/> Reactor Power [is / is NOT] decreasing <input type="checkbox"/> Reactor Trip Breakers [indicate / do NOT indicate] open <input type="checkbox"/> The crew should [verify turbine trip / go to FR-S.1] (this should logically follow the preceding choices)
58	H	3		✓		✓						?		S	<p>In distractors A & C, consider deleting the words "Do not damage RCPs by starting . . .". This seems to give away the fact that RC-Ps should be started.</p> <p>Consider replacing distractor A because it is not sufficiently distinct from distractor C. — delete ECCS from C</p> <p>Distractors B & D should have parallel construction. ✓</p> <p>Uncertain about the K/A match.</p>
59	F	2				✓								E S	<p>Direct recall question. Distractors may not be credible. B & C are not safety related MCCs and lack uniformity (don't appear train related). Can one or more distractors be safety related 480 VAC MCCs on parallel trains?</p>
60	F	2	✓									✓		E	<p>ES-401-5 indicates this is a modified bank question. The modifications leave the bank question essentially unchanged because they do not appear relevant to the Applicant's decision making (plant mode, alarms).</p> <p>K/A match may be loose. The question doesn't require the Applicant to "predict" or "monitor" changes in level - only to recognize that the RWST is an emergency source of makeup.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
61	H	2												S	May be vulnerable to a question about K/A mismatch because the question concerns TBY's instead of ADVs. I think it's a good question. Hopefully, no one will get it wrong.
62	H	2												S	
63	F	3												S	
64	F	2												E	E call of ? to a Lap + ...
65	F	1 2				✓								U S	Distractors A and D are easily ruled out because by the Fire Type/Class category. Consider making distractor A "Class A" and distractor D "Class C". Distractors A and D are easily rule out because the use of Halon outside doesn't make sense. Consider making the Fire Protection method "Wet-Pipe Sprinkler System". For technical accuracy, should "Dry-Pipe, Open-Head Sprinkle System" be "Dry-Pipe, Open-Head Deluge System"?
66	F	2												S	Are we certain that there are no manual actions in the IMAs of E-0 that could arguably construed as "skill-of-the-craft" and make distractor C a second correct answer? -Yes
67	H	4	✓											E	Are we certain that C is a correct answer? The temperature reduction does add positive reactivity which reduces SDM. However, Xe concentration is rising simultaneously to add negative reactivity and raise SDM. Clarify stem
68	F	2												U S	Weak K/A link because it's too broad - relates to purpose of entire ECCS system rather than a major system component and control. Not operational in context because Operators have no control over the ECCS design basis or 50.46 acceptance criteria. Generic K/A
69	F	3												S	
70	F	1 2												U S	Too easy because not sufficiently modified to make it a different question.
71	H	3												E	E "the"
72	F	2												E	E proposed intended
73	H	3												S	Question: are we certain that a train "A" radiation monitor will cause the train "B" CIV (COP-V-4) to close? Incorrect explanation Suggestion: revise distractor D to read "Control room operators must ensure COP-V-3 automatically closed and must manually close COP-V-4 to stop the release".

Ted's Row

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
74	H	4												S	
75	F	3												S	
76	H	3											✓	S	
77	H	3		✓									✓	S	<p>Would distractor C be more plausible if SEAL DP > 220 PSID were Required rather than NOT Required?</p> <p>Similarly, would distractor B be more plausible if LIFT OIL INTERLOCK were NOT Required rather than Required?</p>
78	F	1		✓		✓						✓	✓	E	<p>Too easy because it is a fundamental knowledge item and because at least two distractors are implausible. Also concerned that it is not a good K/A match, that declaring the GE on the half-hour cues the Applicant to ward the answer and that this may be redundant with the Operating Exam.</p> <p>A is 00:25 after the SAE is declared. To be credible, this distractor s/b 00:15 or, preferably, 00:30 after the initial SAE is declared.</p> <p>B is the correct answer but is not discriminatory because it is an easy and widely known memory item.</p> <p>C is 00:30 after the GE is declared and may be credible.</p> <p>D is 1:12 after the initial SAE and 00:53 after the GE. Neither is credible time interval nor common misconception.</p> <p>K/A match is weak because this tests the time in which a PAR is required and does not test the Applicant's understanding of the substantive PAR.</p> <p>Using 12:30 as the time for which the GE is declared signals the correct response as B or C.</p> <p>Potentially redundant with the Operating Test if this examination includes a JPM to make an EAL and PAR determination.</p>
79	H	3		✓									✓	E	<p>The correct answer (D) is not grammatically complete. ✓</p> <p>Distractor plausibility is weak but no suggestions.</p>

Not of use

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
80	F	2	✓				✓						✓	E	An Applicant could select distractor C and argue that it is a correct answer because the stem only asks how the given conditions affect the cooldown. Could even argue that C is <i>more</i> correct than D based on ES-0.2, Step 8, which requires Operators to "Depressurize RCS to 1900 PSIG". Technical Question - is it possible to cooldown without lowering RCS pressure?
81	H	3											✓	S	Check K/A match. Is this acceptable interpretation of "Ability to direct personnel activities inside the control room"?
82	H	2 4				✓							✓	E	Distractors A and B may not be plausible if the Applicant has a fundamental understanding of SOM (presumably, these Applicants have already passed the GFE).
83	F	1				✓						✓	✓	U	Direct lookup from the reference provided. Therefore, no credible distractors. The K/A concerns RCS pressure, not temperature. It's unclear how this question is related to the chosen K/A.

Guenter

[illegible]

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
90	F	3											✓	S	
91	F	2				✓							✓	S	Too easy because distractors B & D are implausible if the Applicant understands SDM. Please consider adding "When the reactor is at the point of adding heat" as one distractor.
92	F	2											✓	S	
93	F	3				✓							✓	S	Tough to choose between A & B but C & D seemed easy to rule out because entering OS1252.02 seemed implausible. I also suspect that the 120 hour limit could cue an Applicant to rule out distractors B & C.
94	H	3											✓	S	
95	F	2											✓	S	
96	F	4											✓	S	Is this sufficiently modified to be called modified? - No, but procedure says Will Applicants have a copy of Tech Specs during the exam? If so, these sections should be redacted. I'm struggling with the plausibility of "Notify the NRC as soon as possible". An Applicant who understands reportability may recognize that there are no ASAP NRC reports.
97	F	2			✓	✓							✓	E	Distractors A & B may be implausible because RCS pressure limits do not protect the fuel. Moreover, distractor A is implausible because it indicates that protecting the fuel prevents release of radionuclides in the RCS to CTMT. Distractors B & D are implausible because RCS pressure and fuel integrity have nothing to do with lifting of MS Safeties. The grammar of these distractors is also seems stilted. This question may be redundant with question 96.
98	H	2											✓	S	This may be a better K/A match as question 78. This is potentially redundant with both question 78 and the Operating Test if there is a EAL & BAP determination of PM or Scenario followup question.
99	F	2											✓	S	Need to verify technical aspects - From Attachment A of OS1201.09, it looks like both Train A & B PORV get open signals. From the stem, both Train A & B PORVs are impacted. The explanation of distractor B seems to indicate that only one train is affected.
100	H	3					✓						✓	S	Question: is the distinction between A (... on initial ...) and C (... during follow-up ...) sufficient to make C an incorrect selection? Could an Applicant conceivably read them as identical? Should those phrases be emphasized in some manner?

after SAFE -

REPLACEMENT QUESTIONS FOR WRITTEN EXAM

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

2

Question # 40

Group #

1

1

K/A #

022.K4.03

Importance Rating

3.6

4.0

Proposed Question:

Given the following plant conditions:

- CGC-V14 and CGC-V28, Containment Structure Purge Isolation Valves are open for surveillance testing.
- All systems are operating as designed.

Based on these conditions, which of the following choices correctly identifies the system response to an automatically generated Train "A" "T" signal?

- A. CGC-V14 and CGC-V28 BOTH CLOSE.
- B. CGC-V14 and CGC-V28 BOTH remain OPEN.
- C. CGC-V14 remains OPEN and CGC-V28 CLOSES.
- D. CGC-V14 CLOSES and CGC-V28 remains OPEN.

Proposed Answer:

D

Explanation of answer: It is important that the operator is aware of the potential for releasing airborne activity from containment to the outside environment and should take appropriate actions if the situation warrants. In the case of containment purge, if a Train A "T" signal is generated only the train "A" valve (CGC-V14) will close. CGC-V28 will remain open.

Explanation of distractors:

B,C & A are incorrect because their combinations do not warrant a correct answer.

Technical Reference(s): CHV Detailed System Text

Proposed references to be provided to applicants during examination:

None

K/A Knowledge of CCS design feature(s) and/or interlock(s), which provide for
Topic: automatic containment isolation.

Question Source: Modified Bank #24422

Question Cognitive Level: Lower

10 CFR Part 55 Content: 55.41.7

Learning Objective: L8038I12RO Describe the Response of the CGC components to a T signal.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
Question # 42	Group #	1	1
	K/A #	026.A1.01	
Proposed Question:	Importance Rating	3.9	4.2

A Large Break Loss of Coolant Accident is occurring. The following specific plant conditions exist:

- Highest Containment Pressure = 35 psig.
- RWST Level = 480,000 gallons and decreasing.
- "A" Containment Spray Pump (CBS-P-9A) Suction Pressure = 60 psig and decreasing.
- "A" Containment Spray Pump (CBS-P-9A) Discharge Pressure = 120 psig and decreasing.
- "B" Containment Spray Pump (CBS-P-9B) Suction Pressure = 60 psig and decreasing.
- "B" Containment Spray Pump (CBS-P-9B) Discharge Pressure = 265 psig and decreasing.

Based on the above parameters, which one of the following choices is correct?

- A. CBS-P-9A is below its design flow; containment pressure exceeded design.
- B. CBS-P-9A is pumping normally; containment pressure did NOT exceed design.
- C. CBS-P-9B is below its design flow; containment pressure exceeded design.
- D. CBS-P-9B is pumping normally; containment pressure did NOT exceed design.

Proposed Answer: D

Explanation of answer: Based on detailed system text and LP information, the design pressure of the CBS pump is 350 psig. As the CBS pumps do not have indicators, it is important (and is the source of common misconceptions) that the candidates be able to discern proper CBS operating characteristics. A computer alarm comes in at 300 psig to warn the operator. A low discharge pressure alarm of 62 psig is also available. With the RWST full the static head of that tank should be about 60 psig which is felt on the suction of the CBS pump. Design containment pressure is 52 psig.

Explanation of distractors:

A & C – are incorrect based on containment pressure not exceeding design alone.

B – design pressure not exceeded is correct, however, the combination of discharge pressure choices makes this choice incorrect.

Technical Reference(s): CBS Detailed System Text, LP8035 CBS System

Proposed references to be provided to applicants during examination: None

K/A Ability to predict and/or monitor changes in parameters associated with operating the

Topic: CSS controls including Containment Pressure.

Question Source: Modified Bank #22830 Original question attached to reference.

Question Cognitive Level: Higher

10 CFR Part 55 Content: 55.41.7/8

Learning Objective: L8035I10RO State the design flowrate and approximate head for the CBS pumps.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
Question # 64	Group #	2	2
	K/A #	068.K6.10	
	Importance Rating	2.5	2.9

Proposed Question:

Given the following list of Process/Effluent Radiation Monitors:

1. R-6509, "Waste Test Tank Discharge Monitor".
2. R-6514, "Waste Liquid Test Tank Inlet Monitor".
3. R-6505, "Condenser Air Evacuation Discharge Monitor".
4. R-6519, "Steam Generator Blowdown Flash Tank Discharge Monitor".
5. R-6516, "Primary Component Cooling Water Loop "A" Activity Monitor".

An automatic system isolation will occur in response to a loss of power to which of the above radiation monitor combinations?

- A. 1 and 5.
- B. 2 and 3.
- C. 2 and 4.
- D. 3 and 5.

Proposed Answer: C

Explanation of answer: According to OS1252.01 as well as System Lesson L8059i, several process or effluent radiation monitors have automatic control functions associated with them. #1,2 & 4 above fall into this category. A loss of the radiation monitor will result in these control functions occurring since they are fail safe in the alarm condition. C is the only correct combination of radiation monitors listed which provide these automatic functions. These monitors are all associated with the Liquid Radwaste System. This is operationally relevant because operators should be aware of system isolation status if high radiation should occur to protect the health and safety of the general public.

Explanation of distractors: Any other combination of these detectors is either partially correct or does not have an automatic control function associated with it. All choices are plausible in that they are radiation monitors listed in Attachment A of OS1252.01.

Technical Reference(s): OS1252.01, Process or Effluent High Radiation, RDMS Detailed System Text Table 4.2.

Proposed references to be provided to applicants during examination: None

K/A Topic: Knowledge of the effect of a loss or malfunction on the radiation monitors will have on the liquid radwaste system.

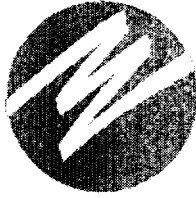
Question Source: Modified Bank #23206 Original question attached to reference.

Question Cognitive Level: Lower

10 CFR Part 55 Content: 55.41.7/13

Learning Objective: L8059I06RO Describe the auto actions (control signals) that result when the below listed monitors reach their alarm setpoints.....

**COMMENT PAGES FROM EXAM VALIDATION,
FOR OPERATING EXAM**



FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE LOIT01

INADVERTENT ROD WITHDRAWAL DURING REACTOR SHUTDOWN

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

Training Coordinator Signature _____ Date: _____
(optional)

SAT UNSAT

This JPM was administered for qualification: YES NO

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PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

PERFORMANCE CHECKLIST

D=Discuss	ELEMENT/STEP	STANDARD	EVALUATION	INITIALS/DATE
P=Perform				
=Simulate	* denotes a critical step	* denotes a critical step	SAT UNSAT	

NOTE: The student may request guidance from the US on desired course of action. Also note that the RO may take control rods to AUTO in an attempt to stop rod motion which is acceptable, however will be unsuccessful.

CUE: If direction is requested from US; Carry out the appropriate required action.

*9. P Trip the Reactor.

- ~~X~~ OS1210.04, "Continuous Control Rod Withdrawal"
Step 1 actions must be taken either from memory or by referencing the procedure
- ~~X~~ Rods placed in MANUAL
- *Verifies Control Rod withdrawal has NOT stopped
- ~~X~~ Trips the reactor using reactor trip switches on MCB.

CUE: "The JPM is complete."

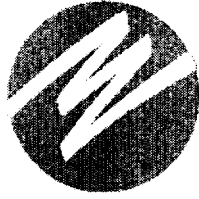
10. Stop time

Evaluator calculates time to complete task.

Time to complete the task
≤ 15 minutes.

ote to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

LOIT01



FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE L0024J

POST LOCA PORV OPERATION

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

Training Coordinator Signature _____ Date: _____
(optional)

SAT UNSAT

This JPM was administered for qualification: YES NO

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PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

PERFORMANCE CHECKLIST

D=Discuss	ELEMENT/STEP	STANDARD	EVALUATION	INITIALS/DATE
P=Perform				
=Simulate	* denotes a critical step	* denotes a critical step	SAT UNSAT	

1.	P	Start time	Initiating cue read.	_____
----	---	------------	----------------------	-------

CUE: If the student requests a Peer Check any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

2.	P	Depressurize RCS To Refill PZR:		_____
----	---	---------------------------------	--	-------

3.	P	PZR level - LESS THAN 25% [50% for adverse containment]	Verifies PZR level <25% since containment pressure is <4.0 psig.	_____
----	---	---	--	-------

NOTE: The student should recognize that the ^{above} following ACTION/EXPECTED RESPONSE cannot be achieved and transition to the RNO. This is acceptable. If student opens the normal spray valve(s), then they should subsequently be closed and transition to the RNO for a satisfactory completion of the JPM. The following **CUE** may be given at any time:

CUE: US to Student: **"Because RCPs are off, we cannot use normal PZR spray valves."**

4.	P	Open normal PZR spray valve(s) to refill PZR	Verifies normal spray not available.	_____
----	---	--	--------------------------------------	-------

*5.	P	Use one PZR PORV	Uses one PZR PORV:	
			* • Opens one PORV (with associated block valve open).	_____

ite to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

L0024J



FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE L0055J

MAKE-UP TO THE CC HEAD TANK

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

Training Specialist Signature: _____ Date: _____

SAT UNSAT

This JPM was administered for qualification: YES NO

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PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT	INITIALS/DATE
--------------------------------------	---	---	--------------------------------	---------------

1. Start time Initiating cue read. _____

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

CUE: **"DM-V-13 opens."**

*2. S COMMENCE filling the "A" CC head tank. Commences filling the "A" CC head tank:

*a. Opens DM-V-13 by turning handwheel counter-clockwise. _____

b. Informs control room DM-V-13 is open. _____

CUE: US to Primary NSO, **"I copy, DM-V-13 is open. "A" CC head tank level is now stable at 55%. Shut CC-V975 and CC-V-1298, the Train A CC Radiation Monitor supply and return valves. The appropriate Tech. Spec. action statement is entered."**

NOTE: CC-V-975 and CC-V-1298 control switches are located at +25' north wall of PAB.

CUE: When student arrives at the +25' north end of the PAB to isolate the rad monitor, cue: **"Water is rushing from the CC piping within the A train rad monitor, RM-RE-6516(6515)." The leakage stops when CC-V-975 and CC-V-1298 are closed. Cue: "The green light for CC-V975 and CC-V1298 are lit and the red light is out."**

NOTE: Based on the CUE above, ensure the student does not become consumed with potentially contaminated water as a deterrent to accomplishing the task of isolation.

*3. S SHUT CC-V-975 and CC-V-1298. *Takes CC-V-975 and CC-V-1298 control switches to CLOSE. _____

4. S INFORM control room the rad monitor was leaking, and closing CC-V-975 and CC-V-1298 stopped the leak. Informs control room the leak has stopped. _____

CUE: **"The JPM is complete."**

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

L0055J



FPL Energy

Seabrook Station

Original Prior to
Modifications requested by
NRC. Add action to
debrief T.S.
alone.

JOB PERFORMANCE MEASURE LOIT06

OFF-SITE NOTIFICATIONS DURING A FORCED OUTAGE

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

Training Coordinator Signature: _____ Date: _____

SAT UNSAT

This JPM was administered for qualification: NO

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PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

Facility:	Seabrook	Scenario No.:	1	Op Test No.:	1
Examiners:	_____	Candidates:	_____	_____	_____
<u>Initial Conditions:</u> Mode 1. Unit at 75% power. IC # 210.					
<u>Turnover:</u> The crew will take the shift and commence a rapid downpower to 50% to remove "A" Main Feedwater Pump from service within the next hour. Entered TSASs for CS-P-2B being tagged out of service for planned maintenance 2 hours ago. Return to service expected within 6 hours.					
<u>Critical Tasks:</u> <ol style="list-style-type: none"> MANUALLY trip the reactor from the control room when SSPS fails to automatically trip the reactor. [E-0] Control the EFW flow rate to not less than 25 GPM per SG in order to minimize the RCS cooldown rate before a severe (orange path) challenge develops to the integrity CSF. [ECA-2.1] 					

Event No.	Malif. No.	Event Type*	Event Description
1	N/A	R (RO) N (BOP/US)	Rapid power decrease.
2	ptFWPT505	I (BOP/US) TS (US)	PT-505 Turbine First Stage Pressure Transmitter Fails LOW
3	ltRCLT459	I (RO/US) TS (US)	Controlling PZR Level Channel LT-459 fails LOW
4	mfTH002 mfTH002 (severity increases) mfRPS001 mfRPS002	C (BOP/US) M (ALL) C (RO/US)	Turbine Generator Vibrations begin to increase. After entry into abnormal operating procedure, turbine vibrations will rapidly increase beyond automatic turbine trip setpoint resulting in a turbine trip. The reactor fails to trip automatically when the turbine trips. The crew will have to trip the reactor manually (CT).
5	mfMS051 mfRPS019 mfRPS020 svMSV86 svMSV88 svMSV90 svMSV92 mfSI003	M (ALL) C (BOP) C (RO)	The combination of high turbine vibrations and turbine trip causes a catastrophic rupture of the main steam bottle (down stream of MSIVs). All four MSIVs will fail to close when the MSI signal is actuated. Manual actuation of MSI in the control room should be attempted, but will not cause the MSIVs to close. Upon automatic actuation of Safety Injection from the RCS cooldown, the "A" Safety Injection pump will not automatically start. Procedure progression will be E-0 ⇒ E-2 ⇒ ECA-2.1 where the crew will be directed to reduce feed flow to all SGs to 25 gpm to avoid severe challenge to the Integrity CSF (CT).
6	mvFWFV4214A	C (BOP/US)	The motor operator overloads for EFW flow control valve FW-FV-4214A will trip as soon as valve motion is demanded. The operator will be required to utilize FW-FV-4214B to control EFW flow to A SG.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specification

	RO	Adds required amount of Boron using OS1008.01, Figure 3 (Boration Checklist). This includes verifying proper system line-up, Placing Blender Mode Start Switch to STOP. Placing Boric Acid Blender Mode Selector Switch to BORATE, selecting desired flow rate and quantity, Placing Blender Mode Start Switch to START, verifying proper plant response, and resetting the control system to AUTO when desired amount of acid is added.
	US/BO P/RO	Peer checks will be provided for all reactivity manipulations. Because of a three man crew, this peer check can be provided by the US.
	RO	As directed by US, if RCS boron concentration is being changed by greater than 50 ppm, OPERATE pressurizer heaters to force spray to equalize boron concentration between the RCS and pressurizer.
	RO	RO will manually insert/withdraw rods to maintain axial flux difference in band.
	BOP	Use the LOAD SELECTOR load decrease push-button or LOAD LIMIT SET potentiometer to reduce load to the desired load.
	BOP	If reducing load with the load selector, FOLLOW the load set with the load limit set potentiometer and the standby load set.
	BOP	Maintain generator VARs consistent with load per The Turbine Generator Capability Curve and load dispatcher's instructions.
	BOP	Maintain the manual voltage regulator nulled.
	BOP	Maintain speed deviations for both main feed pumps nulled.
		FAILURE OF CONTROLLING PZR LEVEL INSTRUMENT
	CUE	VAS D4461 PZR LVL LOW & HTR INTERLOCK ACTUATED & F4324/F4325 PZR GROUP C/D BACKUP HTR TRIPPED & F4323 PZR CONTROL HEATERS TRIPPED annunciators are received. Also LI-459 indication fails low.
	RO	Recognizes controlling channel (LI-459) has failed low. Recognizes letdown has isolated. Informs US.
	US	Enters and directs action IAW OS1201.07, "PZR Level Instrument Failure".
	RO	Takes manual control of PZR level controller RC-LK-459 or controls level with letdown and charging flow.
	RO	Selects an alternate level channel for CONTROL/BACKUP as necessary. Selects an alternate RECORDER channel.
	RO	Resets the control group of PZR heaters.
	RO	Determines that letdown can be restored and restores letdown IAW OS1201.07. <i>(> 50 gpm pwr lvl > 17%)</i>

	RO	Establish normal letdown: VERIFIES CC-V341 OPEN. VERIFIES CS-TK-130 in AUTO, CLOSE CS-HCV-189, CLOSE CS-HCV-190, OPEN RC-LCV-459, OPEN CS-V145, establish letdown flow using letdown flow control valves.
	NOTE	OS1002.08, "PZR Level Control System Operations" may be referenced to restore system to AUTO.
	RO	Returns PZR level controller to AUTO after proper controller setpoint and proper PZR level are established.
	US	Verifies TS compliance 3.3.1 table 3.3-1 item 11 and TS 3.3.3.6, item 5, Accident Monitoring Instrumentation. Verifies redundant channel bistables NOT tripped and inform I&C of controller failure.
	NOTE	Table 3-3.1 item 11: inoperable channel LT-459 tripped within 6 hours.
	NOTE	TS 3.3.3.6 item 5: requires that LT-459 be returned to operable status within 7 days.
	US	Informs I & C of failed channel and requests assistance with troubleshooting including placing LT-459 in bypass (if desired by lead examiner)

When directed by the lead examiner, the main turbine generator vibrations will begin to increase to about 8-10 mils requiring entry into ON1231.01, "Turbine High Vibrations". Once into the abnormal and beyond step 1, Turbine Vibrations will rapidly increase beyond the turbine trip setpoint causing an automatic turbine trip. However, the reactor will fail to trip, requiring a manual reactor trip (CT). Immediately following reactor trip, a catastrophic failure of the MS Bottle downstream of MSIVs will occur. MSIV will not be able to close until much later in the scenario when NSO's locally close the "A" and "D" MISV's from the west pipe chase. Other complications will occur as follows:

Event Description:		MAIN GENERATOR VIBRATIONS / AUTO TURBINE TRIP w/o AUTO REACTOR TRIP LEADING TO ALL S/G'S FAULTED WITH INABILITY TO ISOLATE FAULT FROM CONTROL ROOM WITH OTHER COMPLICATIONS
Time	Position	Applicant's Actions or Behavior
	CUE ↖	After the US discusses TS requirements for the failure of controlling PZR level instrument, and at the discretion of the lead examiner, the main turbine generator vibrations will begin to increase as noted by VAS B5933 TURB GEN BRG 7 VIBRATION HIGH & B5935 TURB GEN BRG 8 VIBRATION HIGH.
	CUE ↙	After the crew has progressed beyond step 1 of ON1231.01, "Turbine Generator High Vibration", the Turbine will AUTO trip as noted by RED Hardwire ANNUNCIATOR on UA-52, "TURBINE TRIP", White Hardwire on UA-53, TURBINE TRIP", and numerous vibration alarms are received on VAS.

more do not pgp

	NOTE	If the crew is conservative and decides to trip the reactor/turbine based on high vibrations increasing quickly, then it is important that we increase severity before they trip in order to preserve critical tasks.
	BOP	Acknowledges alarms for high turbine vibrations and pulls up MPCs graphics to monitor bearing vibration.
	US	Directs entry into ON1231.01, "High Turbine Vibration".
	BOP/US	Monitors vibrations less than trip limits. Determines that Bearing 7 & 8 are limiting at about 10 mils. (alarm is at 8 mils)
	BOP	Checks Main Generator breaker closed.
	BOP/US	Directs turbine load adjusted until vibration levels are less than values needed to support extended operations. May get Engineering involved.
	BOP/US	Checks Turbine vibrations stable or increasing. (vibrations will remain stable until lead examiner requests the severity increased)
	CUE 3	After trip and insertion of Main Steam Bottle rupture, the crew will hear the noise generator simulating main steam noise from steamline break until S/G's are blown down.
	RO/US	[REDACTED]
	US	Enters E-0, "Reactor Trip or Safety Injection"
	RO	Immediate actions: Verifies reactor trip and bypass breakers open, neutron flux decreasing, and rod bottom lights lit. Checks if SI is actuated, verifies both trains of SI actuated.
	BOP	Immediate actions: Verifies all turbine stop valves closed and generator breaker open, Verifies power to AC Emergency busses, verifies all emergency busses energized.
	RO/BOP/ US	Performs ESF Actuation Verification per Attachment A of E-0. Notes "A" SI Pump did not start and manually starts the "A" SI pump. Informs the US that the "A" SI pump did not start but was manually started. Also as part of this attachment Main Steamline isolation is checked. It should be noted all S/G pressures are less than 585 psig, that MSIV's did not close, manual attempt failed and the status should be reported to the US
	RO	Checks containment pressure has remained less than 18 psig by pressure recorder.
	BOP	Verify Total EFW Flow – Greater than 500 GPM.

Facility:	Seabrook	Scenario No.:	2	Op Test No.:	2
Examiners:	_____	Candidates:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	Mode 2. Unit is operating at 10^{-8} amps , MOL. IC# 211				
Turnover:	<p>The crew will take the shift and commence a power increase up to but not to exceed 3% power.</p> <p>The "C" Primary Component Water pump is tagged out for bearing replacement. The motor experienced high vibrations during quarterly surveillance.</p> <p>Seismic Event occurred two shifts ago.</p>				
Critical Tasks:	<p>1. MANUALLY actuate at least one train of Containment Spray or start one train of Containment Spray Building Equipment prior to step 7 of E-0 following Large Break LOCA. [E-0]</p> <p>2. PERFORM TRANSFER to cold leg recirculation when automatic swapover occurs or 115,000 gallons in the RWST, whichever occurs first. [ES-1.3]</p>				

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (RO) N (BOP/US) TS (US)	Raise reactor power from 10^{-8} amps to approximately 3% power. Place Electric EFW Pump (P-37B) in PTL after SM informs crew that it is reported to be inoperable and address TS.
2	ltFWLT529	I (BOP/US) TS (US)	FW-LT-529 Fails LOW causing the "B" Feedwater Regulating Bypass valve to fail open.
3	ptRCPT455	I (RO/US) TS (US)	Controlling PZR pressure channel fails HIGH.
4	mfRC024A mfCBS004 mfCBS005 mfFCS002 mfFW039 svMS1V395 bkFWP37B	M (ALL) C (RO/US) C (RO) C (BOP)	Large Break LOCA occurs leading to automatic reactor trip with failure of Containment Spray pumps to automatically start upon Phase "B" actuation. The crew will have to manually start at least one Containment Spray pump (CT). Upon completion of immediate actions, all RCPs should be tripped based on E-0 Operator Action Summary. The "B" CCP pump will not automatically start, and should be manually started as part of E-0, Attachment A actions. The SUFP will trip after reactor trip and MS-V395 will close after the Steam Driven EFW Pump Auto Starts, causing it to shutdown. It should be recognized by the BOP that there is no EFW flow. Procedure progression will be E-0 to E-1 to FR-P.1 (Red) to FR-Z.1 (Orange) to E-1 to ES-1.3.
5	N/A	N/A	Perform transfer to cold leg recirculation per ES-1.3 when the automatic swapover occurs or 115,000 gallons in the RWST, whichever occurs first. (CT)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specification

	RO	Check PZR PORV and Block Valves.
	RO/US	Check if ECCS flow should be reduced. Based on insufficient subcooling, the US will proceed to step 7.
	RO	Check if containment spray pumps should be stopped. If containment pressure has dropped below 4 psig than reset Phase B isolation and containment spray signals, stop CBS pumps and place in standby.
	RO	Check if RHR pumps should be stopped. Determine RCS pressure is < 260 psig and do not stop RHR pumps.
	RO/BOP	Check RCS and SG Pressure. If SG pressure is NOT stable or NOT INCREASING OR RCS Pressure is NOT stable or NOT DECREASING than the crew will loop back to Step 1 of E-1 until these conditions are met. If and when they are met continue with following steps.
	BOP	Check if EDG should be stopped. Reset SI, verify all AC busses energized by offsite power from UATs or RATs, stop and unload EDG by depressing both emergency stop pushbuttons, after EDG stopped, reset for auto start and isolate SW to EDG.
	RO/US	Evaluate plant status by verifying cold recirculation capability. leg
	RO	Check if RCS cooldown and depressurization required.
	RO/US	Check if transfer to cold leg recirculation is required (auto swapover actuated or RWST 115,000 gallons). When conditions are met transition to ES-1.3.
	NOTE	May take awhile to get here based on Spray Pumps being secured when containment pressure decreases less than 4 psig.
	RO/BOP/US	Transition to cold leg recirculation. To accomplish this critical task the following items must be accomplished:
	US	Transition to ES-1.3, "Transfer to Cold Leg Recirculation".
	RO/US	Within three minutes of receiving RWST Lo-Lo Level Alarm, Reset SI, Verify CBS-V8 and V14 FULL OPEN, Simultaneously close CBS-V2 and V5.
	RO	Verify RHR pumps at least one running.
	RO	Place running RHR pump switches in normal after start position.
	RO	Close SI pump mini-flow valves (SI-V89, 90, & 93)
	BOP	Energize MCC-E522 & E622.

	RO	Close RHR Discharge to cold legs 1 & 2 (RH-V14)
	RO	Close SI and CCP suction (CSV460, 461, & 475)
	RO	Open RHR supplies to SI and CCP suction (RH-V35 & 36)
	RO	Start any pump that was stopped due to RWST empty alarm.
	RO	Isolate RWST feed to CCPs and SI pumps (close CBS-V47 & 51, CS-LCV-112D & 112E, De-energize CS-LCV-112D & 112E.
	BOP	Deenergize MCC-E522 & E622.
	Note	Place the simulator in freeze at Lead Examiner discretion.
	NOTE	Upon completion of follow-up questioning, the SRO will perform JPM LOIT08 (Post EAL Determination and Event Classification) They should declare a SAE based on EAL-15d, but this will be determined by the staff based on the endpoint of the scenario.

Facility: Seabrook Scenario No.: 3 Op Test No.: 3

Examiners: _____ Candidates: _____

Initial Conditions: Mode 1. Unit is operating at 100% power. IC# 212XXXX *fix*

Turnover: The ASDV for the "D" Steam Generator (MS-PV-3004) is tagged out of service due to a positioner air leak. Entered TSAS 3.3.3.5 action c, 3.6.3 action c and 3.7.1.6 action a, two hours ago. Expected outage time is 12 hours.

The Pressurizer control group heaters are tagged out of service. The control circuit for the heaters has failed to zero output. A troubleshooting plan has been developed and Electrical Maintenance is investigating the problem. The heaters have been out of service for 10 hours. Backup Heater Group "B" is ON.

- Critical Tasks:**
1. **MANUALLY** trip the reactor from the control room when SSPS fails to automatically trip the reactor. [E-0]
 2. **MANUALLY** trip the main turbine before a severe (Orange Path) challenge develops to either the Subcriticality or the Integrity CSF, or before transition to ECA-2.1, whichever happens first. [E-0]
 3. **MANUALLY** trip the "C" and "D" RCPs when subcooling is <40 F such that an Orange path on Core Cooling does not occur when forced circulation in the RCS stops.

Event No.	Malf. No.	Event Type*	Event Description
1	mfHD027	C (BOP/US)	"A" Heater Drain Pump Trips on overcurrent
2	N/A	R (ALL)	As a result of the heater drain pump trip, a loss of feedwater preheating will result in positive reactivity and subsequent power increase. The crew will need to take positive control to restore power less than 100%.
3	ttRCTT411	I (RO/US) TS (US)	Loop 1 Tc Instrument Fails HIGH
4	mfED001 mfRPS001 mfRPS002 mfRPS003	M (ALL) C (RO/BOP)	Loss of 13.8kV Bus 1 causes a Loss of "A" & "B" RCP's with a failure of an automatic reactor trip (CT) and main turbine trip (CT) to occur. Note that although Safety Injection should actuate, ALL Safety Injection pumps will be prevented from manual start (malfunction numbers are not shown since no credit is taken for these failures)
5	mfRC016 mfRC019 mfRC049D	M (ALL) C (RO/US)	Subsequent to reactor trip, the Reactor Vessel will develop a flange leak. The crew will need to trip the remaining "C" and "D" RCPs based on loss of RCS subcooling (CT). Once tripped, the RCS leak will become significantly larger to force the crew into FR-C series procedures. The "A" CCP will also trip on overcurrent.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specification