

Q#	1. LOK LOD (F/H) (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		7. U/E/S	8. Explanation	
		Stem Focus	Cue Focus	T/F	Cred Dist.	Parti al	Job-Link	Mini-Link	#/unit	Back-ward			Q=K/A
1													S good question. Minor format changes. Changes made
2													S good question, minor format changes Changes made
3													E Added reason to B. Changed reactor vessel to core. Changed time to 7 hours (recently changed from 10 hours). Changes Made Recommend changing see suggested question, which asks directly the reason for transferring to Hot Leg Recirc Will discuss.
4													D is not plausible, inserted suggested replacement. Changed D

Q#	1. LOK (F/H) (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	Minutes	#/units	Backward	Q=K/A	SR Only			
5															<p>Not possible to have 27F of subcooling w/CETCs reading 950F (3000 psi equals a Tsat of approx 700F) Inventory is a YELLOW path, hardly a challenge no matter what level is.</p> <p>Recommend a new KA.</p> <p>IF we are going to ask RO's to know challenges, lets at least go w/red paths. KA is loss of makeup (charging). So a small break w/loss of injection challenges core cooling. See question for changes.</p> <p>Will discuss</p>
6															<p>The shutdown AP's are usually SRO topics as they are not the normal set of procedures that the RO knows the entry conditions. Also, I believe the premise of low amps with the valves open is an interpretation of step 2 RNO, again not required RO knowledge (not an immediate action). Setup of RHR flow of only 700 gpm is not allowed procedurally, 1550 gpm is required for MODE 6.</p> <p>Recommend question 44 from 2/2009 DCP exam <u>or</u> the added question.</p> <p>Revised/Will discuss</p>

Q#	1. LOK (F/H) (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	Minutes	#/units	Backward	Q=K/A	SR Only			
7															<p>Not applicable to Unit 1 due to plant mod. Changed to Unit 2.</p> <p>The problem is that reducing RCS pressure actually INCREASES the DP across HCV-142 because the charging pumps discharge pressure has stayed the same, while RCS pressure has dropped. The effect is that charging flow rises and seal injection flow increases (especially if charging is in MANUAL). In AUTO, pressurizer level begins to increase and charging flow lowers, if left in AUTO, seal injection flow is not appreciably affected.</p> <p>Need to discuss replacement or rework (see question for suggestion)</p> <p>Revised question/Will discuss</p>
8															<p>the words "following an ATWS" would imply that there no longer is an ATWS. Recommend changing to "during an ATWS".</p> <p>Not much difference between A and B. recommend changing one to "increase".</p> <p>C "following an ATWS", which is in the stem</p> <p>D does not make sense grammatically.</p> <p>Revised</p>
9															<p>Minor formatting. Deleted last bullet, not relevant to the question. Added name to FCV-95</p> <p>Revised</p>

Q#	1. LOK (F/H) (1-5)	3. Psychometric Flaws						4. Job Content Flaws			5. Other		7. U/E/S	8. Explanation
		Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutes	# units	Backward	Q=K/A	SR Only		
10														Minor changes Revised
11														As written only have to know one load to answer question and one load in non-vital. See recommended change. Revised/Will discuss
12														The question asks about the pressurizer level and charging controller, the answer is the only one with a connection to this. Recommend revisiting question submitted earlier. Rewrote question
13														Added bus 12 to align with lesson material. Revised
14														Steve, I had asked if this backward logic previously. Formatting. Revised
15														"A" could certainly be done, knowing if the entry conditions are 90 or 92 psig is pretty trivial. D is a true statement. Changed to lowering slowly to make modified A plausible. Changed D Revised

Q#	1. LOK (F/H) (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	Minutes	# units	Backward	Q=K/A	SR Only					
16																	The difference between "available" vs. "running" is pretty slim Recommend changing CFCUs available to hydrogen concentration. Revised
17																	Procedure step knowledge. How about a nice "why trip RCPs in H.1?" question? Or I could go with something like, "how many PORVs must be open to be effective" Will discuss
18																	Need to validate.
19																	Don't think RO (or SROs for that matter) will remember the required amount of BA to satisfy TS. Recommend adding TS as given reference. Will discuss
20																	Deleted last bullet, at power turbine RPM is going to be 1800 rpm. Agree - Revised
21																	ok
22																	Removed reference to Yellow path, yellow paths are normally not entered. Revised
23																	T/F question. Disagree See suggested replacement. Reformatted

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	Minutes	#/units	Backward	Q=K/A					SR Only
24																ok	
25																Ok	
26																Requires procedure step knowledge that is not immediate action. See proposed replacement. Will discuss	
27																Not a KA match. See suggested replacement. Will discuss	
28																Good. Minor change to question to make D clearly incorrect. Revised	
29																Requires procedure step knowledge, see suggested replacement. Revised	
30																Good. Minor formatting, modified D.	
31																Plant conditions not plausible. See suggested replacement. Will discuss	
32																Good, minor word addition to answer Revised	
33																Modified wording. Revised	

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	Minutes	#/units	Backward	Q=K/A	SR Only				
34																	bad KA, the item is the power supply to the CONTROLLER of the spray valve. Loss of DC bus 13 (and no one will know this is the power to the FCV-584) does not cause a loss of power to the controller. Also Unit 1 hagan controllers have been replaced with Tricon computers. See suggested replacement. Rewrote question
35																	Power range channels cannot be bypassed. Question seems unfocused. See suggested replacement. Will discuss, then revise
36																	ok
37																	Recommend #12 from last NRC exam (being with held ADAMS) Will discuss
38																	Ok Edited
39																	Formatting changes Edited
40																	Added valve names Revised

Q#	1. LOK (F/H) (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	Minutes	# units	Backward	Q=K/A	SR Only						
41																		Actions per train is not stressed. Consider proposed replacement Edited – Don't understand comment
42																		FSAR reference not RO knowledge (agree). EOP number is 435 gpm, its basis is the same. See suggested change. Why is FSAR number different than EOP number?
43																		Recommended slight change to test Unit difference Rewrote question
44																		ok
45																		Ok Edited distractor B
46																		Minor addition of DFO pump which provides Train A and B.
47																		Modified distractors for better plausibility (hopefully) Revised question
48																		Justification has all answers as incorrect. also, doesn't seem to meet KA. See suggested replacement Revised question

Q#	1. LOK (F/H) (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	Minutes	# units	Backward	Q=K/A					SR Only
49																Refueling in containment is SRO knowledge. Also requires knowledge of procedure steps not immediate actions. Rewrote to make more RO oriented and shorten the answers. Will replace question
50																Ok Edited
51																Tweaked setup Edited
52																Reworded question Edited
53																If SI has actuated, the crew is not in E-0.1, reactor trip response. I think question wanted E-1. See suggested change.. Will discuss
54																Numbers based on TS surveillances and bases, changed to RO "need to know" still draws a line between U1 and U2 start levels. Rewrote question
55																Revised question

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	Minutes	#/units	Backward	Q=K/A	SR Only					
56																		As written there were two answers. Pressurizer heaters only stay everigized if transferred to vital power. This is not normally the case. May be ok even though it requires knowledge of procedure steps. Revised question
57																		Needed to change C (and B) because it would still result in a trip. Revised question
58																		Needed to change to unit 2. Still would rather test the new system, see suggested replacement. Replaced question – Verify it is the correct unit
59																		Ok, some reformatting Revised question
60																		Needs to be resampled. The Iodine Removal fans are not used. Will resample
61																		Reformatted for ease of reading. Edited

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	Minutes	# units	Backward	Q=K/A	SR Only				
62																	<p>No one will know this. Not sure what the FSAR statement is driving at, the limit everyone knows is the 3.7.15 level of 23 feet and that is what the drainage hole is protecting. I would reword to make B the answer (see the SFP lesson)</p> <p>The TS level limit has a different bases than the 10 foot limit/Will discuss</p>
63																	<p>We have tried a question like this in the past and the problem is, an initial candidate has virtually no refueling experience. They won't recall if it's a RHR or CS pump used and while they could probably reason the hot legs vice the cold legs, its just not a fair question. Also, since the answer is a Containment Spray pump, not an RHR pump, it would seem to NOT meet the KA.</p> <p>I would focus on the draining to mid loop and the indications of RHR vortexing, (OP A-2:III, attachment 2) however, this may not meet the KA because this would be a RHR and RCS cause/effect.</p> <p>One other possibility is to determine time to SFP boiling following a loss of RHR, using attachment B of OP AP SD-0.</p> <p>Will discuss</p>

Q#	1. LOK (F/H) (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	Minutes	#/units	Backward	Q=K/A	SR Only					
64																	proposed answer should be C (or D). don't recommend splitting hairs over whether its 550 or 551 for unit 1 or 2. not that important or distinguishable. Edited
65																	
66																	Minor change. Revised
67																	Question seems to imply someone's permission is required, yet another is no one, recommend change to wording. Edited
68																	This isn't really a system the operators, especially the instants, have much exposure too. Recommend pink tag question from our last audit exam (3/2012) Edited question
69																	Should (better) be 100% edited

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
3. 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).
4. 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.
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. Check 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" ratings (e.g., how the Appendix B psychometric attributes are not being met).

General comments:

- Separate the question into: initial conditions, problem and question.
- No bold on questions
- No which "one" of the following – recommend "Which of the following"
- Terms like "correct" imply t/f statements, and usually the question can be worded to remove it.
- CRS change to Shift Foreman

1. no bold on setup/question. No comments on question.

2. change third bullet - 'A' Train of ECCS to One Train of ECCS

Answer justification: (From E-1 background, page 12) As stated before, SI system assumptions may be very important. In Case A minimum safeguards SI was assumed.

Case A has been analyzed to a long term stable condition. For breaks in this category, the establishment of an equilibrium pressure where pumped SI equals break flow constitutes a safe and stable condition for the long term, provided that the steam generator heat sink is maintained until such time that the break flow and SI sensible heat can remove all the decay heat. Once equilibrium pressure was established, the core was covered and adequate flow existed to remove decay heat through the steam generator with a small amount of voiding. The only change in the primary system conditions through the transient for these cases is a gradual decrease in fluid temperatures which is beneficial, since it indicates that adequate core cooling is being maintained.

3. See attached question. Better match for KA.

4. Order answers, low to high. Recommend change to:

Unit 1 is at 100% power.

RCP 1-1 stator temperature begins to increase. The crew enters OP AP-28, Reactor Coolant Pump Malfunction.

According to the Foldout Page, the crew is required to trip the RCP once motor stator temperature exceeds:

A. 120°F for 5 minutes

B. 200°F

C. 235°F

D. 300°F

Answer: D. 300°F

Justification: FOP states RCP is tripped if:
120F for 5 minutes for a loss of CCW
200F for motor bearing temperature
235F for seal outlet temperature
300F (correct) for motor stator temperature

Reference: OP AP-28, Foldout Page

Objective: 7927 - Given initial conditions and assumptions, determine if a reactor trip or safety injection actuation is required

5. Inventory is only a YELLOW path, at best, and would only be addressed at the crews discretion (per procedure F-0). C is not plausible given the wording of the question. Probably not a good fit for the loss of makeup (ie loss of charging) abnormal, recommend resample. Also, a post trip SUR of -0.3 is normal, -0.7 is abnormally large.
6. The shutdown AP's are usually SRO topics as they are not the normal set of procedures that the RO knows the entry conditions. Also, I believe the premise of low amps with the valves open is an interpretation of step 2 RNO, again not required RO knowledge (not an immediate action). Setup of RHR flow of only 700 gpm is not allowed procedurally, 1550 gpm is required for MODE 6.

I believe you could address this KA with a vortexing or cavitation question. I know there has been questions like that on our past exams (#44 from 2/2009. I recommend looking there.

7. Good match to KA. Formatting, remove extra space, align bullets under Initial Conditions (and change to GIVEN:) Due to Process rack change out, change to Unit 2. Third bullet is actually the problem, make stand alone.

GIVEN:

- Unit 2 is at 100% etc
- 455/456 yada, yada

455 fails HIGH.

Question

(recommend changing question to: RCP seal injection will:

Then 2 increase etc and 2 decrease etc (based on the A and B response) with no answer being, no change.

8. 3 oppose, 1 ensure (and it's the answer), the pressure coefficient in a PWR is negligible and not a factor, making C a bit implausible. How about this:

GIVEN:

- An ATWS occurs on Unit 1
- The crew is performing the actions of FR-S.1, Response to Nuclear Power Generation/ATWS
- One rod fails to insert when the reactor trip breakers are opened locally
- Emergency boration from the RWST is in progress

When can the crew secure emergency boration of the RCS?

- A. once FR-S.1 is exited.
- B. once 900 gallons of RWST inventory has been injected into the RCS
- C. once 2700 gallons of RWST inventory has been added to the RCS
- D. once the RCS is boration to the desired shutdown condition and there is adequate shutdown margin

9. The steam system is cross-tied, so pressure cannot go up in only one steam generator and I can't think of an event, except perhaps an ATWS, with the MSIVs open that would cause steam pressure to rise to the safety setpoint. Also, the knowledge of whether its RV-3 or RV-7 is not relevant (setpoints, fine, safety valve numbers, not so much). Consider #48 from 4/2007 exam.
10. separate question from stem. Remove "one" from which one.. there is only one answer, its redundant. D not plausible (maybe, discharge rate will rise steadily until... then rapidly go down.)
11. Recommend finding a vital load for A rather than the Cond Booster Pump and a simplification:
Unit 1 is at full power.

A loss of all offsite power occurs. Only Emergency Diesel Generator 1-3 starts and supplies its Vital 4 kV bu.

Which of the following equipment would have power?

12. Note as a Unit difference (unit 1 no longer has hogan controllers). However, knowing the auto/manual power supplies to recommend:
Unit 2 is at 30% power.

Power is lost to PY-21, Vital AC Instrument Bus. Among the instruments that lost power are Power Range channel, N-41, and Turbine Impulse Pressure channel, PT-505.

Which of the following describes why the operators must place Rod Control in MANUAL?

- A. PT-505 failure is causing rods to insert. (answer)
- B. NI-41 failure is causing rods to insert.
- C. PT-505 failure is causing rods to withdraw.
- D. NI-41 failure is causing rods to withdraw.

PT-505 low causes a Tave/Tref mismatch. Rods begin to insert in an attempt to match Tave with the failed low Tref.
NI-41 fails low, but does not cause rods to move (auctioneered high).
PT-505 fails low, the mismatch is the opposite.
NI-41 failing low, could think that rods will withdraw to match turbine with reactor power. In fact, the failing low of the NI will not affect rod control.

13. I'm sorry, we have run this on the simulator and the procedure may be incorrect. There is a change submitted to look into it, (I know, I wrote a similar question just a little while ago).

14. word smithing:

Unit 1 is at full power.

The running ASW pump trips. The standby pump fails to start.

Which of the following would be the indications the operator would expect to see in the Control Room?

NOTE: ONE THING about this question, it seems this may be backward logic. The question probably really should be you get this indication, what happened. You may want to run it by Steve.

15. requires detailed knowledge of PK, not RO required knowledge. You need to go broader. Maybe the PK is in, IA pressure is 77 psig and lowering. PK 09-01 through PK09-04 alarm. s/g levels are 60% and lowering. Then the action to take, ie, take manual control of MFPS, manual control of feed control, trip and one more, be creative.

16. Detailed procedure knowledge, not RO. Consider giving the table and determining the number of spray pumps required, but again, ROs don't read the procedures.

17. again, fine line as it applies to what ROs are expected to know, we can validate to see. Also, there are 3 PORVs, so if only one doesn't open, two would be, not one.

18. Tough one, but probably ok, we'll validate.

19. Knowledge of BAST required level is not required. Need reference.

20. a question will be if P-9 has reset. Turbine will be at 1800 rpm at power, not more, or less. Recommend lowering power a bit more, say to 45%. Also, psychometrically, (such a lovely word) if the answer is A then B and C are correct, the answer must be D. something else to think about, the KA is "explain and apply" the question only addresses "apply", does this meet the ka?

21. the person who directs the procedures is the Shift Foreman, not the Shift Manager. The question is ok, but the way its worded implies you must know the step 2 of the AP, which is not an immediate action. Suggest rewording, to say "which of the following actions will minimize the release?"

23. Change SM to Shift Foreman. Word question to "which of the following will occur?"

24. remove the words "following a LOCA" in the setup. It seems that you'd have a LOCA and be in SI Termination, also, its window dressing. I think it would be clearer to add:
The procedure has the operator verify a specific RCP is running.

Which of the following is the RCP the procedure specifies and why?

26. I'm ok with knowing the cooldown, but the soak time is not something the students will know. Consider either testing around the number of crdm fans, 2 vs 3 and why or why a soak is required. I can probably find a bank question about a soak if you want.

28. ok

29. don't think it meets ka. I don't know of a good activity level limit, there's a cleanup (and I cant for the life of me remember what we call it), we do prior to shutdown to lower rad levels during the outage. If you want, I'll do more research on that.

For question 3:

~~During a loss of coolant accident a shift to hot leg injection occurs hours after initiation of safety injection.~~

What is the reason for shifting to hot leg injection after a loss of coolant accident?

- A. Return into solution boric acid which has assumed to become plated at the top of the core to prevent a reduction of heat transfer from the fuel to the RCS.
- B. Ensure safety injection flow to the core in the event that the break is located in a hot leg Quench the steam bubble in the reactor vessel head ensuring continued natural circulation/reflux cooling.
- C. Equalize safety injection flow through the core to allow more even cooling Quench the steam bubble in the reactor vessel head which refills the vessel to above the top of the fuel, ensuring continued heat removal from the fuel to the RCS.
- D. Ensure safety injection flow to the core in the event that the lower portion of the core has melted Return into solution boric acid assumed to become plated at the top of the core restoring Shutdown Margin.

Answer: A

Answer Explanation

<< >>

Question 1 Info

Question Type: Multiple Choice

Status: Active

Always select on test? No

Authorized for practice? No

Points: 1.00

Time to Complete: 2

Difficulty: 1.00

System ID: 22543

User-Defined ID: <<P-22543>>

Cross Reference Number: <<LPE1C PG 20>>

Objective – 42459 - Explain basis of emergency steps of E-1.4

Justification: E-1.4 background: The calculation of boric acid concentration in the reactor vessel considers a cold leg break of the reactor coolant system in which steam is generated in the core from decay heat while the boron associated with the boric acid solution is completely separated from the steam and remains in the effective vessel volume. The cold leg safety injection flow is not effective in counteracting this boiloff from the core since for larger breaks the downcomer level is low and the injection flow is primarily refilling the downcomer as opposed to the core, and no flushing of the core occurs. If the plant is transferred from cold leg to hot leg recirculation prior to the time the boric acid concentration limit is reached in the reactor vessel, the hot leg safety injection flow will dilute the vessel boron concentration by passing relatively dilute boron solution from the hot leg through the vessel to the cold leg break location and will terminate boiloff from the core. This will prevent boron precipitation in the core along with any resultant plate out on the fuel cladding which could reduce heat transfer from the fuel to the reactor coolant.

One more generic comment:

When referring to CCPs that are part of the ECCS, the proper term is ECCS CCPs. This differentiates them from CCP 1-3 which is not an ECCS pump and this is the way the EOPs refer to them.

31. flow rates will not be known. Better would be, which pumps are injecting/running, (si/chg/rhr running, only chg injecting, si/chg/rhr running, only si and chg injecting, only si/chg running, only chg injecting, si and chg injecting).

Recommend just removing LBLOCA, not supported by an RCS pressure of 1500 psig. That's small break territory, just state "a LOCA has occurred". Also, cont pressure is not plausible again for 1500 psig and since the spray pumps are not part of the answers, its not relevant.

30. recommend moving "only" to the end of the answers (all flow to the ECCS CCPs is secured, only). I think the second part of the question (regarding performing E-1 can be removed. It's the lineup from 1.4 that is being tested.

32. this is double jeopardy with the question about the phase A (28).

33. RHR is not in service in MODE 2. D is not plausible (why throttle Hx 1 when the 2 hx is in alarm). I recommend getting a question from op ap-8a (CR evacuation) and dealing with starting the pumps.

34. bad KA, the item is the power supply to the CONTROLLER of the spray valve. If you want to keep it, I recommend we focus on loss of power to the PCS for the spray valves on Unit 1. if this is what you want, let me know, I'll work on it.

35. there is no bypass for power range channels and you would never be doing concurrent surveillances like this. Remove fist bullet, its unnecessary and if not read closely, implies the reactor is at 8% with the turbine at 140 mwe. Change "unit is now producing" to "main generator output is 140 mwe. We have used questions along the lines of Pzr press channel II (PT-xxx) has been removed from service and bistables tripped. Subsequently NI channel N-43 fails high. Or something like that, then the student has to know the OPdT or OTDT bistables for 2 channels are now tripped when the second failure occurs.

36. ok

37. not plausible. The RWST would not be emptied for a steam line break, nor would RCS pressure be this high if there was an event that emptied the RWST. Answers are SRO level, RO would not have to know what procedure steps would be taken. Look in past exams, we have had RO questions regarding a loss of ASW and its impact on CCW and as a result CFCUs (containment cooling).

38. ok

39. ok, I would change setup to "a design basis loca has occurred" and no need to say "inside containment", you give Containment pressure so, its obvious where the LOCA is.

40. ok, I would just say upstream/downstream of the MSIVs, the numbers (FCV-xx) is not important to the question, the steam generator number, 1, 2, 3, 4 are. You could also, say the 1-1 todfw pump and then say 1-1 s/g etc. wouldn't seem so generic.

41. good concept, but the action per train is not required knowledge. Consider:

Unit 1 is at 40% power.

A Feedwater malfunction results in Steam Generator level rising above the P-14 setpoint.

Which of the following describes the status of Main Feedwater?

- a. all mfw reg, bypass and fw isolation valves are closed.
- b. all mfw reg and bypass valves are closed, the fw isolation valves are open.
- c. the fw isolation valves are closed, the main Feedwater reg and bypass valves are open.
- d. The mfw bypass valves and fw isolation valves are closed, the main fw reg valves are open.

Answer: b.

A incorrect. the fwi valves remain open because the reactor does not trip (below P-9) and do not close for P-14.

B correct. the mfw valves close, the fwi valves do not on P-14.

C incorrect. the bypass valves could be thought to open in an effort to raise level if its thought the fwi valves are the ones to close.

D incorrect. if it is thought the fwi valves close, this is plausible because the bypass valves are normally closed at this power.

42. Fsar is not RO knowledge and 440 gpm is not discussed anywhere I am aware of. We always say 435 (which the eop number). I have never heard any normal procedure requiring a minimum amount of atw flow.

43. power supply to major system loads, these are not major loads. There are loads that are on different 4160 V vital busses. Replace please.

44. remove "following the loss of DC power" from A.Add to initial condition, "unit 2 is (at) 100% (power)". The surveillance wouldn't be "SR...). It would be M-9A, Diesel Engine Generator Routine Surveillance Test. Proposed answer D but explanation says B (which I think is correct) – see LJ6B (systems lesson guide) page 68

45. change question to "which of the following will occur?" (really don't need to say plant operated as expected, that is assumed). Consider changing A or B to 2 and 4. this puts both of the correct pieces in 2 answers, currently 4 is only in D

46. Bullet, bullet, bullet
Unit 1 is at 100% power
NOT necessary to add info about the EDG, if its not stated, its aint broke

The following events occur:

- PK 16...(only PK, the AR part is the procedure – Alarm Response)
- Air Receiver 1-1B

Which of the following will occur?

47. a lot of information to digest. With that said, most of the second paragraph should be added to the bulleted list, "the operator unjack..." should be by itself as the problem statement. I'm not sure the 2 bullets about the cross-connects and cross-ties is necessary, but leave it in until validation.

48. move the statement about the control switch to the given information and out of the question. (unit 2 is at 100% power. The Control switch for...). all justifications say they're incorrect.

49. refueling in containment is an SRO KA. Also, this requires procedure knowledge of steps which are not immediate actions. Needs to be replaced.

50. first 5 statements should be grouped under GIVEN (and bulleted). Take statement about CCW pump trip to stand alone problem statement "A running CCW pump trips."

51. if you know the MSIVs are closed, there is only one option, C. actually a bit misleading, the reheat valves are the result of a result of a condition; not only would the 2 stated msivs be closed but all would be closed. So it leads to confusion, did the other 2 stay open? Also, what the heck is PC 514C? theres a good concept here, but this one is trying too hard.

52. Format:

Unit 1 tripped from full power

Current Conditions:

- RCS Loop average temperature:
 - Loop 11: 552°F and lowering slowly
 - Loop 12: 557°F and lowering slowly
 - Loop 13: 554°F and lowering slowly
 - Loop 14: 555°F and lowering slowly
- Pressurizer Pressure is 1850 psig on all channels and stable
- Steam Generator Narrow Range Level:
 - Loop 11: 72% and rising slowly
 - Loop 12: 75% and rising slowly
 - Loop 13: 74% and rising slowly
 - Loop 14: 73% and rising slowly

The operator notes that a Main Feedwater Isolation has occurred.

Which of the following signals could have caused the Main Feedwater Isolation?

- A. SI only
- B. SI or P-4 coincident with Low RCS Tave
- C. SI or P-14
- D. P-4 coincident with Low RCS Tave only

53. T/F question. Also, if SI has actuated you'd be in E-1 and if there was no AFW flow w/low level you'd be in H.1. Other items, C not plausible, w/o AFW flow, not much chance of restoring level.

A possible idea, is to ask in H.1 at what level steam generators are considered "dry" or no longer effective as a heat sink.

54. Bases of Tech Specs and SR are SRO knowledge. Actually B is the answer for unit 1 as far as "need to know" for RO's. for the license lesson, LJ6B,

If any of the control switches (6) are in ...	Then the pump will ...
ON	Start and run continuously

AUTO	<ul style="list-style-type: none"> • Start when any Unit-1 day tank level lowers to 8" and stop when day tank level rises to 13½" • Start when any Unit-2 day tank level lowers to 7¼" and stop when day tank level rises to 13½"
OFF*	The pump will not start automatically

*NOTE: All six control switches must be in the OFF position to keep the pump from starting.

And:

Study Topics Description of the Fuel Oil System (refer to Figure DEG-22 on the next page):

- The fuel oil system is normally shutdown when the diesel is in standby.
- The day tank is maintained full, automatically, by the fuel oil transfer system.
- The system is maintained primed (vented) by an elevated priming tank.
- The priming tank is kept full automatically.
- The day tank maintains a local inventory of fuel oil at the diesel to allow at least two and one-half hours of diesel operation at full load
-

55. third bullet should probably be part of the problem statement, there's a reason in B and D but not in any of the others.

Unit 1 is at full power. Three CFCUs are running in HIGH.

PK01-16, Containment Environment alarms. The operator reports

- Containment temperature is 110F and rising slowly
- CCW temperatures and flows are normal

Which of the following actions should be taken by the crew?

- increase heat removal from containment by starting another CFCU
- initiate a plant shutdown to ...
- lower containment temperature by starting the third CRDM fan
- increase heat removal from CCW by raising flow to the maximum allowed.

(c incorrect, not allowed to run 3 crdm fans)

56. question missing something, hard to tell what its trying to do.

58. lets test the new system.

Unit 1 is at full power.

RCS pressure channels are reading:

PT - 455 – 2242 psig

PT- 456 – 2235 psig

PT – 457 – 2238 psig

PT – 474 – 2244 psig

Which pressure signal will be used by the PCS for control of Pressurizer Pressure Control?

- a. PT-474, the highest channel
- b. PT-455, the second highest channel
- c. PT-457, the lower of the two median channels
- d. The average of the four channels

answer: B.

59. Suggest:

The crew is performing the actions of FR-C.1, Response to Inadequate Core Cooling.

The operator is about to start an ECCS Charging pump.

Which of the following is the expected INITIAL response of the Core Exit Thermocouples?

(add to references: LPE-C, page 10.)

60. Resample this KA, our Iodine removal fans are abandoned in place.

61. reformat:

Unit 1 is at 100% power.

The following sequence of events occur:

- CONTMT VENT ISOLATION, AR PK02-06, alarms
- It is determined that the alarm was due to Containment Purge Radiation monitor, RE-44A, failing high
- The operator resets the CVI signal with RE-44A still in alarm

- All Containment vent isolation components are returned to their normal position

Moments later, CONTMT VENT ISOLATION, AR PK02-06, alarms again due to an actual high radiation condition detected by RE-44B.

Which of the following describe the condition of the Containment Purge System for current plant conditions?

62. No one will know this. Not sure what the FSAR statement is driving at, the limit everyone knows is the 3.7.15 level of 23 feet and that is what the drainage hole is protecting. I would reword to make B the answer (see the SFP lesson)
63. We have tried a question like this in the past and the problem is, an initial candidate has virtually no refueling experience. They won't recall if it's a RHR or CS pump used and while they could probably reason the hot legs vice the cold legs, it's just not a fair question. Also, since the answer is a Containment Spray pump, not an RHR pump, it would seem to NOT meet the KA. I would focus on the draining to mid loop and the indications of RHR vortexing, (OP A-2:III, attachment 2) however, this may not meet the KA because this would be a RHR and RCS cause/effect. One other possibility is to determine time to SFP boiling following a loss of RHR, using attachment B of OP AP SD-0.
64. proposed answer should be C (or D). don't recommend splitting hairs over whether its 550 or 551. not that important or distinguishable.
65. while it's a "need to know" in the lesson, ops does not do much, if any, calibrations and RM-01, eh. Since the containment area monitors, rm-30 and 31 are pam instruments and in the control room, I recommend focusing on those. See pages 26 thru 28 of LG-4A, Radiation Monitoring System.
67. OP1.DC10 is empowering any operator to trip the plant if necessary. So the CO wouldn't need anyone's permission. I recommend change it a bit to:
The SFM is away from the Control Room. (he is allowed to be out of the area for periods of time, ie to go to the restroom, or get his lunch).
- Per OP1.DC10, Conduct of Operations, the expectation is that the CO will:
- a. obtain permission of the other unit's SFM to trip the reactor.
 - b. obtain permission from the Shift Manager to trip the reactor.
 - c. trip the reactor.
 - d. obtain the concurrence of the BOPCO prior to tripping the reactor.
68. "which of the following methods..." change tag to tags as there would probably be many items in the system that would be tracked. D is very close to correct and might be argued, after all the alignments are done per procedure. I might lean towards testing the pick tag concept vice this method. This is not a system the RO is going to have much say over.

72. reword to: DCCP Emergency Exposure Guidelines for exposure to save plant equipment is:

Then list the different values of A, B, C and D (in ascending order)

74. I'd like B to be a note answer. Warning is not used and so is really not plausible. Perhaps something like NOTE, contain conditional statements which allow for prompt Operator response (which is what a foldout page item is)

76. Stop at MODE 4 (reason is not relevant). Bullet the list:
GIVEN:

- Unit 1 is in MODE 4
- PZR PORVs and PZR Safeties are closed
- Train 'A' RHR aligned for shutdown cooling
- Pressurizer level is 20% and lowering
- RCS subcooling is 15°F and lowering

Which of the following procedures will be entered by the Shift Foreman?

(justification for B, "loos" – british bathrooms?)

78. Change to Unit 2 (is at, not @). Change CRS to Shift Foreman). Not sure this would pass as SRO, the second part could be considered RO knowledge and is AP-5 versus AP-13 enough? Just asking, I'm ok with it.

80. 4th bullet wording. CRS to Shift Foreman.

83. B, C and D not plausible, containment evac alarm for SFP problem? Also why would PK 02-06 be in alarm? Change question to fuel accident in containment.

89. needs work. No Service at DCP, ASW? Max power for 1 CWP is 50%. Could not be at 90%. I believe we have had questions around CWPs on past tests. Look to replace with one of those.

