

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. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
1	H	3											Y		B	S	
2	F	2											Y		B	E	1) Choice B implausible. Changed to heat transfer between the RCS and the S/Gs using two-phase forced circulation flow. Reordered answers and changed explanation. Underlined "primary method" in the stem.
3	H	3											Y		M	S	
4	H	3											Y		M	S	
5	H	2	X				X	X					Y		N	E	1) Stem focus. Stem is not specific about source of Ph B signal, only that Trn A testing in progress. Distractors hinge on misunderstanding effects of single train isolation signal. Added "from Train A SSPS" to stem. 2) Q reference cites Learning Objective L8035112. Per the lesson plan, this objective is to "DESCRIBE the construction of the containment sump suction valve housing". Changed to reference correct objective L80361 12RO, "DESCRIBE the automatic responses of each CC loop to the following signals..." 3) Justifications for B and C do not match the choices. For C, the pumps are not stopped before tripping reactor. For B, justification does not address why turbine trip plausible vs manual reactor trip. Corrected justification statements. 4) Choice D not discriminating. Thermal barrier heat exchangers not affected by Phase B and, more importantly, no action required on loss of thermal barrier heat exchanger cooling unless concurrent loss of seal injection. 5) Choice A appears to be a subset of Choice D. Psychometric problem. If D is correct, then A must also be correct. Only one correct answer, therefore D cannot be correct. Revised Choice D to say "...Initiate monitoring of RCP Motor temperatures. Initiate a MANUAL reactor trip and stop all RCPs within 10 minutes of any motor stator winding temperature exceeding 195°F."
6	H	3											Y		B	E	1) Added to stem, "IAW 1201.06..."
7	H	3											Y		B	E	1) Added to stem, "IAW FR-S.1..."
8	H	2											Y		N	U	1) No correct answer. Per E-3, 1950 psi is the condition for block, not 1925. Changed stem condition to 1950 psi. 2) Added to stem, "IAW E-3..."

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
9	F	2											Y		B	E	1) Added to stem, "IAW ECA-2.1...". 2) Modified Choice D to "maintain symmetrical cooling".
10	H	3											Y		B	E	1) Added bullet to stem - "feed pumps in auto". 2) K/A match for Part A, no match for Part B.
11	H	3				X							N		B	U	1) K/A mismatch. K/A associated with SBO, not LOP. Changed stem conditions to match K/A 2) Choices A and B non-credible. Obvious that condenser will not be available on LOP or SBO. Modified all answer choices.
12	H	4											Y		N	S	
13	F	3											Y		B	S	
14	F	3				X							N		B	E	1) Choice B justification not correct. Switch alignment by itself does not generate an auto TA signal. Requires a concurrent LOP, indicated by UV on the E Bus assoc with the SW pumps in PTL. Same for Choice A, should say "...to ensure a TA signal will be generated on a LOP. Added "if a LOP signal occurs" to Choices A and B. 2) Choice D is not credible. Stem states TA has been actuated. SW is already aligned to the cooling tower. No logical reason why step would need to be performed to prevent future TA signal. Changed Choice D to "Ensures the Cooling Tower Pump remains running if system pressure decreases to the Tower Actuation setpoint." 3) Q appears to be memory level, not higher order. Changed designation to memory level.
15	F	3			X								Y		N	U	1) Question is collection of true/false statements. Can be answered without reading the question stem. Replaced with a new question.
16	H	4											Y		N	E	1) Changed stem - "required", not "expected".
17	H	3											Y		N	E	1) Added bullet to stem - "all other ECCS equipment energized and operable".
18	F	3											Y		M	S	
19	H	3											Y		N	S	
20	H	3											Y		N	S	
21	F	2											Y		B	E	1) Added to stem, "IAW ON1233.01...".

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22	H	2				X	X						Y		N	U	1) Q should be tied to Learning Obj LO8040I RO21, "DESCRIBE the WAH system supply and exhaust flow path." Added references to other related learning objectives. 2) For Choice B need to explain why increased flow thru chg pp rooms could not contribute to increased WRGM reading. Enhanced Choice justification. 3) Enhanced Justification for Choice C 4) Choice D is not credible distractor since no condition has changed. Changed the distractor. 5) Modified wording of choices for symmetry. 6) Enhanced stem with "100% with all systems in normal lineup" and "assuming no operator action".
23	F	3											Y		B	S	
24	F	3											Y		N	E	1) Modified stem - "what is the tech spec basis...". 2) Choice A is implausible. Changed to "ensures the transport time to the site boundary exceeds the half life of the limiting isotopes". 3) Q may not be fair for an RO applicant. Verify supported by valid RO learning objective. Added objective references.
25	H	3											Y		B	E	1) Modify stem - "...describes the correct procedural response...". 2) Verify RO applicants required, by learning objective, to know EOP transitions.
26	F	3											Y		B	S	
27	H	4				X							Y		N	E	1) Enhanced credibility of Choice B by changing from 100 to 90. 2) Added text of learning objectives to show the question is within the scope of expected RO knowledge. 3) Changed Choice B from 45 to 55. Step 23 RNO would only come into play if subcooling is not less than 50. 4) Added to stem, "...IAW FR-P.1...". 5) Choice D is implausible. Modified question stem and Choice D.
28	H	2											Y		B	E	1) Reworded stem - "What charging flow, as indicated on Charging Header FI-121 on the main control board, is required to maintain...".
29	H	3											Y		N	E	1) Added to stem - "what is the SG(s) response to stopping...".
30	F	2				X	X						Y		M	E	1) Distractors associated with 459 and 460 somewhat implausible since there is no challenge to p2r level. Question modified to enhance distractors associated with 459 and 460. 2) Answers are not mutually exclusive. Choice A is a subset of Choice C. Choice B is a subset of Choice D. Added "only" to each of the choices.
31	F	2											Y		M	S	1) K/A match. CBS sump valves common to RHR system.

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32	H	3											Y		N	S	
33	H	3											Y		N	E	1) Added to stem, "All safety injection pumps are inoperable".
34	H	4											Y		N	E	1) Add to stem, "IAW E-3 background document...". 2) Knowledge is objective-based and RO applicants are expected to know the EOP basis document content. Objective references added.
35	H	3				X							Y		B	U	1) Choices B and C are not plausible. The letdown regen HX and the C RCP Thermal Barrier HX are not cooled by CCW. Replaced with bank question.
36	F	2											Y		N	S	1) K/A match for Part B, no match for Part A.
37	H	2											Y		N	E	1) Added to Choice D, "The Control Group heaters have failed to maintain pressure and the Master...".
38	H	4				X							N		N	U	1) K/A mismatch. Q tests knowledge of control channels, not protective channels. Modified question, changed from memory level to higher cognitive level.
39	H	2											Y		M	E	1) Answers are not mutually exclusive. Added "only" to Choices B, C and D. 2) Does not appear to be objective-based. ROs required to know 1 hour or less TS actions from memory. Action 18 has a 6 hr time requirement. Question stem modified to provide information that RO would not be expected to know from memory. 4) Added to stem, "how will plant respond to the PT...".
40	F	3				X							Y		N	E	1) Choice D justification enhanced. 2) Improved stem clarity by replacing "later" with "after event initiation". 3) Added bullet to stem, "plant initially normal 100% power...".
41	H	3											Y		B	E	1) Reclassified as a bank question. "Modified" defined in NUREG 1021 ES-401 as changing at least one pertinent condition in the stem and at least one distractor. This question's stem has not been modified. 2) Modified stem - "which of the following conditions require...".
42	F	3											Y		N	S	

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43	H	33					X						Y		B	U	1) Choice A appears to also be a correct answer. Although the event will progress rapidly, depending on the size of the feed line break, Tave may increase prior to the trip since feed rate significantly reduced. This contrasts with a MSL break, where the increased steam flow out of the SG causes a decrease in Tave. This is supported by intermediate feedline break event description in E2 HP Bkgd Doc, Rev 1, Page 13 and large feed break Figures 8 and 9. Changed parameter to reactor power and changed Choice D. 2) Added to stem "which of the following parameter trends..."
44	F	3			X							X	N		N	U	1) Question is collection of true/false statements. Can be answered without reading the question stem. 2) Not good K/A match 3) Backwards logic. "This happens, why?" instead of "doesn't happen, how do you identify". Rewrote question.
45	H	2											Y		B	S	1) Enhanced stem conditions to improve KA match for an auto control malfunction. Rewrote the stem conditions and modified Choice D. Modifications minor, still meets definition for bank question.
46	H	3											Y		N	E	1) Added to stem, "assuming all auto functions occur as designed..."
47	F	2											Y		B	E	1) Delete unnecessary information from stem - "in the A train swgr rm". Location of NSO and panel not needed to answer question. 2) Per LP, it appears reverse transfer light informs of position of transfer switch and that it is locked. Can not absolutely determine status of PP-1E based solely on transfer switch position. Appears additional plant status information is needed. Modified stem and distractors to better focus the question on the transfer switch.
48	F	2				X							Y		B	E	1) Choices A, C and D are weak distractors due to the absolute nature of these responses (ALL, no effect, ALL). Improved distractors.
49	H	3											Y		N	E	1) Added to stem, "the plant is at 100%, all systems are in normal lineup" and "the following sequence then occurs".
50	F	2											Y		B	E	1) Added to stem, "100% normal lineup, then ...occurs." 2) Modify stem by replacing "are placed in" with "are switched to".
51	F	3											Y		B	E	1) Added to stem, "high alarm in which of the following rad monitors will cause".

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52	H	4											Y		N	E	1) Added to stem, "IAW 1200.02A, "Remote Safe Shutdown Control Train A".
53	H	2											Y		N	E	1) Modified stem to separate initial conditions from transient event. "service air lineup is a follows", "then the following occurs" and delete "has occurred" after "LOP". 2) Choices B and C are both true statements and are only incorrect because power is not restored to US-21. Reworded choices to describe current state of compressors.
54	F	2											Y		B	E	1) Modified stem - "with service in normal lineup, an instrument air leak occurs" and "which of the following... in response to the instrument air leak." Revised setpoint in the choices.
55	F	3											Y		N	E	1) Reworded Choice A - "The T signal CANNOT be reset and the current Containment Pressure. The P signal CANNOT be reset at the current Containment Pressure."
56	H	3											Y		M	E	1) Added to stem, "100% power with rods in auto." 2) Improved Q by modifying stem and distractors.
57	F	4											Y		N	S	
58	H	2											Y		B	E	1) Modified stem - "just prior to a reactor startup..."
59	H	3											Y		M	E	1) Added to stem, "100%, all systems normal, then the following occurs" and "what is impact of N41 failure".
60	F	3											Y		B	S	
61	F	3				X							N		M	U	1) Choice A is implausible. Fire water would never be primary source for pool makeup because of impurities. 2) Modify stem - "which of the following IAW... has FIRST priority...". 3) Choice C is not plausible. Question asks for emergency water source. This is normal water source. 4) K/A mismatch. Does not require predicting impact of malfunction and doesn't use prediction to determine required actions. Condition provided in stem - rapid level loss due to gate failure. Stem also indicates required action - to refill from an emergency source. 5) Answer can be determined by deductive reasoning, without knowledge of procedure. Fire water is has impurities, Condensate is not borated. SFP purification is not emergency source. Therefore reasonable guess is RWST. It is large, clean, borated and an emergency source. Simple question that does not test the K/A. Rewrote the question. Changed classification from bank to modified.

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62	H	2				X							Y		M	E	1) The quality of distractor choices C and D could be improved. Rewrote question and distractors.
63	F	3			X								N		N	U	1) Question is collection of true/false statements. Can be answered without reading the question stem. 2) Modify stem for clarity - "with regard to the 25VDC and 125VDC systems,... the effect on the ...". Rewrote stem and some of the distractors.
64	H	3											Y		B	E	1) Modified stem - "which of the following describes the cause of the condensate pump trip / auto start and the appropriate operator response to the transient". 2) Changed from low suction pressure to low hotwell level.
65	F	3											Y		N	E	1) Added to stem, "plant is at 100%, systems in normal lineup, then..." and "response of the containment purge system to ...".
66	F	2											Y		B	U	1) Choice A is arguably a correct statement. 2) Choices are not mutually exclusive. If Choice B is true then Choice D must also be true. If Choice C is true then Choice A is also true. 3) The key answer is not correct per OPM Ch 1.05, Item 5.3. The procedure specifically states NOT required to have the no-solo person in line of sight - to allow for going around back of control boards. Modified all choices.
67	F	4											Y	Y	B	U	1) This is an SRO, not an RO question.
68	H	4				X							Y		N	U	1) Choices A and D could be enhanced. Their discrimination value could be improved. Standing orders cannot circumvent procedural guidance. Changed distractors and added additional conditions to the stem. 2) Added to justification to explain why this is expected RO knowledge at Seabrook.
69	F	3				X							Y		N	E	1) The Choices contain a reason for the action. However, the stem does not ask for a reason. Need to match stem question with responses provided. 2) Question is not discriminating. Forcing sprays is a frequent evolution, expected of the RO prior to power changes. 3) Choice A describes the method for initial criticality, not for maintaining RCS and pressurizer concentrations matched. Also, this only applies to initial criticality where question asks for method during any startup. 4) Choices A and D are not plausible answers for the question since they discuss how to keep RCS mixed, not how to maintain RCS and pressurizer concentrations matched. Wrote a new question.

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70	F	2				X							Y		N	U	1) Choices C and D implausible. 2) Possibly not an RO level question. Replaced question.
71	F	3				X							Y		B	E	1) Choice A is implausible. Added information to improve plausibility
72	H	3											Y		N	E	1) Changed Choice D, to improve plausibility, from "25,000" to "8,900".
73	F	4											Y		N	E	1) Modified Choice A and changed general area from 5 to 100 mr/hr.
74	F	3											Y		N	E	1) Modified stem - "security event to address the above condition".
75	F	3											N		N	U	1) K/A mismatch. Testing plan implementation time limits, not knowledge of EAL thresholds and classifications. Reselected KA and wrote new question.
76	H	3											Y	Y	N	E	1) Added to stem, "IAW OS1227.02, what crew actions...".
77	H	3											Y	Y	N	E	1) Modified stem - "Which of the following procedures must be entered by the US and what actions must be direct to address these conditions?".
78	H	3											Y	Y	N	E	1) Reworded stem as follows: "If the PSO fails to block low MSL SI, the what are the possible consequences and procedural transition implications during the cooldown?". 2) Choice D stands out from all others because the initiator for the signal initiation is not stated. For symmetry, changed Choice D to state - "MSI will actuate on Low Main Steam Line pressure during the plant cooldown. The Post..." 3) Added to justifications for Choices B and C to better explain why SI will not re-occur after reset (re-initiation blocked by signal seal-in signal associated with P4 reactor trip bkrs open). 4) Changed wording of each choice from "will" to "could", since we are discussing a possible, not actual, consequence.
79	H	3											Y	Y	N	E	1) Added a bullet to the stem - "plant at 100%, all systems in normal lineup". 2) Question shares many similarities with RO Q#14 but does not appear to be double-jeopardy. 3) added information to stem to improve Q clarity.
80	H	3											Y	Y	B	E	1) In stem, changed "...should..." to "...will be, based on the above conditions".

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81	H	4											Y	Y	N	U	1) Choices are ambiguous. When they state bus voltage has reached 2nd level, do they mean the voltage as stated in the stem or the voltage stated in the beginning of each choice? Need to clarify. 2) Question can be answered using system level knowledge of 2nd level setpoint and interlocks. Therefore, not SRO only. Removed RO system knowledge level piece from choices.
82	F	2				X							Y	Y	N	U	1) Modify stem. "Rx power is at 100% when 2 rods drop into the core. SRO enters OS1210.05, "Dropped Rod" and determines that a manual reactor trip must be directed. What is the basis for the reactor trip?" 2) Choice A is implausible, some rods dropping doesn't affect drop times of other rods. 3) Choice C is implausible. Even if it were a true statement, it wouldn't answer the stem question. Another option might be to replace this choice with "To ensure that reactivity transients associated with postulated accident conditions are controllable within acceptable limits." This is one of the reasons for maintaining SDM, not for tripping on multiple dropped rods. 4) Choice B use of "all" and reference to MTC values out of spec solely because of dropped rods not very believable. Recommend change Choice B to "Because the value of MTC CANNOT be assured to remain within the limiting condition assumed in the FSAR accident and transient analyses." Modified two of the distractors.
83	F	3											Y	Y	N	E	1) Added to stem, "IAW OS1200.02, ...".
84	F	4											Y	Y	B	E	1) Added the word "travels" to the stem.
85	H	3											Y	Y	N	S	
86	H	3											Y	Y	N	S	
87	H	3											Y	Y	N	E	1) Modified stem - "to these conditions".
88	H	2											Y	Y	N	U	1) Two correct answers - key answer B and also Choice C. Per Step 5.d of procedure, will isolate train. Modified Choice C.
89	H	3											Y	Y	N	S	
90	H	3											Y	Y	N	E	1) Modified stem - "impact of these conditions".
91	H	4											Y	Y	N	S	
92	F	3											Y	Y	N	E	1) Added two bullets to stem - "pZR level 30% and stable", "all SG NR levels > 25".

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93	H	3										Y	Y	N	E	1)Enhanced stem to indicate power reduction actions already taken per Step 11.
94	H	2										Y	Y	M	S	
95	H	4										Y	Y	M	S	
96	H	3										Y	Y	N	E	1) Added to stem, "IAW WM 8.0, "Work Control Practices".
97	H	3										Y	Y	N	E	1) Added to choices B, C and D that would perform 4.8.1.1.a within 1 hour and every 8 thereafter. 2) Modified stem - "what is the status of the A EDG and what, if any, action is required...".
98	H	3										Y	Y	M	S	1) SRO-only because of who can authorize.
99	H	3										Y	Y	N	U	1) Choices A and B are not plausible because only need to know P14 trip setpoint. Modified Choices A and B and changed "swell" to "increases" in the stem.
100	F	3										Y	Y	M	S	1) Choices A and B are not plausible because only need to know P14 trip setpoint. Modified Choices A and B and changed "swell" to "increases" in the stem.

Part A Op Test – Admin JPMs

1. **RO Admin #1**, "SDM Calc" (LO043J) was used on the 2005 exam. Appears that JPM was **also used** on 2007 exam. Not flagged on outline as used on either of previous two exams.

4/9/09: Will replace JPM with modified QPTR calculation, substantially different from one used on previous exam.

2. **RO and SRO Admin #3**, "Verify Leak Rate" (LO082J) similar to 2007 RO and SRO Admin JPMs to "perform a leak rate" and "verify a leak rate", respectively.

4/9/09: 2007 JPM was significantly different from 2009 leak rate JPM. 2007 related to weld-overlay shiftily compensatory actions and action level requirements. 2009 JPM requires performing (RO) or verifying (SRO) complete LR – different methodology, different numbers.

3. **RO Admin #4**, "Initiate a Liquid Effluent Waste Sample Request", is listed as New on the outline. However, the same JPM was administered on the 2005 RO and SRO exams (LOIT04).

4/9/09: Will leave this on exam but flag on outline as previously used.

4. **SRO Admin #1** appears to be an RO task, in that an RO is required to know how to calculate and perform makeup operations. NUREG 1021, ES301, Sections D.1.e and D.3.c provide guidance for differentiating the SRO exam from the RO exam.

4/9/09: Changing this JPM to verifying a flush calculation.

5. **SRO Admin #4**, "Verify COP Exhaust RM Setpoints" listed as New. However, JPM with same title used on 2007 RO exam and flagged on the 2007 outline as direct from the bank and used on previous exams. Also, if acceptable JPM for RO on past exams, why is it classified as an SRO task on this exam?

4/9/09: Will replace JPM since this was previously used as an RO task.

Part B Op Test - Control Room / In-Plant JPMs

1. **Isolate Open PORV**. Appears to be very simplistic with just one critical step. Applicant is put almost at the alternate path step and just has to close block valve. This is arguably a "perform from memory" action. Applicants will have demonstrated their familiarity with E-0 steps during the scenarios. Recommend

adding some complications such as excessive feed, requiring throttling EFW. More importantly, add the ability to close PORV to get closed indication, but PORV leaks by, must be diagnosed with alternate indications and mitigated by closing PORV Block valve.

Could almost see this as one of 8 RO or 7 instant SRO simulator JPMs, but definitely too simplistic as currently proposed for one of only two simulator JPMs for the upgrade SRO applicants.

4/9/09: Will increase complexity / difficulty of task as follows. Enter at Step 7. Both PORVs will be open. Close A PORV with handswitch. Attempt to close B PORV. B PORV will not close. Close B PORV block valve. Valve closes partially, then breaker trips. Inform US. Examiner asks for recommendation. SRO applicants must (critical step) identify need to transition to E-1. RO applicants (not critical) should identify need to transition to E-1.

2. **Transfer SW to Cooling Tower Using Manual TA.** Do not understand how this differs substantially from JPMs on 2003 and 2005 exams. Looks like applicants performed 2009 alternate path actions in 2005 JPM.

4/9/09: Licensee has reviewed JPM against previously administered JPM and determined this one to be substantially different from previous task.

3. **Trip All RCPs.** Similar JPM (SI Termination/Reduction) on 2007 exam. Previous JPM had applicant stop RHR, leak gets bigger, he restarts RHR. 2009 JPM has him stop RHR and SI, leak gets bigger, he restarts RHR/SI and stops RCPs.

4/9/09: Licensee has reviewed JPM against previously administered JPM and determined this one to be substantially different from previous task.

4. **Start Hydrogen Recombiners.** As this JPM was on past exams (both 2003 and 2005), recommend changing containment pressure to result in different power calc result. Also change bus energized initial conditions to require use of different recombiner.

4/9/09: Will incorporate recommendations for different train, different recombiner power level.

5. **Blended Makeup Performance.** This is an admin JPM, not a control room JPM as the critical aspect is to perform a calculation, not to demonstrate system knowledge through manipulation of controls and observation of parameters. Further, SRO Admin JPM #1 tests the same skills. Perhaps this could be saved by changing to a "fill RWST by raising level to Y feet". Then applicant can calculate and manipulate controls to accomplish task. Could stop JPM after makeup

established with critical aspects of tank fill underway at correct blend, within JPM pre-defined \pm tolerances. Should not provide any instruction as to desired flowrate or procedure to be used. Initial conditions are general plant status, concentrations of RWST and BASTs. Cue is to restore RWST level to Y feet. Solicit recommendation from applicant during JPM as to concentration of makeup to tank. Follow up, to RO applicants only, with SRO direction to makeup at xx concentration. For SRO applicants, examiner should parrot the applicant's recommendation. Critical step values should be \pm tolerance from ordered or, for SRO applicants, recommended makeup concentration – provided it falls within TS allowable values.

4/3/09: Licensee stated there is more to this JPM than just calculating the blend. Applicants must set up and initiate the blended makeup and take alternate path actions upon failure the PMW during the blend.

6. **Recover From CRFRM Actuation.** Looks like task only requires a couple of switch manipulations per OS1023.51. Is there any challenge to this? How does this tool allow for assessment of applicant understanding?

4/9/09: Will replace with new alternate path JPM to initiate filter recirc. New JPM more substantial, has large number of manipulations. Also, now alternate path.

7. **SAE Notifications.** Appears to be another admin JPM. Need to replace JPM.

4/9/09: Replacing with JPM to recover the SUFP and establish EFW flow to hot dry SG. Will review against Scenario C to ensure no overlap with possible change to scenario if needed.

8. **De-energize Bus Due to Fire.** Cannot determine content of JPM from narrative description. What is the time limit? What is required to complete the task? What will the applicant be directed in the cue?

4/9/09: Licensee representatives think JPM has adequate level of difficulty and confirm time limit valid and based on design analyses.

9. **Align Alternate (FP) Cooling to CCP.** This JPM was used on the 2007 exam, but not flagged as such on the 2009 outlines. This JPM was flagged in 2007 as relating to SF #8. This time it is tied to SF #2. Also, see note below regarding use of different safety functions for the SROU exam.

4/9/09: Proposing to replace the CCP Cooling JPM AND the MSIV Local Closure JPM with 1) Local Start TDEFW Pump – SF4 and 2) Close Stuck Open ASDV – new – SF5.

10. **SRO Upgrade JPM Outline.** The SRO-U outline contains two of five JPMs associated with Safety Function #2. Per the note on the walkthrough outline (ES-301-2), "all 5 SRO-U systems must serve different safety functions". Need to replace a JPM.

4/9/09: Proposal under Item 9 above addresses this SROU overlap problem.

11. **Control Room JPM Classification on Outlines.** 6 of the control room JPMs are mis-classified as "(E)mergency or abnormal in-plant". The "E" classification only applied to in-plant JPMs.

Part C Op Test – Dynamic Scenarios

1. Try to establish a uniform set of equipment OOS conditions for all, or most, scenarios so that we are not telegraphing the upcoming major event.
2. Recommend revise scenario narrative description to match following format:
 - initial conditions, equipment OOS
 - turnover / shift orders
 - series of paragraphs describing each event, arranged in sequence thru the scenario
3. Must separate out component / instrument failures from the major event. Cannot double count the major as a component malfunction. Each counted malfunction should be listed as a separate event, even if it occurs concurrent with another failure.
4. Scenarios A, B, C all begin with small RCS leak requiring entry into OS1201.02. First requires letdown isolation, but other two do not require mitigation actions. Cannot take credit for leak mitigation in Scenarios B or C. Further, appears to be overuse of similar malfunction in multiple scenarios.
5. Tech Spec calls for SRO not identified in scenarios. Need two TS calls per scenario. These should be listed as events along with taking C / I credit as appropriate. Example for a particular event: I(RO/SRO), TS(SRO)

4/9/09: Following schedule review, have determined only 4 scenarios needed. Will use Scenarios A thru D and discard E.

Scenario A

6. Cannot count the MT fail to trip and the EDG malfunctions separately. They are all part of the major transient. No mitigation actions for the EDGs separate of the major. MT fail to trip integral to initial response to major.

7. Cannot count restoration of A EDG as component failure. There is no failure to mitigation. This is restoration action in the major.

4/3/09: Licensee identified they are taking credit for required action to manually start the SW pump after the diesel is started. Malfunction is actually the failure of the SW pump to auto start on bus re-energization.

8. Can only count FW-P37A overspeed as malfunction if significant control board actions required to restore. Cannot count if actions are those taken in field.

4/3/09: Licensee states that operator control board actions required (recirc valve reposition, EFW throttling) after TD EFW started in field. Will need to evaluate further during on-site validation.

9. Does not meet standard for minimum number of malfunctions. The metric is 5 to 8 malfunctions. This scenario contains I(RO), C(BOP), Major, possibly second C(BOP) if counting FW-P37A for a total of four malfunctions.

Scenario B

10. Cannot count RCS leak as malfunction. No significant actions required to mitigate.

4/3/09: Licensee explained that pressurizer level deviation will occur because of long time constant controller integral reset feature. This will result in letdown isolation from this power level if no manual action taken.

Will have to evaluate during on-site validation for adequacy of this malfunction.

11. Two dropped rods can count as a malfunction, but recognize that it is very simplistic – to identify and recommend action. The diagnosis and action recommendations may well be performed by someone other than the RO, in which case the only thing left to evaluate for the RO is his/her ability to trip the reactor when ordered – not enough to count as a malfunction for the RO. The scenario does not appear to contain any other malfunctions for the RO. Recommend compounding the malfunction by having multiple rods stick on the trip. Then can evaluate RO on emergency boration actions. Also, need to add additional malfunctions for the RO.

Scenario C

12. Cannot credit feed pump trip malfunction. Plant responds as designed. No mitigation actions required. Little to evaluate. Recommend failing auto rods. Then could credit based on manual action by RO required to mitigate event.

13. Second feed pump trip not valid component malfunction, just a lead-in to the major (ATWS).
14. Cannot count SUFP trip as malfunction. Appears no mitigation action available other than response per the major for loss of heat sink.
15. Does not meet standard for minimum number of malfunctions. Only two majors and one component failure.

Scenario D

16. Not enough malfunctions (PT508, LT459, PCCW trip).
17. Need to list event #1 as the power increase. From evaluation standpoint the power increase is an "event" of the scenario. Same for other scenarios.
18. V-88 failure to close (Event #4) is not a malfunction event. It is a setup for the faulted / ruptured major.
19. SGTR is not a malfunction. It is a major event.
20. PCCW pump trip on the reactor trip is unrealistic. Recommend losing the bus that feeds the running PCCW pump instead, with a failure of the standby pump to auto start.
21. ASDV 'B' failed open (Event #7) is not a malfunction event. It is part of the major (faulted/ruptured)

Scenario E

22. **Scenario E.** Setup is a give-away, pointing to loss of recirculation capability. Need to standardize equip OOS for all scenarios. Perhaps instead on the trip, fail the MCC that powers cross-tie valve from RHR to SI/Chg, such that recirc capability lost later when single RHR pump on other train trips. Requires applicants to exercise some system knowledge and diagnostic capability to recognize the loss of recirc capability. Should make for a better evaluation tool.
23. **Scenario E.** No normal or reactivity event. The normal in all other scenarios is a power change. Recommend variety by including a surveillance or equipment start as a normal.
24. **Scenario E.** Light on malfunctions. I count 4 malfunctions (N43, FT512, RCP vibs, manual cntmt isolation) and the major. Recommend adding to scenario.
25. **Scenario E.** RHR bearing failure not a malfunction. No mitigation action available.

26. **Scenario E.** Restart of RHR pumps and tripping RCPs on leak size increase same as JPM for tripping RCPs.
27. **Scenario E.** Need to list the failure of auto cntmt isolation as a malfunction event on the D-1 form. BOP must manually isolate.

General Formatting

1. Tear-off sheet should not contain the JPM page number or the JPM identifier.
2. Tear off should ONLY contain the initial conditions and the cue. Any additional performance instructions can be within body of JPM document but should not clutter the tear off page. We give general briefing on JPM performance prior to administration, no value added by including within each JPM.
3. Scenario Guide D-1 Form 1st Line. Request formatting consistent with typical use. First block should contain 1 to 2 line IC summary and 1 to 2 line turnover. Information in draft D-1 forms should be moved to a 2nd page as a "narrative summary".
4. D-1 Form Event Lines.
 - a. Event Type should contain the type and the applicants credited.

Some examples:

I (RO/SRO)
C (SRO/BOP)
C (US/RO)
TS (SRO)
M (All)
 - b. Event Description should contain abbreviated one-line description. No more. Detailed description belongs on 2nd page narrative. Details of simulator implementation (i.e., malf severity, ramp, delay) belongs in separate list of simulator setup instructions – perhaps page 3.
5. Intent is for D-1 Form to provide broad outline of exam and occupy only one page. It will be sent to each applicant along with examiner comments after the exam.
6. Recommend ensuring all JPM initial conditions and cues do not contain extraneous information that is not specifically needed to perform the task.

Written Exam Outlines

RO Exam

1. ES-401-2 K/A Category totals on 401-2 cover and at bottom of tier/group task list do not match the number of selected K/A items:
 - Tier 1/Group 1 Category K1 Total = 3. However, 4 items selected.
 - Tier 1/Group 1 Category K2 Total = 2. However, only 1 item selected.

2. ES-401-2 K/A Category totals on 401-2 cover differ from bottom of tier/group task list page:
 - Tier 1/Group 2 Category K3 cover sht = 1. However, bottom of page list = 2.
 - Tier 1/Group 2 Category A1 cover sht = 1. However, bottom of page list = 0.
 - Tier 2/Group 2 Category K3 cover sht = 0. However, bottom of page list = 1.
 - Tier 2/Group 2 Category K4 cover sht = 2. However, bottom of page list = 1.

3. Individual page lists show RO/SRO totals under # column. However, separate RO and SRO outlines developed, so doesn't make sense to include SRO totals on RO exam outline.

4. Rejected K/A form lists CRDS K5.65 rejected as tied to GFE training materials. Looks like an operationally-oriented knowledge. Need to further discuss justification for rejection.