

Written Examination Review Worksheet

NOTE : 1. BOLD & Italics reflect resolution of comments

2. Reviewed by Don Jackson

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		
1	F	2				X								E	Modified Q- Need Changes or Parent, Add More To "Constant Speed"
2	H	2												S	
3	H	2												S	Check Valve Line Up At Facility
4*	H	2		X										U	Stem States No Other Failures, D Only Answer Indicating No Failure/ Also How Does "C" Pump Auto Start If Already Running?
5	H	2												S	
6	H	2												S	Modified Q- Need Changes or Parent
7*	F	2												S	Use "Remotely Open" vs. "Manually Open", Remove Brackets Around TV-1-RC-519
8	H	2				X								E	"B" Not Plausible - Internal System Leak
9	H	3				X								E	"C" and "D" Are Not Plausible- Times Too Long
10	H	2												S	
11	H	1			X									U	Rule Out CIB Since Ctmt Pressure Not Mentioned , A Must Be Correct. Too Simple, SI in All 4, and CIB In 3
12*	F	2												S	Explanation "B" Should Say CIA
13	H	2												S	
14	H	2												S	
15	H	2												S	
16	H	2												S	
17	F	2												S	Modified Q- Need Changes or Parent, Answer Doesn't Match Explanation

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
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18	F	2												E	Add "Directly Auto Trip" To Stem- "A" and "D" May Lead To Auto Trip
19	F	2												E	Use Other Sources Of Service Water, "Spool Pieces, etc."
20	H	2												S	
21	F	1												U	Direct Answer- "What Color Is George Washington's White Horse!
22	F	2												E	Ensure "A" Is Not Correct- Can Residual Magnetism Self Excite Field?
23	F	2												S	
24	H	2												E	Second Bullet Missing EDG #
25	F	2												S	
26*	H	2												S	
27	F	2												E	Rework To Show Affect On System Not Valves
28	H	2												U	Double Jeopardy With Number 11
29	F	2												S	
30*	F	2												S	Wrong K/A Statement On Form, and Answer Proposed Is Wrong, "C" Is Correct
31	H	2												S	
32	H	3												S	
33	F	2				X								E	"D" Not Plausible If ISFSI Under Discussion or Construction, CAF
34	H	2												S	
35	F	2									X			U	K/A Resolved In Stem and Is Not Tested
36*	F	2				X								E	"A" Not Plausible, Why Would It Open?, and If S/G Drain Tank Pump Trips On High Pressure Then "B", "C", "D" Correct
37	H	1				X								U	"B" and "C" Not Plausible As They Obviously Lower Flow. "A" and "D" Are Also Correct, LOD=1
38	F	2												S	Is This P&L Required RO Knowledge?
39	F	2												E	If Pzr Level Dropped To 10% SI Would Actuate, No ES-0.1, and No Letdown Restoration, Change Pzr Level.

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40	H	2												S	Modified Q- Need Changes or Parent
41	H	2												S	2 Correct Answers, "B" and "D" Depending On Documentation Of "Preferred Method", May Be U, Modified Q- Need Changes or Parent
42	H	2												S	
43	F	2												S	
44	H	2												S	
45	F	1												U	LOD=1
46	H	2												E	Potentially 2 Correct Answers, "A" and "B" Are Correct Just A Matter of Degree, Change A/D To Fully Open, and B/C To Throttled Open To Some Position
47	H	2												S	Proposed Answer Should Be "C"
48	F	2												S	
49	F	2												E	Clarify C and D, Natural Circ Impeded By N2 Injection, and Effect Of Steam Pressure
50	F	2												S	
51	H	2												S	
52	F	2												S	
53	F	2										X		U	Memory Level, K/A Mismatch Nuclear SRW and Primary CCW Not Same Thing?
54	H	2				X								E	"B" Not Plausible Unless Pzr Level, CET Temps, and RCS Pressure With Trends Added

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55	H	2												E	Need To Reference Time In Stem, "Just Occurred" , at 5Min Enter FR.H.1, and Add Ctmt. Pressure To Stem
56	H	2												S	
57	F	2												S	
58	H	2												S	Add "Control Bank B" To Stem
59	H	2												S	
60*	F	2												S	
61	H	2												S	
62	F	3												E	"B" and "C" Are Correct Based On Basis Document, Get Rid Of Reflux Boiling
63	H	2												S	
64	H	2												E	"B" and "D" Potentially Correct Answers, Stm Line Drains Are Open and Dumps Still Have 30# Air, Modified Q- Need Changes or Parent
65*	H	2												S	
66	H	2												S	
67	H	2												U	I Do Not Believe That The Answer Is Calculated Corectly, Proposed Answer and Explanation Do Not Match
68	F	2					X							U	"D" Is A Subset of Correct Answer "B", 2 Correct Answers
69	F	3												S	Description Does Not Match K/A

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86* sro-11	H	2													E	How Are S/Gs At 20# If RCS At 165 Deg F
87 sro-12	F	1			X										U	PORVs Credited or Not Credited, Number Irrelevant
88 sro-13	H	2													S	
89 sro-14	F	2													E	Credited As Higher Cog, Actually Memory Level, Only 1/2 of K/A Addressed
90 sro-15	F	1													S	Credited As Higher Cog, Actually Memory Level, Not Discriminatory At The SRO Level
91 sro-16	H	2													S	Need References
92 sro-17	H	2													S	
93 sro-18	H	2													S	
94 sro-19	F	2													S	Credited As Higher Cog, Actually Memory Level
95 sro-20	F	2													S	
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97 sro-22	F	2												S	
98 sro-23	F	2												S	Could Use As Higher Cog., and rearrange so distractors don't say....."after".....
99 sro-24	F	2												S	
100 sro-25	H	2												S	

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:
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 - ~~One or more~~ ~~than one~~ distractors is not credible.
 - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
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 - 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. Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

1/18 w/ Joe Arsenault
Miss Holmes (11)
Don Schwart (12)

ES-401

Beaver Valley Unit 1 Written Examination February 2005

Form ES-401-9

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all stem numbers are value manipulation

not in d = A (A cells are not field #)

no ISFSI, D is etc

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BV1 FEB 2005 OPERATING EXAM REVIEW COMMENTS

Examiners: S. Barr, D. Jackson, P. Presby

General Comment:

Please make all applicant hand out material a different color paper including all cue sheets and reference materials.

General JPM Comment

Ensure that the JPM cover sheet and the ES-301-1 & 2 K/As are correctly cross-referenced.

General Scenario Comments

- There is NO lower power scenario. Low power is defined ES-301, D.5.c. (footnote 2 thereto) as "criticality to 5 percent power". Given that we have four scenarios here and on the other unit, we should demand at least one low power scenario.
- Will the crews have STAs? Surrogates? Is the STA continuously stationed in the Control Room or should we delay the STA and require a brief when s/he does report to the Control Room?

rework scenario 3 for start e 5% fine 25%.

Admin. JPMS

RO.A.1 Task standard is that cooldown RATE is calculated and verified NOT to be within acceptable limits. However, cooldown rate is within limits. The problem to be determined by the applicant is that plant is operating in unacceptable region of pressure-temperature curve. Recommend task standard state that applicant determines not operating within acceptable pressure-temperature limits.

Changing std to "temp/press not w/in acceptable region"

SRO.A.1 Written to 2.2.12. Per outline, needs to be JPM tied to 2.1.12.

will re-categorize JPM to 2.1.12

RO.A.2 / SRO.A.2

- Should we change the title to "Perform an Estimate Critical Boron Concentration" from "Perform an Estimated Critical Position"?

Title change not needed. Applicant is implementing the procedure titled "perform ECP".

- Recommend changing the signature block names provided in handouts in the JPMS (RO.A.2 - "U.R.Fine" in 10M-50.4.F pg 13 of 29, SRO.A.2- "U.R.Fine" and "I.C.Clearly" in same procedure). May become public record and, as such, should be more formal, without attempt at humor.

① Will chg RO to black, have them perform.

② Adding to SRO IC to make Page 1 of 7 same as RO

③ Licensee will look at final acceptance band.

BV1 FEB 2005 OPERATING EXAM REVIEW COMMENTS

- Any difference between these JPMs? None that I can tell. The RO title is PERFORM. The SRO title is REVIEW. I suspect that's what you wanted but the initiating cue for both is to REVIEW. The handouts for both support REVIEW because they are both filled out.

RO JPM provides current boron conc, SRO does not. Shouldn't both applicants get the same initial condition information?

- Provide more detail for the answer:

- ✓○ What is the ECP or ECB? *The ES-C-1 form or the Data Sheet 1 Answer Sheet should list the required minimum and maximum critical boron conc values (Example, for RO, $1834 \leq \text{CriticalBoron} \leq 1844$)*
- ✓○ What is the minimum and maximum acceptable value?
- ✗○ May want to specify tolerances around each subsidiary value just in case . . .
- ✓○ What errors is the Applicant expected to identify?

- RO.A.2

- There is no Data Sheet 2. Should there be? *Not needed -*
- Where does 110 on CBD come from? Step IV.A.2.e. indicates 100.
- Part B, Line 1 - *Verified that Data Sheet value of 1720 is correct.*

will correct →

- Part B, Line 2 key shows 875, with 675 in grey below. Assuming 875 is one of the errors to be located by the applicant due to use incorrect of 24B vice 24A, shouldn't the greyed correct value be 625 at a bank position of 110 steps? 675 is the correct value for a BOL ECP of 100 steps, not 110 steps. Fix the associated carry through error to the key 'correct' values.

will correct to 7.1 →

- Part C, Column II, Line 1 shows -7.2 pcm/ppm for DBW. However, using 1300 ppm (Part A Column V) and 1000 MWD/MTU Curve on CB20 yields a DBW of ~~-7.5~~ *-7.1* pcm/ppm. Error carries forward. Part C, Column III, Line 1 should be +418 ppm.

will correct →

- ✓○ Part C, Column IV, Line 1 shows 1337 ppm. However, correct number from Part A, Column V should be 1300 ppm.

- Part C, Column V, Line 1 shows 1772 ppm. Should be 1718 ppm.

- Part C, Column II, Line 2 should be -7.18 pcm/ppm.

- Part C, Column III, Line 2 should be +461 ppm.

- Part C, Column IV, Line 2 should be 1300 ppm.

- Part C, Column V, Line 2 should be 1761 ppm.

will add this in →

- Part C, Columns VI thru VIII are not completed. Applicant should fill these in to determine CBC.

- SRO.A.2

- ✓○ Lists task importance rating as 3.9. The SRO rating for 2.1.23 is 4.0.

- Part C, Column II, Line 1 should be ~~-7.5~~ *-6* pcm/ppm. Error carries forward.

Okay as is on SRO

BV1 FEB 2005 OPERATING EXAM REVIEW COMMENTS

change as is

X Part C, Column II, Line 2 should be -7.18 pcm/ppm. Error carries forward.

o Part C, Column IV, Lines 1 and 2 should be 1300 ppm. Error carries forward.

will change

RO.A.3 / SRO.A.3

will add name

• Applicant is to review a tagging request. Should the Prepared By block be filled in? Alternatively, make it one of the errors the Applicant is to find.

will change
will fix

• ES-C-1 form lists importance factor as 3.8. Should be 3.6.

• Both. JPM Step 1 states that OS-16 is not a correct DISCHARGE isolation point. Should say this is not a correct SUCTION isolation point.

will look into when feasible

SRO.A.3. Only apparent difference is the addition of the breaker tagged ON instead of OFF. Can we / should we throw in an administrative process error? Perhaps no second review or Preparer and Reviewer (or Second Reviewer) are the same person. This may require changing the cue from REVIEW to APPROVE.

No

• Both. Is it possible / reasonable to expect the Applicant to request electrical prints? *-They use 3TS*

X SRO.A.3. Is there a TS issue or Risk Mgmt issue the SRO should or may address?

RO.A.4

will fix

• The RWPs should be arranged numerically to preclude a potential cue.

X

• Will the current TEDE of 150 mR plus the planned 100 mR exceed any administrative limits?

will fix

• ES-301-1 sample plan calls for 2.3.2, "Knowledge of ALARA". However, RO.A.4 is tied to 2.3.10, "Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure".

will give w/ RWP note will delete note

• What basis does the applicant have for selecting RWP 1003 when you don't provide him/her with the area survey map until after RWP selected? Would need to know general area dose rate of room before you could select the RWP.

• Seems too simple a JPM. Would expect any rad worker to be able to perform this task. Not sufficiently discriminating for a license applicant. Recommend setting up task and survey map such that there are hot spots in room - but not in area of work - that would introduce error into the stay time calculation if inappropriately used. This would require the applicant to determine which dose rate to use instead of just choosing the highest reading.

leave as is

• Recommend including a high surface contamination reading also (away from the area of work) to get applicant to show understanding of the different symbols on the map.

SRO.A.4

• The errors to be identified may be inconsequential with respect to the radiological implications. The missing signature in itself certainly is. The late start date may be - may even be a benefit because more time for the tank to decay before release. How about an above limit activity due to a miscalculation?

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- Should procedure 1/2OM-19.4A.B be initialed through to completion?

SRO.A.5

Will consider class of nuclear PWR

- Too easy. The equivalent of making an EAL determination. In this case, the Applicant is expected to recognize that the EAL can be terminated. Can we add some termination or reporting activities to beef it up?
- *Concept okay, but too much of a simple, direct lookup as written. Initial conditions state that RCS is depressurized. Should instead provide a list of plant parameters (temperature, pressure, pwr level, cntmt conditions, dose rates, etc) and let the applicant evaluate these conditions against all of the EAL tabs. Will then have to determine that current RCS pressure meets the criteria "depressurized".*

Simulator JPMs

Gen:

- None of the Alternate Paths have much Alternate meat. Just a single corrective step or implementation of the RNO column. None require the Applicant to determine what alternate path to follow.
- *Several JPMs listed as "E" (meaning emergency or abnormal in-plant), but are instead control room, not in-plant (JPMs S2, S3, S4 and S5). Total number of actual "E" JPMs (2 for RO/ISRO and 1 for USRO) still meet minimum criteria of ≥ 1).*
- *No "L" or low-power JPM for USRO. Minimum criteria is at least 1 for USRO.*

S1:

- is there enough of the alternate path to call it an alternate PATH?
- any chance they'll get an automatic trip first? (SUR Trip - B&W, West??)
- note preceding performance step 1 tells me to provide the Applicant with a copy of 1/M plot and the ECP. Shouldn't we also give them the procedure to use? The cover sheet does indicate that the procedure is to be provided.
- *Admin JPM A2 should be administered before this JPM to ensure ECP data from S1 does not affect the integrity of A2.*

Noted by licensee

S2:

- *No No plan - done*
- Should / could steps ~~8~~, and ~~19~~ be critical?
- *potentially not much PATH after the alternate route is taken - similar to comment to S1*
- Should the standard for performance step 24 be more specific?
- K/A reference not from one of the Safety Function sections of the K/A catalog. To demonstrate or prove adequate safety function coverage, the referenced K/A has to come

will fix

Will review in region

Joe Arsenault interpretation different.

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from the associated sections (3.1 thru 3.9). Consider a K/A from section 3.2

see above

- X Simulator setup for Unit 2 equivalent JPM includes guidance to the booth to increase leak size after applicant takes some action. Should the same guidance be included in the Unit 1 JPM?
- Must be tied to system on ES-301-2. Form shows S2 as E02 system and S3 as E03 system. JPMs need to be tied to specific systems of Sections 3.1 through 3.9 of the K/A catalog.

see above

S3:

- K/A reference not from one of the Safety Function sections of the K/A catalog. However, this JPM applies to a Reactor Coolant System Inventory Control or a Reactor Pressure Control system (ECCS). Should be re-categorized on ES-301-2 form as a SF2 or SF3 JPM. Looks like there are two JPMs tied to the same system (S2 and S3). Don't think ES-301 will allow this as it requires each of the RO/ISRO JPMs to evaluate a different safety function and same system shouldn't be used to evaluate more than one safety function (ES-301.D.4.a).

will add 250 with tank

S4:

Performance Step 12, include the common noun name for HCV-1MS-104

S5:

- ✓ Yes - but later step, main actuation doesn't work. The alternate path begins at step 1. There's nothing alternate about it - just a simple IF, ... THEN ... step. Can we start them out at an earlier step?

S6:

Pretty straightforward - can we add a normal or emergency EDG shutdown?

S7:

- ✓ • Again, straightforward - only 2 critical steps and they're both easy - how about starting them with four operable PRNIs. Then let them respond to the failed NI and go on to defeating the failed channel.

S8:

- ✓ • Why end it when flow is established? It's ~300 gpm batch add at ~90 gpm. Let the Applicant complete the add normally.

In-plant JPMs

P1:

- Poor K/A match:

- A1.01 - "Ability to predict and/or monitor changes in parameter (to prevent exceeding design limits) associated with operating the HRPS controls including: Hydrogen concentration". There is no predicting or monitoring here.

okay match monitor by done

Not good match.

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- o A4.01 - "Ability to manually operate and/or monitor in the control room: HRPS controls". I don't think this is happening in the Control Room.

P2:

- No comments

P3: will check to be sure

60%
25%
42%
100%

- Should Performance Step 6 be critical?
- For Performance Step 7, include the site specific electrical safety requirements in the JPM **AND** make compliance or simulated compliance with those requirements a critical step.
- Does BV have a breaker that can be used for ACTUAL racking? Is it worth the effort?
- Cover sheet references system 055. One of the referenced K/As should come from Section 3.6 - perhaps 062.A2.05 ("Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Methods for energizing a dead bus").

Scenario #1

Event 1:

Yes

- Have the Applicant crew conduct their pre-job brief BEFORE arriving in the simulator to save time.

Event 6:

- Scenario says to open RTB "A" & "B" when directed to do so. We need to ensure there is some delay if the RO or PO take the initiative and call for this immediately as the scenario unfolds.
- *Should the critical task #1 have a time component, such as do the action prior to exiting a certain procedure or prior to equipment operator opening the TCBs locally?*

Event 7:

- *Should the critical task #2 have a time component, such as do the action prior to exiting E-2?*
- On page 23, the crew checks and finds that PRT conditions are normal. But on Event 3 (PZR PT failure) the PORVs were opened. Any chance the crew will do something unexpected here?

Scenario #2

Event 1:

BV1 FEB 2005 OPERATING EXAM REVIEW COMMENTS

- Have Applicant crew conduct their pre-job brief BEFORE arriving in the simulator to save time.
- Potential redundancy. This reactivity manipulation is the same as Scenario 1's reactivity manipulation.

Scenario #3

- Have Applicant crew conduct their pre-job brief BEFORE arriving in the simulator to save time.
- *Should the critical task #1 have a time component, such as do the action prior to exiting ES-0.1?*

Scenario #4

Event 1:

- Have Applicant crew conduct their pre-job brief BEFORE arriving in the simulator to save time.
- Potential redundancy. This reactivity manipulation is the same as Scenario 1's reactivity manipulation.

Event 7:

- Critical Task #1: How much time does this give Applicants to recognize & respond to the need to manually close MSIVs?