

Note for Adams:

The first 10 pages are this cover sheet and the draft exam statistics. A cover sheet follows this and then the final total for the Final exam statistics is the last 9 pages.

## 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 to 5 (easy to difficult) rating scale (questions in the 2 to 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
  - a. The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
  - b. The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
  - c. The answer choices are a collection of unrelated true/false statements.
  - d. The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
  - e. 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:
  - a. 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).
  - b. 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).
  - c. The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
  - d. 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?  
Place the answer letter here  
Place the 55.41 or 55.43 item here
8. At a minimum, explain any Unsat ratings (e.g., how the Appendix B psychometric attributes are not being met).

	1. LOK	2. LOD	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6	7	Ans Letter	CFR	8
Q#	(F/H)	(1-5)	stem focus	cueing	T/F	cred dist	partial	job link	minutia	# / units	back-ward	K/A	SRO-only	B/M/N	U/E/S	A/B/C/D	55.41x55.43y	Explanation
1	F	3												B	S	B	41.4	
2	F	3												N	S	A	41.10	
3	F	2												N	S	D	41.11	
4	F	2												N	S	B	41.7	
5	F	3												N	S	C	41.7	
6	H	3												M	S	D	41.7	free review
7	F	2	X											B	E	A	41.7	NRC-2015-negatively focused stem not allowed per NUREG-1021, ie which is NOT true....
8	H	3												N	S	A	41.5	
9	F	3												N	S	C	41.7	
10	H	3												B	S	A	41.7	free review
11	H	3												N	S	B	41.7	
12	H	3												B	S	A	41.7	NRC-2003

13	F	3	X											B	E	B	41.5	NRC-2009-stem could be challenged as written. Should state something like "Per POP04-RC-0003, Title, a rx trip and SI are required when the leak rate from the RCS EXCEEDS __ (1) __ gpm.
14	H	3												B	S	D	41.12	NRC-2009
15	H	3												N	E	A	41.8	Need 55.41(b)8 on worksheet.
16	H	3	X											N	E	C	41.5	<b>Reference required</b> Need to put "AND/BUT" instead of just "AND" in the stem to establish logic for being within the curve but still making an adjustment (credibility of A and B affected).
17	H	3												N	S	D	41.10	
18	H	3												B	S	B	41.7	NRC-2015
19	F	3												N	S	B	41.7	
20	H	3												B	S	C	41.14	NRC-2011
21	H	3												N	S	A	41.10	
22	H	3												N	S	C	41.7	
23	H	3												B	S	B	41.7	NRC-2014, <b>Reference required</b> KA swap not complete, statement not inserted into outline and point value not updated on outline.
24	F	3												N	S	C	41.7	
25	F	3												N	S	C	41.7	
26	H	3												N	S	A	41.7	
27	H	3												N	E	A	41.10	point value should be 4.5 not 4.6 for this KA for the RO exam.
28	F	3												N	S	D	41.8	
29	F	3												B	S	C	41.7	
30	F	3												N	S	B	41.11	free review
31	H	3												N	S	A	41.7	
32	H	3												N	S	C	41.5	
33	H	3												B	S	D	41.10	NRC-2011
34	H	3												N	S	A	41.7	
35	H	3												B	S	B	41.7	NRC-2014

36	H	3												B	S	C	41.7	NRC-1999
37	F	2												N	S	C	41.4	
38	H	3												N	S	C	41.10	
39	H	3												N	S	A	41.7	
40	F	3												B	S	D	41.10	NRC-2001
41	F	3												B	S	A	41.10	
42	F	2												N	S	A	41.9	
43	F	3	X											N	E	C	41.5	should make the bullet for pressure closer to the TS value such as 2090psig
44	F	3												N	E	C	41.1	worksheet should be for cfr 41(b)5 not 41(b)1 since it is a transient condition
45	F	3												N	S	C	41.10	
46	F	3				X								N	E	A	41.7	Credibility of reset SI when nothing in stem indicates an SI occurred. Affects distracters C and D. it would be better to ask how you reset the phase A-with one train A and one train B switch, two train b switches, two train a switches, etc. Not sure what you guys call these switches.
47	H	3				X								N	E	D	41.7	Distracters B, and C don't work together as pairs. For example, if pumping down in B is selected because at 60% level, then should have stopped if band as given in B is 65-75% since out of band.
48	H	3												N	S	B	41.7	
49	H	3												N	S	B	41.7	
50	H	3												B	E	B	41.7	NRC-2013 No point value on worksheet for this KA. It should be 3.1.
51	H	3												B	S	C	41.5	NRC-2001
52	H	3												B	S	B	41.4	NRC-2011
53	H	3												N	S	A	41.11	
54	H	3												B	S	B	41.5	
55	F	3												B	S	D	41.10	
56	F	3												N	S	C	41.10	

57	H	3												N	S	D	41.7	
58	H	3												B	S	B	41.7	NRC-2009
59	F	3												B	E	D	41.7	NRC-2016 Outline pt value doesn't match worksheet.
60	H	3												N	S	D	41.7	
61	F	3												N	S	D	41.7	
62	F	3												N	S	A	41.10	
63	H	3												N	S	B	41.10	
64	H	3	X											N	E	A	41.7	stem needs repair, "What are the expected....." also spell out depressurize in stem. Also worksheet point value is wrong. After KA change ST didn't update the point value. It should be 4.4 not 4.3.
65	H	3												M	S	B	41.10	SEE PARENT
66	H	3												N	S	D	41.10	
67	H	3	X											N	E	D	41.5	free review negatively focused stem not allowed per NUREG-1021, ie "all EXCEPT the...."
68	F	3												N	S	C	41.10	
69	H	3												B	S	B	41.5	NRC-2009
70	H	3												B	S	D	41.9	
71	F	3												N	S	C	41.12	
72	F	2												B	S	C	41.10	free review, NRC-2016
73	F	2										X		N	E	D	41.8	This KA is not a locate and operate, it is PS.
74	F	3												B	S	B	41.7	
75	F	2												N	E	D	41.10	schedule to work can't be official because someone might not come in if sick, etc. Need to fix this.
76	F	3												M	S	A	43.3	SEE PARENT
77	F	3												B	S	A	43.7	NRC-2014
78	F	3												N	S	D	43.3	free review
79	H	3												N	S	C	43.5	
80	H	3												N	S	D	43.5	free review
81	H	3												N	S	D	43.5	
82	H	3												M	S	B	43.5	SEE PARENT

83	H	3												N	S	B	43.5	free review
84	F	3												N	E	A	43.4	not an H but an F
85	H	3												N	E	B	43.5	Do the two bullets in the stem need to be connected (ie in explanation it states that the fire caused the trip, so is that important for the answer choices)?
86	H	3												B	S	C	43.5	NRC-2014
87	H	3												B	E	C	43.5	NRC-2016 Point value is wrong on worksheet-should be 4.2 not 4.7.
88	H	4												N	S	C	43.5	free review
89	H	3												N	S	D	43.5	free review
90	F	3												N	S	B	43.2	
91	H	3												N	S	C	43.2	
92	H	3	X											N	E	B	43.2	Put is/are secured after (1) in the stem.
93	H	3												B	E	D	43.2	NRC-2016 worksheet is wrong for point value, it is 3.4 not 4.2
94	H	3												N	S	A	43.2	
95	H	3												N	S	C	43.2	
96	H	3	X											N	E	A	43.2	conditions is plural in the stem.
97	H	3	X											N	E	D	43.2	stem -delete "by"
98	H	3												N	S	A	43.2	
99	F	3												N	S	A	43.2	
100	F	3												N	S	B	43.1	

**Results Table**

%

RO LOK -H	42	56	Avg RO LOD	2.89	
RO LOK-F	33	44	AVG SRO LOD	3.04	
SRO LOK - H	18	72	Overall LOD	2.93	
SRO LOK - F	7	28			
		%			
RO Bank	26	34.67	SRO Bank	4	16
RO Mod	2	2.667	SRO Mod	2	8
RO New	47	62.67	SRO New	19	76

**Flaws**

Stem focus  
Cues  
T/F  
Cred Dist  
Partial  
job link  
units

9
0
0
2
0
0
0

**10 CFR Distribution**

41.1	19	43.1	1
41.2	0	43.2	10
41.3	0	43.3	2
41.4	3	43.4	1
41.5	9	43.5	10
41.6	0	43.6	0
41.7	33	43.7	1

%				
Total Bank	30	30		
Total Mod	4	4		
Total New	66	66		
%				
RO Sat	60	80	SRO Sat	18 72
RO Unsat	0	0	SRO Unsat	0 0
RO Edit	15	20	SRO Edit	7 28
%				
Total Sat	78	78	Total Unsat	0 0
Total Edit	22	22		

minutia	0	41.8	3
backward	0	41.9	2
KA	1	41.10	19
SRO-only	0	41.11	3
LOD = 1	0	41.12	2
		41.13	0
		41.14	1

**Answer Dist ( in %)**

RO-A	18	SRO-A	7
RO-B	19	SRO-B	6
RO-C	20	SRO-C	6
RO-D	18	SRO-D	6

**Question Overlap with the Previous Two NRC Exams**

QA form ES-401-6 item 4 requires 4 or less questions on RO exam from previous two NRC exams, SRO portion two or less questions from previous two NRC exams\*

\* if this is exceeded, the region shall call NRR to explain why/reasons.

RO overlap from previous two NRC exams

7                    2015

18                   2015

59                   2016

SRO overlap from the previous two NRC exams

87                   2016

93                   2016



**Questions Requiring References to Answer**

6-10 questions rule of thumb on SRO portion of exam are allowed to be open reference, while the RO exam is generally none

RO Questions that require hand-outs

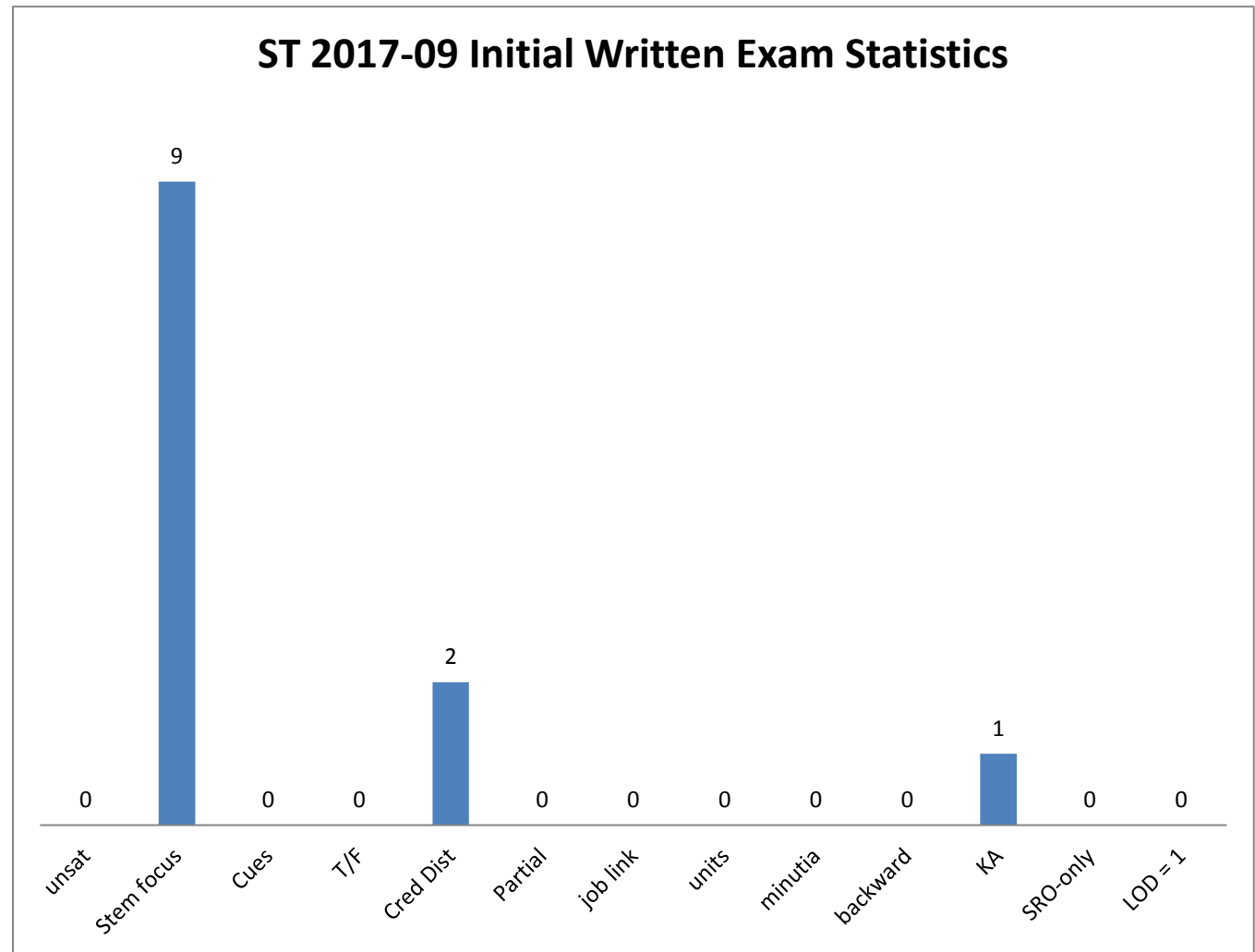
- 16 POP03-ZG-0008, Fig 7.1
- 23 POP04-TM-0004 Addendum 1 (page 1 of 1)
- 51 steam table

SRO Questions that require hand-outs

NONE

**Stats and Graph**

sat	78
edit	22
unsat	0
Stem focus	9
Cues	0
T/F	0
Cred Dist	2
Partial	0
job link	0
units	0
minutia	0
backward	0
KA	1
SRO-only	0
LOD = 1	0



Note for Adams:

After this cover sheet are the FINAL WRITTEN Exam statistics (the last 9 pages).

## 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 to 5 (easy to difficult) rating scale (questions in the 2 to 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
  - a. The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
  - b. The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
  - c. The answer choices are a collection of unrelated true/false statements.
  - d. The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
  - e. 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:
  - a. 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).
  - b. 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).
  - c. The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
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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?  
Place the answer letter here  
Place the 55.41 or 55.43 item here
8. At a minimum, explain any Unsat ratings (e.g., how the Appendix B psychometric attributes are not being met).

	1. LOK	2. LOD	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6	7	Ans Letter	CFR	8
Q#	(F/H)	(1-5)	stem focus	cueing	T/F	cred dist	partial	job link	minutia	# / units	back- ward	K/A	SRO- only	B/M/N	U/E/S	A/B/C/ D	55.41x55 .43y	Explanation
1	F	3												B	S	B	41.4	
2	F	3												N	S	A	41.10	
3	F	2												N	S	D	41.11	
4	F	2												N	S	B	41.7	
5	F	3												N	S	C	41.7	
6	H	3												M	S	D	41.7	free review

7	F	2												B	S	A	41.7	NRC-2015-negatively focused stem not allowed per NUREG-1021, ie which is NOT true....Revise question to ask "Which of the following is a DIRECT auto start signal for an ECW pump? A. Start of the associated ESF DG, B. Sequencer Mode II actuation, C. ECW pressure in one of the other trains at 28 psig, D. CCW common header pressure 78 psig. STP made corrections and question is now Sat.
8	H	3												N	S	A	41.5	
9	F	3												N	S	C	41.7	
10	H	3												B	S	A	41.7	free review
11	H	3												N	S	B	41.7	
12	H	3												B	S	A	41.7	NRC-2003
13	F	3												B	S	B	41.5	NRC-2009-stem could be challenged as written. Should state something like "Per POP04-RC-0003, Title, a rx trip and SI are required when the leak rate from the RCS EXCEEDS __ (1) __ gpm. STP revised as suggested and question is now Sat.
14	H	3												B	S	D	41.12	NRC-2009
15	H	3												N	S	A	41.8	
16	H	3												N	S	C	41.5	<b>Reference required</b> Need to put "AND/BUT" instead of just "AND" in the stem to establish logic for being within the curve but still making an adjustment (credibility of A and B affected. STP revised as suggested and question is now Sat.

17	H	3												N	S	D	41.10	
18	H	3												B	S	B	41.7	NRC-2015
19	F	3												N	S	B	41.7	
20	H	3												B	S	C	41.14	NRC-2011
21	H	3												N	S	A	41.10	
22	H	3												N	S	C	41.7	
23	H	3												B	S	B	41.7	NRC-2014, <b>Reference required</b>
24	F	3												N	S	C	41.7	
25	F	3												N	S	C	41.7	
26	H	3												N	S	A	41.7	
27	H	3												N	S	A	41.10	point value should be 4.5 not 4.6 for this KA for the RO exam. STP Updated form to 4.5 and question is now Sat.
28	F	3												N	S	D	41.8	
29	F	3												B	S	C	41.7	
30	F	3												N	S	B	41.11	free review
31	H	3												N	S	A	41.7	
32	H	3												N	S	C	41.5	
33	H	3												B	S	D	41.10	NRC-2011
34	H	3												N	S	A	41.7	
35	H	3												B	S	B	41.7	NRC-2014
36	H	3												B	S	C	41.7	NRC-1999
37	F	2												N	S	C	41.4	
38	H	3												N	S	C	41.10	
39	H	3												N	S	A	41.7	

40	F	3												B	S	D	41.10	NRC-2001
41	F	3												B	S	A	41.10	
42	F	2												N	S	A	41.9	
43	F	3												N	S	C	41.5	should make the bullet for pressure closer to the TS value such as 2090psig. STP made change as suggested to 2090 psig and question is now Sat.
44	F	3												N	S	C	41.1	
45	F	3												N	S	C	41.10	
46	F	3												N	S	A	41.7	Credibility of reset SI when nothing in stem indicates an SI occurred. Affects distracters C and D. it would be better to ask how you reset the phase A-with one train A and one train B switch, two train b swiches, two train a switches, etc. Not sure what you guys call these switches. STP added "an SI has occurred" into the stem of the question to make all distractors credible. Question is now Sat.
47	H	3												N	S	D	41.7	Distracters B, and C don't work together as pairs. For example, if pumping down in B is selected because at 60% level, then should have stopped if band as given in B is 65-75% since out of band.STP agreed and made changes to distracters and choices to repair this flaw and question is now Sat.
48	H	3												N	S	B	41.7	
49	H	3												N	S	B	41.7	
50	H	3												B	S	B	41.7	NRC-2013
51	H	3												B	S	C	41.5	NRC-2001
52	H	3												B	S	B	41.4	NRC-2011
53	H	3												N	S	A	41.11	
54	H	3												B	S	B	41.5	
55	F	3												B	S	D	41.10	

56	F	3												N	S	C	41.10	
57	H	3												N	S	D	41.7	
58	H	3												B	S	B	41.7	NRC-2009
59	F	3												B	S	D	41.7	NRC-2016
60	H	3												N	S	D	41.7	
61	F	3												N	S	D	41.7	
62	F	3												N	S	A	41.10	
63	H	3												N	S	B	41.10	
64	H	3												N	S	A	41.7	stem needs repair, "What are the expected....." also spell out depressurize in stem. Also worksheet point value is wrong. After KA change ST didn't update the point value. It should be 4.4 not 4.3. STP changed stem as suggested and updated point value and question is now Sat.
65	H	3												M	S	B	41.10	
66	H	3												N	S	D	41.10	
67	H	3												N	S	D	41.5	free review negatively focused stem should be avoided if possible per NUREG-1021, ie "all EXCEPT the...." STP tried several options and could not find a way to avoid it. STP stated that it was not confusing during validation so they would like to keep it as is for this question only. NUREG states that sometimes a negative stem is unavoidable and when it is used then the negative word needs to be highlighted. This was done by STP and question is now Sat.
68	F	3												N	S	C	41.10	
69	H	3												B	S	B	41.5	NRC-2009
70	H	3												B	S	D	41.9	
71	F	3												N	S	C	41.12	
72	F	2												B	S	C	41.10	free review NRC-2016



73	F	2												N	S	D	41.8	This KA is not a locate and operate, it is PS. STP modified question to be a 2 X 2 with just buses and is now Sat.
74	F	3												B	S	B	41.7	
75	F	2												N	S	D	41.10	schedule to work can't be official because someone might not come in if sick, etc. STP changed it to Emp Center - this is where the official time record keeping is logged for employees. Emp Center is also what we use for the official record keeping to determine the work hour rule for operators and any violations. Question is now Sat.
76	F	3												M	S	A	43.3	
77	F	3												B	S	A	43.7	NRC-2014
78	F	3												N	S	D	43.3	free review
79	H	3												N	S	C	43.5	
80	H	3												N	S	D	43.5	free review
81	H	3												N	S	D	43.5	
82	H	3												M	S	B	43.5	
83	H	3												N	S	B	43.5	free review
84	F	3												N	S	A	43.4	
85	H	3												N	S	B	43.5	Need to ensure the stem is clear for order of fire and trip. STP modified stem to be more clear. Question is now Sat.
86	H	3												B	S	C	43.5	NRC-2014
87	H	3												B	S	C	43.5	NRC-2016
88	H	4												N	S	C	43.5	free review
89	H	3												N	S	D	43.5	free review
90	F	3												N	S	B	43.2	
91	H	3												N	S	C	43.2	
92	H	3												N	S	B	43.2	Put is/are secured after (1) in the stem. STP changed stem to "is/are" and question is now Sat.
93	H	3												B	S	D	43.2	NRC-2016

94	H	3												N	S	A	43.2	
95	H	3												N	S	C	43.2	
96	H	3												N	S	A	43.2	conditions is plural in the stem. STP changed condition to conditions in the stem and it is now Sat.
97	H	3												N	S	D	43.2	stem -delete "by" - STP changed and is now Sat.
98	H	3												N	S	A	43.2	
99	F	3												N	S	A	43.2	
100	F	3												N	S	B	43.1	

**Results Table**

%

RO LOK -H	42	56	Avg RO LOD	2.89
RO LOK-F	33	44	AVG SRO LOD	3.04
SRO LOK - H	18	72	Overall LOD	2.93
SRO LOK - F	7	28		

%

%

RO Bank	26	34.67	SRO Bank	4	16
RO Mod	2	2.667	SRO Mod	2	8
RO New	47	62.67	SRO New	19	76

%

Total Bank	30	30		
Total Mod	4	4		
Total New	66	66		

%

%

RO Sat	75	100	SRO Sat	25	100
RO Unsat	0	0	SRO Unsat	0	0
RO Edit	0	0	SRO Edit	0	0

%

%

Total Sat	100	100	Total Unsat	0	0
Total Edit	0	0			

**Flaws**

Stem focus	0
Cues	0
T/F	0
Cred Dist	0
Partial	0
job link	0
units	0
minutia	0
backward	0
KA	0
SRO-only	0
LOD = 1	0

**10 CFR Distribution**

41.1	19	43.1	1
41.2	0	43.2	10
41.3	0	43.3	2
41.4	3	43.4	1
41.5	9	43.5	10
41.6	0	43.6	0
41.7	33	43.7	1
41.8	3		
41.9	2		
41.10	19		
41.11	3		
41.12	2		
41.13	0		
41.14	1		

**Answer Dist ( in %)**

RO-A	18	SRO-A	7
RO-B	19	SRO-B	6
RO-C	20	SRO-C	6
RO-D	18	SRO-D	6

**Question Overlap with the Previous Two NRC Exams**

QA form ES-401-6 item 4 requires 4 or less questions on RO exam from previous two NRC exams, SRO portion two or less questions from previous two NRC exams\*

\* if this is exceeded, the region shall call NRR to explain why/reasons.

RO overlap from previous two NRC exams

7 2015

18 2015

59 2016

SRO overlap from the previous two NRC exams

87 2016

93 2016

**Questions Requiring References to Answer**

6-10 questions rule of thumb on SRO portion of exam are allowed to be open reference, while the RO exam is generally none

RO Questions that require hand-outs

- 16 POP03-ZG-0008, Fig 7.1
- 23 POP04-TM-0004 Addendum 1 (page 1 of 1)
- 51 steam table (given out at all exams)

SRO Questions that require hand-outs

NONE