

ALL RO MARKUPS ATTACHED AT END OF THIS FORM

Some comments state "Attach original question." The originals were attached at the end of the file containing the question references. Disregard this comment.

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	Back- ward	Q= K/A	SRO Only			
1	H	2												N	S	D, CR, 41.3
2	F	2				X								N	S	A, CR, 41.5 – If the applicant recognizes that the minimum flow isn't achieved with single loop flow, then distracters B and C are the same. <i>Changed distracters, Answer now B.</i>
3	H	3												B	S	B, CR, 41.7 – Question: Is there significance to the 28 gpm letdown flow vice it lowering to a new level? <i>OK as is. Min letdown.</i>
4	H	3												M	S	A, CR, 41.10 <i>Minor Edit to stem.</i>
5	F	2												M	S	B, CR, 41.5 – Question: Do power supplies 314A and 315A supply LPSI/ECCS loads? From the references, I can't tell. This affects whether these are plausible distracters. Also, the question references OP-901-313 Attachment 2, and Attachment

Instructions

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

- Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
- Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
- Check the appropriate box if a psychometric flaw is identified:
 - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
 - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
 - The answer choices are a collection of unrelated true/false statements.
 - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
 - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
- Check the appropriate box if a job content error is identified:
 - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
 - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
 - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
 - The question requires reverse logic or application compared to the job requirements.
- Check questions that are sampled for conformance with the approved K/A and those that are *designated SRO-only* (K/A and license level mismatches are unacceptable).
- Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
- Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
- At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

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	Back- ward	Q= K/A	SRO Only			
																1 is provided. OK as is. References updated.
6	H	3												N	S	A, CR, 41.10
7	F	3												M	S	A, CR, 41.8
8	H	3												M	S	C, CR, 41.5
9	H	2												M	S	D, CR, 41.10
10	H	3												N	S	C, OR, 41.5
11	H	3												N	S	B, CR, 41.7
12	F	3				X								N	S	A, CR, 41.7 – It appears that loads are restored with either a UV condition or not according to the sequencer. There appears to be no situation when loads will be restored “immediately.” Therefore, if it isn’t possible for loads to start immediately, the applicant can eliminate distracters B and D based on knowing that isn’t possible. Changed ESFAS loads to the HPSI pump. Times would be minutia.
13	F	2												N	S	A, CR, 41.7
14	F	3												N	S	D, CR, 41.9
15	H	4												M	S	D, CR, 41.1
16	F	2												B	S	D, CR, 41.4 – It is assumed that steam from S/G B can supply both SGFP A and B, but steam from S/G A can only supply SGFP A, based on the question. The reference materials do not provide the information to support this. Please confirm if this is the intent of the question, and review reference materials to see if additional information is needed. OK as is. B side supplies both pumps.
17	H	3												N	S	B, CR, 41.7 – The references don’t show the details of DEH control stated in support to two of the distracters. Added additional reference.
18	H	2												M	S	A, CR, 41.7
19	H	3												B	S	B, CR, 41.7
20	F	3												B	S	C, CR, 41.7
21	F	3												N	S	A, CR, 41.7 – Reference OP-500-004, Section 4.114, “SUPS SA Trouble,” says that the there are no Control Room indications of this alarm. However, the nature of the question indicates that there is a loss of indication for affected components in the Control Room. The references provided show that the valve indications stated in the question will be part of a Loss of SUPS A. The list of items that give a “SUPS SA Trouble” condition

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	Back- ward	Q= K/A	SRO Only			
																does not include the Loss of SUPS A. Clarify how the two interface so the source of the correct answer can be understood. OK as is. Enhanced references.
22	F	2												M	S	C, CR, 41.7 – Will the applicant be able to determine the correct answer, not by knowing the power supply lists, but by eliminating distracters based power supply naming conventions? Do you know that A-DC and B-DC are incorrect because neither are associated with safety equipment, per their “X-DC” naming convention, vice “YY-DC,” for example? OK as is.
23	H	4				X								B	S	D, CR, 41.7 – Based on reviewing the reference material, there does not appear to be a trigger point in the automatic loading sequence at 7 seconds for anything. Clarify why this distracter is plausible. As an observation, stating that all of the wrong answers are wrong because the right answer is right doesn't prove why the distracters are plausible. Additional detail on the justification would be beneficial. This has been observed in other places as well. Added another bullet. No overlap with Q12.
24	H	2												N	S	A, CR, 41.12
25	F	2										X		B	S	B, CR, 41.4 – OK as is.
26	H	3												N	S	D41.5 Need to fix punctuation in first sentence after bullets. Question OK.
27	F	2												N	S	D41.8
28	F	2												N	S	C41.9 Remove “ONE” DONE
29	F	2												N	S	D41.5 See markup. Edits fixed.
30	F	1												B	S	C41.7 [none] Too easy. See markup. OK as is.
31	H	3										U		M	U S	B41.2 KA Mismatch Question replaced.
32	H	2												N	S	B41.10
33	F	3												N	S	C41.10 See markup Fixed
34	H	2												N	S	B41.5 See markup for change to stem. Fixed.
35	H	3												N	S	B41.5 See markups. Fixed.
36	F	2	E											N	S	D41.10 See markup. Stem focus needs to be enhanced. OK as is.
37	H	3												N	S	D41.5 See markup. Fixed.

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	Back- ward	Q= K/A	SRO Only			
38	F	2												N	S	D41.8 Minor edit. Fixed.
39	H	2												N	S	A41.10 See markup. Fixed.
40	H	3												N	S	B41.14
41	H	2												N	S	A41.5
42	H	3												N	S	B41.10 See markup. Fixed.
43	H	3												M	S	A41.10 See markup. Fixed.
44	H	3				E								N	S	D41.10 Fix non-credible distractor. Fixed.
45	H	3												N	S	B41.5 See markup. Fixed.
46	F	3												M	S	C41.5, 10 See markup for change to stem. Fixed.
47	F	2				E								B	S	D41.10 Fix credible distractor. Fixed.
48	F	2												N	S	A41.10
49	H	3												N	S	D41.10 See markup. Fixed.
50	H	4												M	S	C41.10 Need original. See markup. Please explain. Question OK. Fixed.
51	F	2												B	S	A41.10 [none] Revised stem for clarity.
52	H	3												M	S	C41.5 See Markup. Need original. Replace KA and question for this or Q56. Revised Q56. This is OK question.
53	H	2												M	S	A41.5 See markup. Fixed.
54	F	3												N	S	C41.10
55	F	2												N	S	B41.5 See markup. Fixed.
56	H	2												N	S	A41.5 Please revise the question as indicated on markup. Closer tie to KA. Question revised.
57	H	3												N	S	D41.6 See Markups. Fixed.
58	F	2												B	S	B41.5 [2006 NRC]See markups. Fixed.
59	H	2												N	S	D41.5
60	F	2												B	S	C41.10 [none] Minor edit: Space between stem and answers. Fixed.
61	H	3	U				U							N	U	B41.10 See markup. The original question had little focus and it wasn't clear what

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
															S	was being asked. Question replaced.
62	H	2										U		N	U S	D41.10 Replace question. Does not meet KA. Question replaced.
63	H	3												N	S	C41.9 See markup. Fixed.
64	H	2												N	S	B41.10 See Markup. Fixed.
65	H	3												B	S	D41.10 [none] Note: this is borderline SRO Only, but there are no RO applicants.
66	H	3												N	S	A41.10 See Markup. Fixed.
67	F	2												N	S	D41.5 See markup. Fixed.
68	F	2			U									N	U S	B41.10 See markup. Replaced question.
69	F	2												M	S	C41.2
70	H	3												B	S	A41.4 [none]
71	H	2												M	S	B41.12 See Markup. Fixed.
72	H	3												M	S	D41.12 [2000 NRC] See markup. Fixed.
73	F	1		U		U						U		N	U S	C41.10 This is too easy. SIAS is in the stem, and anyone who wouldn't know the answer would guess SIAS as the answer and be correct. Does not match KA. See markup for possible generic question. Question replaced.
74	F	3												N	S	C41.10
75	H	3					U							N	U S	A41.10 See comment on mark-up attached. Fixed B so there are not 2 correct answers.
1	H											X		N	U S	A/43.5 Question does not address RCS pressure limits. Question Replaced.
2	H	4												M	S	A/43.6
3	F	3												N	S	B/43.2 Administrative – move “and cascading Tech Specs” to stem since in all answers. Fixed.
4	F	3				X								N	S	D/43.6 I'm not sure what “establish reactive load < 0.1 MW real load” means and how that action could affect first part of answers. Changed to 1MVAR.

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
5	H	4												M	S	B/43.5
6	H	3												N	S	B/43.5
7	H	2				X								N	S	C/43.5
8	H	3												M	S	D/43.5 OPEN REFERENCE. Add "Primary" to Delta T header in answers. Fixed .
9	H	3					X							N	S	A/43.5 OP-901-110 step E0.2 directs entry into OP-901-112 if a problem with letdown. Therefore, "C" could be correct also. Question OK . Revised Distractors .
10	H	3				X								N	S	C/43.5 Stem states both CCW pumps are running therefore distractors "A" and "B" to use sub-section E2 for Loss of CCW Pumps are not credible. Changed E2 to E3 to remove ambiguity . Question OK .
11	H	2				X								M	S	C/43.5 OPEN REFERENCE.
12	H	3												N	S	D/43.2
13	H	4												N	S	B/43.5 Revised procedure titles .
14	F	3												M	S	C/43.5
15	H	3										X		N	S	A/43.2 OPEN REFERENCE.
16	H	3				X								N	U S	D/43.5 "B" and "C" are not credible since part (1) and part (2) of the answers contradict each other. For "C", part (1) says pressurizer level controller failed with part (2) saying to enter procedure for letdown malfunction. Replaced question due to overlap with Q9 .
17	F	4												N	S	A/43.5
18	H	3					X							B	S	A/43.6 Modified from 2004 W3 SRO Exam. "B" is also correct per procedure. Answer "A" is based on an assumption that applicant will deem 2ft per minute level drop too fast to re-grapple and move assembly. Subjective. Revised stem for clarity .
19	H	3												N	S	B/43.5
20	F	3							?					N	S	A/43.2
21	H	2										X		N	U S	D/43.2 Although TS 3.03 does have a 1 hour element, this question is testing knowledge of cold shutdown requirements (37 hours). Question replaced .
22	F	3												N	S	D/43.2
23	F	4												B	S	C/43.5 FROM 2009 NRC EXAM.

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24	H	3												N	S	C/43.5 OPEN REFERENCE
25	H	3												B	S	B/43.4 OPEN REFERENCE; From 2009 NRC EXAM
RO TOTALS:			B=					F=				E=		Additional Notes:		
			M=					H=				U=				
			N=													
SRO TOTALS:			B=					F=				E=		Additional Notes:		
			M=					H=				U=				
			N=													
<u>GENERAL COMMENTS:</u>																
1. Chief Examiner comments are indicated in <i>blue</i> .																

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1	H	2												N	S	D, CR, 41.3
2	F	2				X								N	E	A, CR, 41.5 – If the applicant recognizes that the minimum flow isn't achieved with single loop flow, then distracters B and C are the same.
3	H	3												B	S	B, CR, 41.7 – Question: Is there significance to the 28 gpm letdown flow vice it lowering to a new level?
4	H	3												M	S	A, CR, 41.10
5	F	2												M	E	B, CR, 41.5 – Question: Do power supplies 314A and 315A supply LPSI/ECCS loads? From the references, I can't tell. This affects whether these are plausible distracters. Also, the question references OP-901-313 Attachment 2, and Attachment 1 is provided.
6	H	3												N	S	A, CR, 41.10
7	F	3												M	S	A, CR, 41.8

Instructions

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

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- Check the appropriate box if a psychometric flaw is identified:
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- Check the appropriate box if a job content error is identified:
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 - 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).
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- Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
- Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
- At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
8	H	3												M	S	C, CR, 41.5
9	H	2												M	S	D, CR, 41.10
10	H	3												N	S	C, OR, 41.5
11	H	3												N	S	B, CR, 41.7
12	F	3				X								N	E	A, CR, 41.7 – It appears that loads are restored with either a UV condition or not according to the sequencer. There appears to be no situation when loads will be restored “immediately.” Therefore, if it isn’t possible for loads to start immediately, the applicant can eliminate distracters B and D based on knowing that isn’t possible.
13	F	2												N	S	A, CR, 41.7
14	F	3												N	S	D, CR, 41.9
15	H	4												M	S	D, CR, 41.1
16	F	2												B	S	D, CR, 41.4 – It is assumed that steam from S/G B can supply both SGFP A and B, but steam from S/G A can only supply SGFP A, based on the question. The reference materials do not provide the information to support this. Please confirm if this is the intent of the question, and review reference materials to see if additional information is needed.
17	H	3												N	S	B, CR, 41.7 – The references don’t show the details of DEH control stated in support to two of the distracters.
18	H	2												M	S	A, CR, 41.7
19	H	3												B	S	B, CR, 41.7
20	F	3												B	S	C, CR, 41.7
21	F	3												N	E	A, CR, 41.7 – Reference OP-500-004, Section 4.114, “SUPS SA Trouble,” says that there are no Control Room indications of this alarm. However, the nature of the question indicates that there is a loss of indication for affected components in the Control Room. The references provided show that the valve indications stated in the question will be part of a Loss of SUPS A. The list of items that give a “SUPS SA Trouble” condition does not include the Loss of SUPS A. Clarify how the two interface so the source of the correct answer can be understood.
22	F	2												M	E	C, CR, 41.7 – Will the applicant be able to determine the correct answer, not by knowing the power supply lists, but by eliminating distracters based power supply naming conventions? Do you know that A-DC and B-DC are incorrect because

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
																neither are associated with safety equipment, per their "X-DC" naming convention, vice "YY-DC," for example?
23	H	4				X								B	E	D, CR, 41.7 – Based on reviewing the reference material, there does not appear to be a trigger point in the automatic loading sequence at 7 seconds for anything. Clarify why this distracter is plausible. As an observation, stating that all of the wrong answers are wrong because the right answer is right doesn't prove why the distracters are plausible. Additional detail on the justification would be beneficial. This has been observed in other places as well.
24	H	2												N	S	A, CR, 41.12
25	F	2										X		B	U	B, CR, 41.4 – The K/A aims at determining where parameters will go with the system and/or what if any control operations would be needed in response. The question as stated tells the applicant that controls will be operated, and that temperatures and pressures will change. The applicant should be given conditions and tested on what he/she expects to happen, and what actions if any are needed.
26	H	3												N	E	D41.5 Add a period at end of last sentence.
27	F	2												N	S	D41.8
28	F	2												N	E	C41.9 Remove "ONE"
29	F	2												N	E	D41.5 See markup.
30	F	1												B	U	C41.7 [none] Too easy. See markup.
31	H	3										U		M	U	B41.2 KA Mismatch
32	H	2												N	S	B41.10
33	F	3												N	E	C41.10 See markup
34	H	2												N	E	B41.5 See markup for change to stem.
35	H	3												N	E	B41.5 See markups.
36	F	2	E											N	E	D41.10 See markup. Stem focus needs to be enhanced.
37	H	3												N	E	D41.5 See markup.
38	F	2												N	E	D41.8 Minor edit
39	H	2												N	E	A41.10 See markup.
40	H	3												N	S	B41.14

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41	H	2												N	S	A41.5
42	H	3												N	E	B41.10 See markup.
43	H	3												M	E	A41.10 See markup
44	H	3				E								N	E	D41.10 Fix non-credible distractor.
45	H	3												N	E	B41.5 See markup
46	F	3												M	E	C41.5, 10 See markup for change to stem.
47	F	2				E								B	E	D41.10 Fix credible distractor.
48	F	2										U		N	U	A41.10 Fix focus of question to operational implication.
49	H	3												N	E	D41.10 See markup.
50	H	4												M	E	C41.10 Need original. See markup. Please explain.
51	F	2	U											B	U	A41.10 [none] See markup. Why ask what was previously in a procedure?
52	H	3												M	E	C41.5 See Markup. Need original. Replace KA and question for this or Q56.
53	H	2												M	E	A41.5 See markup
54	F	3												N	S	C41.10
55	F	2												N	E	B41.5 See markup
56	H	2												N	E	A41.5 Please revise the question as indicated on markup. Closer tie to KA.
57	H	3												N	E	D41.6 See Markups
58	F	2												B	E	B41.5 [2006 NRC]See markups
59	H	2												N	S	D41.5
60	F	2												B	E	C41.10 [none] Minor edit: Space between stem and answers.
61	H	3	U				U							N	U	B41.10 See markup.
62	H	2										U		N	U	D41.10 Replace question. Does not meet KA.
63	H	3												N	E	C41.9 See markup
64	H	2												N	E	B41.10 See Markup
65	H	3												B	S	D41.10 [none] Note: this is borderline SRO Only, but there are no RO applicants.

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	Back- ward	Q= K/A	SRO Only			
66	H	3												N	E	A41.10 See Markup.
67	F	2												N	E	D41.5 See markup.
68	F	2			U									N	U	B41.10 See markup
69	F	2												M	S	C41.2 Need original Q
70	H	3												B	S	A41.4 [none]
71	H	2												M	E	B41.12 See Markup. Need original Q.
72	H	3												M	E	D41.12 [2000 NRC] See markup. Need original Q.
73	F	1		U		U						U		N	U	C41.10 This is too easy. SIAS is in the stem, and anyone who wouldn't know the answer would guess SIAS as the answer and be correct. Does not match KA. See markup for possible generic question.
74	F	3												N	S	C41.10
75	H	3					U							N	U	A41.10 See comment on mark-up attached.
1	H											X		N	U	A/43.5 Question does not address RCS pressure limits
2	H	4							X					M	E	A/43.6 Would SRO be expected to know this from memory?
3	F	3												N	E	B/43.2 Administrative – move “and cascading Tech Specs” to stem since in all answers
4	F	3				X								N	E	D/43.6 I'm not sure what “establish reactive load < 0.1 MW real load” means and how that action could affect first part of answers
5	H	4												M	S	B/43.5
6	H	3												N	S	B/43.5
7	H	2				X								N	U	C/43.5 Part (1) distractors referencing CCW system malfunction not credible with information provided in stem. The stem contains no evidence of anything wrong with CCW.
8	H	3												M	S	D/43.5 OPEN REFERENCE. Add “Primary” to Delta T header in answers.
9	H	3					X							N	U	A/43.5 OP-901-110 step E0.2 directs entry into OP-901-112 if a problem with letdown. Therefore, “C” could be correct also
10	H	3				X								N	U	C/43.5 Stem states both CCW pumps are running therefore distractors “A” and “B” to use sub-section E2 for Loss of CCW Pumps are not credible

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			
11	H	2				X								M	E	C/43.5 OPEN REFERENCE. Answer D not credible based on stem since no release or core damage indicated. Also, 32A and 32B supply breakers should be renamed to SST A32 FEEDER and SST B32 FEEDER BREAKERS
12	H	3												N	S	D/43.2
13	H	4												N	S	B/43.5
14	F	3												M	S	C/43.5
15	H	3										X		N	U	A/43.2 OPEN REFERENCE. Asking tech spec knowledge vice indications of a dropped rod
16	H	3				X								N	U	D/43.5 "B" and "C" are not credible since part (1) and part (2) of the answers contradict each other. For "C", part (1) says pressurizer level controller failed with part (2) saying to enter procedure for letdown malfunction.
17	F	4												N	E	A/43.5 Is knowledge of RAB-7C Fire Area something SRO's should know from memory?
18	H	3					X							B	E	A/43.6 Modified from 2004 W3 SRO Exam. "B" is also correct per procedure. Answer "A" is based on an assumption that applicant will deem 2ft per minute level drop too fast to re-grapple and move assembly. Subjective
19	H	3												N	E	B/43.5 Is there an assumption that insertion limits are being met due to absence of Insertion Limit alarm?
20	F	3							?					N	S/E	A/43.2 Would SRO be expected to know the testing requirements for CVAS boundary door? Possibly minutia.
21	H	2										X		N	U	D/43.2 Although TS 3.03 does have a 1 hour element, this question is testing knowledge of cold shutdown requirements (37 hours)
22	F	3												N	S	D/43.2
23	F	4												B	S	C/43.5 FROM 2009 NRC EXAM.
24	H	3												N	S	C/43.5 OPEN REFERENCE
25	H	3												B	S	B/43.4 OPEN REFERENCE; From 2009 NRC EXAM

RO TOTALS:

B=

F=

E=

M=

H=

U=

N=

Additional Notes:

SRO TOTALS:

B=

F=

E=

Additional Notes:

M=

H=

U=

N=

GENERAL COMMENTS:

1. Bank questions are indicated by **B**; Modified are indicated by **M**; New questions are indicated by **N**
2. Chief Examiner comments are indicated in *blue*.
3. Average difficulty is _____ on the RO exam and _____ on the SRO exam.
4. The 10CFR55.41/43 distribution is: RO / SRO
41.1 = 43.1 =
41.2 = 43.2 =
41.3 = 43.3 =
41.4 = 43.4 =
41.5 = 43.5 =
41.6 = 43.6 =
41.7 = 43.7 =
41.8 =
41.9 =
41.10 =
41.11 =
41.12 =
41.13 =
41.14 =
5. The answer distribution is: RO / SRO
A = 13 (17%) / 6 (24%)
B = 16 (22%) / 7 (28%)
C = 21 (28%) / 5 (20%)
D = 25 (33%) / 7 (28%)
6. There are ____ questions with attachments provided.

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

003 K3.01

Importance Rating

3.7

K/A Statement

Knowledge of the effect that a loss or malfunction of the RCPS will have on the following:
RCS

Proposed Question: RO 1

Rev: 0

The following conditions exist:

- The plant is in Mode 3 with a cooldown in progress with 3 RCPs running.
- RCP 2A was secured 2 minutes ago.

Which ONE of the following conditions would result in a TOTAL loss of RCS flow?

- A. RCP 1B Oil Pressure is LOW.
- B. RCP 1A Oil Reservoir level is LOW.
- C. RCP 2B Bearing Temperature is HIGH.
- D. RCP 2A has Reverse Rotation Detected.

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: Low oil pressure condition requires stopping the affected pump ONLY.
- B. INCORRECT: Low oil level condition may require stopping the affected pump ONLY.
- C. INCORRECT: High temperature condition requires stopping the affected pump ONLY.
- D. CORRECT: Anti-Reverse Rotation Device is defective and the RCP 2A is running in reverse which requires securing ALL running RCPs – Loss of RCS flow.

Proposed references to be provided to applicants during examination:	None
--	------

Question Source: Bank # _____
 Modified Bank # _____ (Note changes or attach
 New X parent)

Question Cognitive Level:	Memory or Fundamental Knowledge	<u> </u>
	Comprehension or Analysis	<u> X </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>003 K5.05</u>	<u> </u>
	Importance Rating	<u>2.8</u>	<u> </u>

K/A Statement

Knowledge of the operational implications of the following concepts as they apply to the RCPS: The dependency of RCS flow rates upon the number of operating RCPs

Proposed Question: RO 2 Rev: 0

The following plant conditions exist:

- Cooldown to Mode 5 is in progress
- Boration to Refuel Boron requirements is in progress
- All RCPs are running

Which ONE of the following RCP pump combinations describes the minimum required ~~RCS flow~~ alignment for RCS flow to ensure proper boron concentration is reached in both loops?

- A. 1B and 2B are running
- B. 1A and 1B are running **Since this is essentially the same as C, the applicant can easily eliminate both. Change this to one RCP in one loop.**
- C. 2A and 2B are running
- D. All 4 RCPs are required

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: This configuration has a RCP in each loop running. Procedure prefers one RCP in each loop remain running for equalization of flow through each SG to ensure proper cooldown and boron mixing.
- B. INCORRECT: Procedure prefers one RCP in each loop remain running for equalization of flow through each SG to ensure proper cooldown and boron mixing.
- C. INCORRECT: Procedure prefers one RCP in each loop remain running for equalization of flow through each SG to ensure proper cooldown and boron mixing.
- D. INCORRECT: This would be optimum but is not the minimum requirement. Procedure prefers one RCP in each loop remain running during cooldown for equalization of flow through each SG to ensure proper cooldown and boron mixing.

Technical Reference(s) OP-010-005 pg 35 & Att (Attach if not previously
 9.15 provided)
 _____ (including version/revision
 _____ number)

Proposed references to be provided to applicants during
examination: None

Learning Objective: WLP-OPS-RCP00 Obj 10 (As available)

Question Source: Bank # _____
 Modified Bank # _____ (Note changes or attach
 New X parent)

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
 Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	004 A3.14	
	Importance Rating	3.4	
K/A Statement			
Ability to monitor automatic operation of the CVCS, including: Letdown and charging flows			
Proposed Question:	RO 3	Rev:	0

The following plant conditions exist:

- Reactor power is 100%
- Charging Pump B is running
- Charging Pump A and AB control switches are in AUTO
- Standby Pump Selector switch is in the AB – A position

Which ONE of the following describes the Letdown flow response following a trip of the running Charging Pump?

- A. Lowers to 28 GPM and stabilizes **Is there something significant about 28.**
- B. Isolates upstream of the Regenerative Heat Exchanger
- C. Lowers to a new value and bypasses the in-service CVCS ion exchanger
- D. Lowers to a new value until the standby pump starts, then returns to normal flow

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: Letdown will no longer be cooled and will isolate on a high temperature a short time later producing NO flow condition.
- B. CORRECT: Letdown will no longer be cooled and will isolate on a high temperature a short time later producing NO flow condition.
- C. INCORRECT: Letdown will no longer be cooled but will bypass Ion Exchanger flow for the in-service ion exchanger a short time later.
- D. INCORRECT: Letdown will no longer be cooled and will isolate on a high temperature a short time later producing NO flow condition.

Technical Reference(s)	<u>SD-CVC pg 10</u>	(Attach if not previously provided) (including version/revision number)
	<u>OP-500-007 A-1</u>	
Proposed references to be provided to applicants during examination:		<u>None</u>
Learning Objective:	<u>WLP-OPS-CVC00 Obj 2</u>	(As available)
Question Source:	Bank # <u>X</u>	08390
	Modified Bank # <u> </u>	(Note changes or attach parent)
	New <u> </u>	
Question History:	Last NRC Exam <u>2007 RO/SRO Exam</u>	
Question Cognitive Level:	Memory or Fundamental Knowledge <u> </u>	
	Comprehension or Analysis <u>X</u>	
10 CFR Part 55 Content:	55.41 <u>7</u>	
	<u> </u>	
Comments:		

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

005 K1.06

Importance Rating

3.5

K/A Statement

Knowledge of the physical connections and/or cause effect relationships between the RHRS and the following systems: ECCS

Proposed Question: RO 4

Rev: 0

The following plant conditions exist:

- Shutdown Cooling Train A is in service at 4000 gpm
- RCS pressure is 125 PSIA with depressurization in progress for Crud Burst cleanup

As RCS pressure is lowered, Which-which ONE of the following valves is required to be CLOSED and CAUTION tagged to prevent inadvertent makeup to the RCS from the RWSP ~~as RCS pressure is lowered?~~

- A. SI-109A, LPSI Pump A Suction Isolation
- B. SI-116A, LPSI Pump A Minimum Flow Recirculation Stop Check
- C. CVC-1661, Purification Ion Exchanger Outlet Header Isolation
- D. SI-138A, LPSI Header to RXC Loop 2A Control

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: "NOTE" prior to Step 5.3.14 requires SI-109A to be CLOSED and CAUTION tagged during the lineup to prevent makeup to RCS from RWSP.
- B. INCORRECT: Step 5.3.11 requires SI-116A to be CLOSED to prevent loss of inventory from the RCS in the SDC lineup..
- C. INCORRECT: CVC-1661 is required to be closed to prevent a loss of RCS inventory during SDC purification operations.
- D. INCORRECT: SI-138A is required to be throttled closed during RCS mid-loop operation to prevent LPSI Pump vortexing.

Technical Reference(s) OP-009-005 Sec 5.3 (Attach if not previously provided)
SD-SDC Fig 1 (including version/revision number)

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-SDC00 Obj 3 (As available)

Question Source: Bank # 07906
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam 2006 RO Exam

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

006 K2.04

Importance Rating

3.6

K/A Statement

Knowledge of bus power supplies to the following: ESFAS-operated valves

Proposed Question: RO 5

Rev: 0

What is the power supply to SI-138 A, LPSI Header to RC Loop 2A Control Isolation?

A. Bus 213 A

B. Bus 311 A

C. Bus 314 A **Does this and 315A exist, and are they plausible? Can't find them in references.**

D. Bus 315 A

Proposed Answer: B

Explanation (Optional):

A. INCORRECT: SI-138 A is not powered from Bus 213A

B. CORRECT: SI-138 A is powered from Bus 311A

C. INCORRECT: SI-138 A is not powered from Bus 314A

D. INCORRECT: SI-138 A is not powered from Bus 315A

Technical Reference(s) OP-901-313 Att 2 (pg 42) (Attach if not previously provided)
SD-SDC Table 4 (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-SDC00 Obj: 2 (As available)

Question Source: Bank # _____
Modified Bank # X (Note changes or attach parent)
New _____

Question History: Last NRC Exam 2009 RO/SRO Q# 31

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>007 A2.01</u>	<u> </u>
	Importance Rating	<u>3.9</u>	<u> </u>

K/A Statement

Ability to (a) predict the impacts of the following malfunctions or operations on the PRTS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Stuck-open PORV or code safety

Proposed Question: RO 6 Rev: 0

The following annunciator alarms are LIT on CP-2:

- Pressurizer Relief Line Temp HIGH
- Quench Tank Level HI/LO
- Quench Tank Temperature Hi

Which ONE of the following conditions and corrective actions would address these alarms?

- A. Leaking Pressurizer Safety Valve; Fill and Drain the Quench Tank to reduce temperature.
- B. Leaking Quench Tank Drain Valve; Fill and Drain the Quench Tank to reduce temperature.
- C. Leaking Reactor Vessel Vent To Quench Tank, enter Containment and isolate the leaking solenoid valve.
- D. Stuck Closed Quench Tank Drain Valve; Perform a Reactor Coolant Drain Tank Leakage Diagnostic to determine the source of in-leakage.

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: All alarms can be related to a leaking Safety Valve which requires action to maintain Quench Tank level and temperature by fill and drain method.
- B. INCORRECT: Quench Tank LOW level would indicate a problem with the Quench Tank Drain Valve, but does NOT relate to Pressurizer Relief Line or Quench Tank HIGH Temp.
- C. INCORRECT: A leaking Head vent would not cause a PZR Relief Line Temperature High alarm but would give the remaining alarms.
- D. INCORRECT: Quench Tank HIGH level would NOT indicate a problem with the Quench Tank Drain Valve since it does NOT function in AUTO.

Technical Reference(s) OP-901-111 (Attach if not previously
 OP-500-008 A-2, D-2, F-1 provided)
 _____ (including version/revision
 _____ number)

Proposed references to be provided to applicants during
examination: NONE

Learning Objective: WLP-OPS-RCS00 Obj 2 (As available)

Question Source: Bank # _____
 Modified Bank # _____ (Note changes or attach
 New X parent)

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

008 K4.09

Importance Rating

2.7

K/A Statement

Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following:

The “standby” feature for the CCW pumps

Proposed Question:

RO 7

Rev:

0

Which ONE of the following conditions will send an automatic start signal to ACCW Pump A?

- A. Low ACCW system pressure
- B. High ACCW system temperature
- C. Dry Cooling Tower A bypass opens
- D. Low Component Cooling Water flow

Proposed Answer:

A

Explanation (Optional):

- A. CORRECT: ACCW pumps start on system low pressure.
- B. INCORRECT: ACCW pumps start on high CCW temperature.
- C. INCORRECT: ACCW pumps are NOT started on DCT in bypass.
- D. INCORRECT: ACCW pumps are NOT started on Low CCW flow.

Technical Reference(s) SD-CC pg 45-46 and Table 1.28 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-CC00 Obj 3 (As available)

Question Source: Bank # 2136-A
Modified Bank # X (Note changes or attach parent)
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41 8

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

008 A3.04

Importance Rating

2.9

K/A Statement

Ability to monitor automatic operation of the CCWS, including: Requirements on and for the CCWS for different conditions of the power plant

Proposed Question: RO 8

Rev: 0

The following plant conditions exist:

- Dry Cooling Tower Fans 1 – 5 A are running in SLOW.
- Component Cooling Water Heat Exchanger A Outlet temperature rose to 93.
- 15 minutes later, CCW Heat Exchanger A Outlet Temperature drops from 92 °F to 91° F and stabilizes.

Which ONE of the following conditions identifies the number of Train A Dry Cooling Tower Fans that will be running and their respective speed(s) at the 15 minute point? (Assume ALL DCT Fans are operable and will function as designed)

	<u>FANS</u>	<u>SPEED</u>
A.	1 thru 15	SLOW
B.	1 thru 15	FAST
C.	1 thru 5; 6 thru 15	FAST; SLOW
D.	1 thru 5; 6 thru 15	SLOW; FAST

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: DCT fans cycle on 1 thru 15 every 60 seconds in SLOW until ALL fans are running, BUT continue to cycle on 1 thru 15 every 60 seconds in FAST until temperature is less than 92° F.
- B. INCORRECT: DCT fans cycle on 1 thru 15 every 60 seconds in SLOW until ALL fans are running, THEN cycle on 1 thru 15 every 60 seconds in FAST until temperature is less than 92° F.
- C. CORRECT: DCT fans cycle on 1 thru 15 every 60 seconds in SLOW until ALL fans are running, THEN cycle on 1 thru 15 every 60 seconds in FAST until temperature is less than 92° F.
- D. INCORRECT: DCT fans cycle on 1 thru 15 every 60 seconds in SLOW until ALL fans are running, BUT cycle on 1 thru 15 every 60 seconds in FAST until temperature is less than 92° F.

Technical Reference(s) SD-CC pg 19-20 and 73 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-CC00 Obj 3 (As available)

Question Source: Bank # 6065A
Modified Bank # X (Note changes or attach parent)
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

010 A1.06

Importance Rating

3.1

K/A Statement

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: RCS heatup and cooldown effect on pressure

Proposed Question: RO 9

Rev: 0

Plant conditions are as follows:

- RCS pressure is 160 psia
- Pressurizer level is 98% and lowering
- The crew is drawing a Pressurizer bubble in accordance with OP-001-001, Reactor Coolant System Fill and Vent

Which of the following describes how the operator knows that a bubble has been formed in the Pressurizer during this evolution?

- A. Pressurizer Backup heaters cycle off.
- B. Pressurizer water temperature reaches 212 °F.
- C. Pressurizer water temperature reaches saturation temperature for RCS pressure.
- D. Pressurizer Pressure no longer drops while Pressurizer level is being lowered.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect: Pressurizer pressure will not be rising during this evolution.
- B. Incorrect: The Pressurizer bubble does not form at 212 °F for the conditions given.
- C. Incorrect: OP-001-001 directs raising Pressurizer temperature to this point, and then directs lowering Pressurizer level while monitoring Pressurizer pressure.
- D. Correct: OP-001-001 has a note with this information. While raising Letdown flow and lowering Pressurizer level, pressure will stop dropping when the Pressurizer bubble is formed.

Technical Reference(s) OP-001-001 Step 6.6 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Question Source: Bank # _____ 1452-A
Modified Bank # _____ (Note changes or attach parent)
X
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

010 G2.1.25

Importance Rating

3.9

K/A Statement

Pressurizer Pressure Control System: Ability to interpret reference materials, such as graphs, curves, tables, etc.

Proposed Question: RO 10

Rev: 0

The plant is performing a Cooldown to Cold Shutdown in accordance with OP-010-005 using Att 9.4, Cooldown to Cold Shutdown (Mode 4 to Mode 5). The CRS has directed you to monitor the Pressurizer Cooldown evolution using Att. 9.5, Pressurizer Saturation & $P_{\text{sat}} + 100$ PSIA curve.

Which ONE of the following data points indicates an excessive pressure condition requiring operator action?

	<u>Press (PSIA)</u>	<u>Temp (°F)</u>
A.	167	308
B.	216	347
C.	319	386
D.	348	415

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: :Pressure/Temperature conditions are met on the $P_{\text{sat}} + 100$ PSIA curve with NO entry into the NOT allowed region on Att 9.5.
- B. INCORRECT: :Pressure/Temperature conditions are met on the $P_{\text{sat}} + 100$ PSIA curve with NO entry into the NOT allowed region on Att 9.5.
- C. CORRECT: Pressure/Temperature condition exceeds the $P_{\text{sat}} + 100$ PSIA curve with entry into the NOT allowed region on Att 9.5.
- D. INCORRECT: :Pressure/Temperature conditions are met on the $P_{\text{sat}} + 100$ PSIA curve with NO entry into the NOT allowed region on Att 9.5.

Technical Reference(s) OP-010-005 Step 3.2.29 and Att 9.5 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: OP-010-005 Att 9.5

Learning Objective: WLP-OPS-PLC00 Obj 3 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

012 A1.01

Importance Rating

2.9

K/A Statement

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPS controls including: Trip setpoint adjustment

Proposed Question: RO 11

Rev: 0

The following plant conditions exist:

- The plant is operating at 100% with NOT and NOP
- Performance of OP-903-107, Plant Protection System Channel A Functional Test, is in progress

The NPO reports that he inadvertently depressed the LOW PZR PRESS Setpoint Reset pushbutton.

Which of the following pressures (PSIA) indicates the approximate value at which Channel A would generate a low Pressurizer pressure trip?

- A. 1850
- B. 1684
- C. 1484
- D. 1284

Proposed Answer:

B

Explanation (Optional):

- A. INCORRECT: The manual RESET pushbutton will only lower the existing setpoint of a maximum of 400 PSIA below existing RCS pressure. The setpoint has a ceiling of 1684 PSIA. This number would be plausible if the candidate does not realize that there is an upper ceiling on the setpoint.
- B. CORRECT: The manual RESET pushbutton will only lower the existing setpoint of a maximum of 400 PSIA below existing RCS pressure. The setpoint has a ceiling of 1684 PSIA.
- C. INCORRECT: The manual RESET pushbutton will only lower the existing setpoint of a maximum of 400 PSIA below existing RCS pressure. The setpoint has a ceiling of 1684 PSIA. This number is 200 psia below existing setpoint and would be plausible if the candidate believes that it works like the Steam Pressure Lo setpoint which is 200 psia and uses the setpoint instead of process pressure to determine the new setpoint.
- D. INCORRECT: The manual RESET pushbutton will only lower the existing setpoint of a maximum of 400 PSIA below existing RCS pressure. The setpoint has a ceiling of 1684 PSIA. This number is 400 psia below given setpoint and is plausible if the candidate uses the setpoint vs. process pressure to determine the new setpoint.

Technical Reference(s) SD-PPS pg 33 & Fig 30 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-PPS00 Obj 3 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	013 K1.12	
Importance Rating	4.1	

K/A Statement

Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: ED/G

Proposed Question: RO 12

Rev: 0

The following plant conditions exist:

- EDG 'A' is running paralleled in TEST mode for surveillance OP-903-068
- A SIAS actuation occurred with **NO** Loss of Offsite Power condition

The EDG output breaker will _____ (1) _____ and the ESFAS loads will be Started _____ (2) _____ after _____

Change (2) to sequencer times for UV and no UV.

(1)

(2)

- A. OPEN by the sequencer **xx seconds**
- B. OPEN Immediately **yy seconds**
- C. stay CLOSED by the sequencer
- D. stay CLOSED Immediately

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: EDG output breaker OPENS and after 2 seconds the sequencer loading begins since NO undervoltage conditions existed on the safety bus.
- B. INCORRECT: EDG output breaker OPENS and after 2 seconds the sequencer loading begins since NO undervoltage conditions existed on the safety bus to ensure NO excess loading if IMMEDIATELY started.
- C. INCORRECT: EDG output breaker OPENS and after 2 seconds the sequencer loading begins since NO undervoltage conditions existed on the safety bus.
- D. INCORRECT: EDG output breaker OPENS and after 2 seconds the sequencer loading begins since NO undervoltage conditions existed on the safety bus to ensure NO excess loading if IMMEDIATELY started..

Technical Reference(s) SD-EDG pg 44 - 45 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-EDG00 Obj 3 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	013 K6.01	
Importance Rating	2.7	

K/A Statement

Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS:

Sensors and detectors

Proposed Question: RO 13 Rev: 0

Regarding a single channel of Plant Protection System, which ONE of the following PPS sensor failures would cause a Reactor Trip signal but NO ESFAS signal from the channel if it failed to ZERO?

- A. RCP 1A Speed
- B. S/G 1 Level
- C. S/G 1 Pressure
- D. Wide Range Pressurizer Pressure

Proposed Answer: A

Explanation (Optional):

RPS and ESFAS channels share the same sensors

- A. CORRECT: Loss of the 1A RCP speed output (zero speed) signal will cause a reactor trip signal but is not an input to ESFAS.
- B. INCORRECT: Loss of the S/G 1 Level output signal will cause a reactor trip and ESFAS (EFAS-1) signal
- C. INCORRECT: Loss of the S/G 1 Pressure output signal will cause a reactor trip and ESFAS (MSIS) signal
- D. INCORRECT: Loss of the WR Pressurizer pressure output signal will cause a reactor trip and ESFAS (SIAS/CIAS) signal.

Technical Reference(s) SD-PPS Fig 15 & 32 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-PPS00 Obj 3 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>022 A4.03</u>	<u> </u>
	Importance Rating	<u>3.2</u>	<u> </u>
K/A Statement			
Ability to manually operate and/or monitor in the control room: Dampers in the CCS			
Proposed Question:	RO 14	Rev:	0

Which ONE of the following methods will OPEN the CCS-102 A(B), Emergency Discharge Damper(s)?

- A. Place CCS-102 A(B) control switch to OPEN at CP-18
- B. Start Containment Fan Cooler in FAST at CP-18
- C. Start Containment Fan Cooler in SLOW at CP-18
- D. SIAS

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: NO control switch available
- B. INCORRECT: NO function tied to fan operation
- C. INCORRECT: NO function tied to fan operation
- D. CORRECT: Designed to OPEN on SIAS to direct cool air to top of containment following a LOCA or MSLB event.

Technical Reference(s) SD-CCS pg 10 and Fig 2 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-CCS00 Obj 5 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 9

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

026 K3.02

Importance Rating

4.2

K/A Statement

Knowledge of the effect that a loss or malfunction of the CSS will have on the following:

Recirculation spray system

Proposed Question:

RO 15

Rev:

0

The following plant conditions exist:

- A large break LOCA occurred
- Containment Spray Line A pipe failure occurred in the -35 Wing Area

Which ONE of the following conditions describes the operational concern for the Safety Injection system following RAS initiation?

The (1) will not have adequate water inventory for automatic operation of the (2) pumps.

(1)

(2)

- A. RWSP LPSI
- B. RWSP HPSI
- C. SIS sump LPSI
- D. SIS sump HPSI

Proposed Answer:

D

Explanation (Optional):

- A. INCORRECT: RWSP is NOT available once RAS is initiated
- B. INCORRECT: RWSP is NOT available once RAS is initiated
- C. INCORRECT: SIS sump water will spray into -35 wing area which will cause a loss of inventory until the break can be isolated and loss of inventory for pump suction.
- D. CORRECT: SIS sump water will spray into -35 wing area which will cause a loss of inventory until the break can be isolated and loss of inventory for pump suction.

Technical Reference(s) SD-CS pg 7 (Attach if not previously provided)
OP-902-008 pg 30 (IC-2: SI) (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-CS00 Obj.5 (As available)

Question Source: Bank # _____ 6504A
Modified Bank # _____ (Note changes or attach parent)
Bank # X
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 1

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	<u> </u>
Group #	<u>1</u>	<u> </u>
K/A #	<u>039 K1.08</u>	<u> </u>
Importance Rating	<u>2.7</u>	<u> </u>

K/A Statement

Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: MFW

Proposed Question: RO 16 Rev: 0

Steam supply to both Steam Generator Feedwater pump turbines comes from _____ and _____.

Does steam for both turbines come from B side?? References don't make this clear.

- A. Main Steam Header A; MSR A header.
- B. Main Steam Header A; MSR B header.
- C. Main Steam Header B; MSR A header.
- D. Main Steam Header B; MSR B header.

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: The SGFP does **NOT** receive steam from the 'A' Main Steam or the 'A' MSR headers.
- B. INCORRECT: The SGFP does **NOT** receive steam from the 'A' Main Steam but does receive steam from the 'B' MSR headers.
- C. INCORRECT: The SGFP does receive steam from the 'B' Main Steam but does **NOT** receive steam from the 'A' MSR headers.
- D. CORRECT: The SGFP does receive steam from both the 'B' Main Steam and the 'B' MSR headers based upon plant power.

Technical Reference(s) SD-FWP Fig 4A & pg 33 (Attach if not previously provided)
 _____ (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-FWP Obj 1 (As available)

Question Source: Bank # X 1871A
 Modified Bank # _____ (Note changes or attach parent)
 New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
 Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 4

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>039 A2.04</u>	<u> </u>
	Importance Rating	<u>3.4</u>	<u> </u>

K/A Statement

Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunctioning steam dump

Proposed Question: RO 17 Rev: 0

The following plant conditions exist:

- Plant is operating at 92% following Main Turbine testing
- MS-319A, Main Steam Bypass 1A valve, fails OPEN

Which ONE of the following conditions states the initial plant response and the required operator action?

- A. Turbine Governor Valve position will lower; lower turbine loading to maintain reactor power $\leq 100\%$ and T_{AVG} stable.
- B. Reactor power will rise; lower turbine loading to maintain reactor power $\leq 100\%$ and T_{AVG} stable.
- C. Turbine Governor Valve position will lower; manually initiate Reactor Power Cutback.
- D. Reactor power will rise; manually initiate Reactor Power Cutback.

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: If DEH feedback loops are in service the Governor valves will open to try and compensate for the loss of MW or impulse pressure. If they are not in service the Governor valves will remain as is. The additional steam flow will cause a rise in reactor power which requires operator action to reduce main steam flow to the main turbine.
- B. CORRECT: The additional steam flow will cause a rise in reactor power which requires operator action to reduce main steam flow to the main turbine.
- C. INCORRECT: If DEH feedback loops are in service the Governor valves will open to try and compensate for the loss of MW or impulse pressure. If they are not in service the Governor valves will remain as is. The additional steam flow will cause a rise in reactor power which requires operator action to reduce main steam flow to the main turbine.
- D. INCORRECT: The additional steam flow will cause a rise in reactor power which requires operator action to reduce main steam flow to the main turbine.

Technical Reference(s) SD-SBC pg 27-28 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-SBC00 Obj 8 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam New

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	<u> </u>
Group #	<u>1</u>	<u> </u>
K/A #	<u>059 K4.05</u>	<u> </u>
Importance Rating	<u>2.5</u>	<u> </u>

K/A Statement

Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following:

Control of speed of MFW pump turbine

Proposed Question: RO 18 Rev: 0

Which ONE of the following signals or conditions will result in a SG Feedwater Pump A speed reduction to approximately 3900 RPM?

- A. Reactor Trip Override
- B. SG1 High Level Override
- C. One of two Feedwater Flow Demand output signals fails LOW
- D. One of two Speed Pickup units to GE Microprocessor fails

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: A Reactor Trip Override (RTO) signal is initiated on a Reactor Trip to ensure minimum SGFP output to the Steam Generators.
- B. INCORRECT: High Level Override (HLO) generates a zero flow demand to close both FWRVs and a zero flow demand to SGFP control but HIGH select circuit is used and the higher of the two signal controls FWCS to non effected SG level.
- C. INCORRECT: Feedwater Flow Demand controls operate on a HIGH select circuit that uses the higher of the two signal to control FWCS.
- D. INCORRECT: GE Microprocessor uses two shaft speed pickup units and uses the high select for speed input.

Technical Reference(s) SD-FWC Figs 22 - 24 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-FW00 Obj. 4 (As available)

Question Source: Bank # 3163A
Modified Bank # X (Note changes or attach parent)
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>061 K6.02</u>	<u> </u>
	Importance Rating	<u>2.6</u>	<u> </u>

K/A Statement

Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Pumps

Proposed Question: RO 19 Rev: 0

The AB EFW pump has tripped on OVERSPEED. The NPO was directed to take the Turbine Stop Valve (MS-416) control switch to the OPEN position.

Which ONE of the following reasons would explain why the valve position did NOT change position following this action?

- A. The control switch must be taken to the CLOSE position prior to going to the OPEN position.
- B. The mechanical overspeed tappet nut and linkage must be locally reset.
- C. The emergency steam line drain valve (MS-407) must be closed first
- D. The steam supply valves (MS-401 A & B) must be closed first.

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: A mechanical overspeed trip locks out MS-416 from opening in the control room until the mechanical overspeed tappet nut and linkage have been reset.
- B. CORRECT: A mechanical overspeed trip locks out MS-416 from opening in the control room until the mechanical overspeed tappet nut and linkage have been reset.
- C. INCORRECT: The valve must be reclosed after a high level condition has cleared but is NOT linked to the overspeed function.
- D. INCORRECT: Not closing MS-401 A & B will not prevent MS-416 from operating. However, the valves must be closed to reset the ramp generator to prevent another overspeed condition when restoring the pump.

Technical Reference(s) SD-EFW pg 16 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-EFW00 Obj 5 (As available)

Question Source: Bank # X 139A
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

061 G2.1.28

Importance Rating

4.1

K/A Statement

Auxiliary / Emergency Feedwater System: Knowledge of the purpose and function of major system components and controls.

Proposed Question: RO 20

Rev: 0

Which ONE of the following states the purpose of the bypass lines that are provided from Main Feedwater to the piping downstream of the Emergency Feedwater Pumps?

- A. Provide a cleanup path for the emergency feedwater system.
- B. Provide a means to test the EFW system check valves in Modes 4 – 6.
- C. Keep the EFW lines filled and pressurized to prevent water hammer on EFAS initiation.
- D. Keep the EFW discharge lines warm to prevent thermal shock to the SG Feedwater ring.

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: This is a keep filled line with NO cleanup feature provided.
- B. INCORRECT: While this line contains a check valve for prevention of backflow, no test feature is provided.
- C. CORRECT: Bypass line is provided to ensure the EFW piping is full of water at all times. This feature prevents a water hammer even upon actuation. In addition, the line has a check valve to prevent backflow into the Main Feedwater system
- D. INCORRECT: This is a keep filled line with NO warming feature provided

Technical Reference(s): OP-003-033 3.2.2 (Attach if not previously provided)
SD-EFW pg 29

(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-EFW00 Obj 7 (As available)

Question Source: Bank # X 108A
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

062 G2.4.46

Importance Rating

4.2

K/A Statement

A.C. Electrical Distribution: Ability to verify that the alarms are consistent with the plant conditions.

Proposed Question: RO 21

Rev: 0

Please explain. The references aren't clear.

The ATC reports that indication has been lost on the following CP-4 components:

- CVC-101, Letdown to Regen HX from RCS Loop 2B
- CVC-109, Letdown HX Inlet Header Isolation
- CVC-510, Borated Water to VCT Header Isolation

All 3 components indicate closed on the PMC.

Which ONE of the following SUPS Trouble alarms would be expected for the CVC system indications?

- A. SA
- B. SB
- C. SAB
- D. SMD

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: A loss of SUPS SA power supply will cause the CVC valves to reposition and CC-636 should AUTO close when CVC-109 goes close but that does NOT occur on loss of AC power.
- B. INCORRECT: A loss of SUPS SB does not affect these valves.
- C. INCORRECT: A loss of SUPS SAB does not affect these valves.
- D. INCORRECT: A loss of SUPS SMD does not affect these valves.

Technical Reference(s): OP-500-004 Att 4.114 (Attach if not previously provided)
OP-901-312 B₂.8 (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-PPO30 Obj 4 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

063 K2.01

Importance Rating

2.9

K/A Statement

Knowledge of bus power supplies to the following: Major DC loads

Proposed Question: RO 22

Rev: 0

Ensure plausibility of incorrect answers.

Loss of which DC bus will cause a failure of MS-401A, EFW Pump AB Turbine Steam Supply valve, to perform its AUTO function?

- A. A-DC
- B. B-DC
- C. AB-DC
- D. TGB-DC

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: MS-401A(B) motor operated valves receive power from the AB-DC bus.
- B. INCORRECT: MS-401A(B) motor operated valves receive power from the AB-DC bus.
- C. CORRECT: MS-401A(B) motor operated valves receive power from the AB-DC bus.
- D. INCORRECT: MS-401A(B) motor operated valves receive power from the AB-DC bus.

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	064 A3.07	
Importance Rating	3.6	

K/A Statement

Ability to monitor automatic operation of the ED/G system, including: Load sequencing

Proposed Question: RO 23

Rev: 0

This tests same knowledge as Q12. Fix this or 12 or resample one of the KAs.

The following plant conditions exist:

- EDG A & B have started due to a Loss of Offsite Power event
- Transformer input to MCC-315A developed a direct short to ground upon being re-energized by the Sequencer 1 second Load Block (S1 relay)
- An undervoltage condition exists on 4160 Volt Bus 3A

Which ONE of the following conditions describes the Sequencer response?

- A. Immediately stops the automatic loading process due to Under Voltage Override (UVO) condition.
- B. Immediately stops the automatic loading process due to Sequencer Lockout (SLO) condition.
- C. Stops the automatic loading process when the 7 second Load Block (S3 relay) is reached.
- D. Stops the automatic loading process when the 17 second Load Block (S4 relay) is reached.

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: : A SLO condition will occur at Load Block S4 due to the undervoltage condition on Bus 3A
- B. INCORRECT: : A SLO condition will occur at Load Block S4 due to the undervoltage condition on Bus 3A
- C. INCORRECT: : A SLO condition will occur at Load Block S4 due to the undervoltage condition on Bus 3A
- D. CORRECT: A SLO condition will occur at Load Block S4 due to the undervoltage condition on Bus 3A

Need better explanations.

Technical Reference(s) SD-EDG pg 46 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-EDG Obj 3 (As available)

Question Source: Bank # X 2226-A
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

073 K5.03

Importance Rating

2.9

K/A Statement

Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Relationship between radiation intensity and exposure limits

Proposed Question: RO 24

Rev: 0

The CROAI Radiation monitors isolate the Control Room Ventilation (HVC) on a high radiation level to prevent Control Room staff from receiving a maximum dose of (1) for the (2) of the event.

(1)

(2)

- A. 5 rem duration
- B. 5 rem first 2 hours
- C. 2 rem duration
- D. 2 rem first 2 hours

Proposed Answer: A

Explanation (Optional):

- A. CORRECT: The isolation of the Control Room for the duration of the event ensures no one individual will exceed the Federal Limit of 5 rem.
- B. INCORRECT: Wrong duration. The isolation of the Control Room for the duration of the event ensures no one individual will exceed the Federal Limit of 5 rem.
- C. INCORRECT: Wrong dose. The isolation of the Control Room for the duration of the event ensures no one individual will exceed the Federal Limit of 5 rem.
- D. INCORRECT: Wrong dose, wrong duration. The isolation of the Control Room for the duration of the event ensures no one individual will exceed the Federal Limit of 5 rem.

Technical Reference(s) FSAR 6.4.1 (Attach if not previously provided)
10 CFR 50.67(b)(iii) (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-RAD02 Obj 12 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 12

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	076 A1.02	
Importance Rating	2.6	

K/A Statement

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the SWS controls including: Reactor and turbine building closed cooling water temperatures

Proposed Question: RO 25

Rev: 0

KA mismatch.

The plant is currently producing 500 MWe output with all systems operating per design.

Which ONE of the following MANUAL operator actions is required as the plant ramps to 1100 MWe output in order to maintain Turbine Cooling Water system temperature and pressure constant?**Focus this question such that the applicant must determine that temperature and pressure will be affected on TBCCW, and that throttling valves will be required. This would fit the PREDICT and/or MONITOR portion of KA better than telling them they will adjust temp and press.**

Throttle the TCW Temperature Control Valve (TC-147) in the _____ direction and throttle the TCW Pressure Control Valve (TC-135) in the _____ direction.

- A. OPEN ; OPEN
- B. OPEN ; CLOSED
- C. CLOSED ; OPEN
- D. CLOSED ; CLOSED

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: Need more cooling as heat input rises during power escalation and less pressure control to maintain system in a balanced condition.
- B. CORRECT: Need more cooling as heat input rises during power escalation and less pressure control to maintain system operation in a balanced condition.
- C. INCORRECT: Need more cooling as heat input rises during power escalation and less pressure control to maintain system in a balanced condition.
- D. INCORRECT: Need more cooling as heat input rises during power escalation and less pressure control to maintain system in a balanced condition.

Technical Reference(s) OP-901-512 E₃ (Attach if not previously
SD-TCW pg 11 provided)
_____ (including version/revision
number)

Proposed references to be provided to applicants during
examination: NONE

Learning Objective: WLP-OPS-TC00 Obj 4 (As available)

Question Source: Bank # X 7045A
Modified Bank # _____ (Note changes or attach
parent)
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 4

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

078 K3.02

Importance Rating

3.4

K/A Statement

Knowledge of the effect that a loss or malfunction of the IAS will have on the following:

Systems having pneumatic valves and controls

Proposed Question:

RO 26

Rev:

0

Plant conditions are as follows:

- The plant is in day 18 of a refueling outage
- Shutdown Cooling Train B is in service and Train A is in standby
- SI-129 B, LPSI Pump B Flow Control, is closed
- SI-415 B, Shutdown Cooling HX B Temperature Control, is 50% open
- CC-963B, SDC HX B TCV is full open
- SI Train B flow is 3000 gpm

An Instrument Air line ruptures in the RCA, causing Instrument Air pressure to drop to 20 psig. (assume pressure drop duration depletes any accumulator capacity)

Based on these conditions, Safety Injection Train B flow will (1) _____ and RCS temperature will (2) _____ .

(1)

(2)

- | | | |
|----|------|------|
| A. | drop | drop |
| B. | drop | rise |
| C. | rise | drop |
| D. | rise | rise |

Proposed Answer:

D

Explanation (Optional):

- A. INCORRECT: SI-129 B fails OPEN on a loss of air and SI-415 will not respond to air leak causing SDC flow to rise but the flow is bypassing the Heat Exchanger.
- B. INCORRECT: SI-129 B fails OPEN on a loss of air and SI-415 will not respond to air leak causing SDC flow to rise but the flow is bypassing the Heat Exchanger.
- C. INCORRECT SI-129 B fails OPEN on a loss of air and SI-415 will not respond to air leak causing SDC flow to rise but the flow is bypassing the Heat Exchanger.
- D. CORRECT: SI-129 B fails OPEN on a loss of air and SI-415 will not respond to air leak causing SDC flow to rise but the flow is bypassing the Heat Exchanger.

Technical Reference(s) SD-SDC Pages 9 & 13 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-AIR Obj. 5 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>064 A4.01</u>	<u> </u>
	Importance Rating	<u>4.0</u>	<u> </u>

K/A Statement

Ability to manually operate and/or monitor in the control room: Local and remote operation of the EDG

Proposed Question: RO 27 Rev: 0

SAT

The following plant conditions exist:

- Plant was operating at 100% when a LOOP event occurred
- EDG B started as designed

Which of the following conditions will cause an EDG B trip?

- A. BOP presses the Diesel Generator B Trip pushbutton on CP-1
- B. EDG B Oil Pressure drops to less than 20 psig
- C. EDG B Jacket Water Temperature is 210° F
- D. EDG B Speed rises to greater than 680 rpm

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: Diesel Generator B Trip pushbutton on CP-1 is NOT functional during LOOP event
- B. INCORRECT: Engine Lube Oil pressure trip limit is 30 PSIG but NOT functional during LOOP event
- C. INCORRECT: Jacket Water Temperature trip limit is 205 °F but NOT functional during LOOP event
- D. CORRECT: Overspeed condition exist above 660 rpm to TRIP the EDG

Technical Reference(s) OP-009-002 Section 8.8 (Attach if not previously provided)
SD-EDG Table 2 & Fig 17 (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-EDG00 Obj 2 (As available)

Question Source: Bank #
Modified Bank # (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41 8

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

103 K4.01

Importance Rating

3.0

K/A Statement

Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Vacuum breaker protection

Proposed Question: RO 28

Rev: 0

Which **ONE** of the following conditions describes the setpoint and design basis for the Containment Vacuum Relief valve operation?

At (1) INWD Containment to Annulus differential pressure, CVR-101(201) open to ensure Containment internal pressure does not become more (2) than the Containment design limit.

(1)

(2)

- A. 5.5 negative
- B. 5.5 positive
- C. 8.5 negative
- D. 8.5 positive

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: Containment Vacuum Relief valve operation does not occur at 5.5 INWD to ensure the design Containment negative pressure is not exceeded.
- B. INCORRECT: Containment Vacuum Relief valve operation does not occur at 5.5 INWD to ensure the design Containment negative pressure is not exceeded.
- C. CORRECT: Containment Vacuum Relief valve auto operation occurs at 8.5 INWD to ensure the design Containment negative pressure is not exceeded.
- D. INCORRECT: Containment Vacuum Relief valve auto operation occurs at 8.5 INWD to ensure the design Containment negative pressure is not exceeded.

Technical Reference(s) OP-008-005 Section 8.1 & 9.0 (Attach if not previously provided)
FSAR 6.2.3 (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-CB Obj. 2 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>001 K1.05</u>	<u> </u>
	Importance Rating	<u>4.5</u>	<u> </u>

K/A Statement

Knowledge of the physical connections and/or cause effect relationships between the CRDS and the following systems: NIS and RPS

Proposed Question: RO 29 Rev: 0

Which ~~ONE~~ of the following ~~output signals~~ is used as an input (direct or calculated) signal to prohibit ALL automatic CEA movement below 15% reactor power?

- A. RCS Average Temperature
- B. Pressurizer Pressure
- C. RCS Cold Leg Temperature **(Subset of A. Replace this with Tref.)**
- D. Reactor Power (control channel)

Proposed Answer: D

Explanation (Optional): **Change explanations when corrections made above.**

- A. INCORRECT: Average Reactor Coolant Temperature output to SBCS for quick opening permissive.
- B. INCORRECT: Pressurizer Pressure output to the Summed Error calculation.
- C. INCORRECT: RCS Cold Leg Temperature output to Tave Loop calculation.
- D. CORRECT: Power Range Control Channel output is used to produce the reactor power error calculation which prohibits auto CEA movement below 15% reactor power.

Technical Reference(s) SD-RR Fig 2 and pg 22 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-RR00 Obj 3 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 6

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	016 K4.03	
Importance Rating	2.8	

K/A Statement

Knowledge of NNIS design feature(s) and/or interlock(s) which provide for the following:
Input to control systems

Proposed Question: RO 30

Rev: 0

Too easy. Change this to Pressurizer level control or pressure control.

RCS Reference Temperature (Tref) signal is generated in the (1) system as a function of the (2) input.

(1)

(2)

- | | |
|-------------------------|--------------------------------------|
| A. Reactor Regulating | Main Steam Crossover Header pressure |
| B. Steam Bypass Control | Turbine First Stage pressure |
| C. Reactor Regulating | Turbine First Stage pressure |
| D. Steam Bypass Control | Main Steam Crossover Header pressure |

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: : Reactor Regulating System takes input from Turbine First Stage Pressure to calculate the current Tref but does not use MS Crossover Header Pressure.
- B. INCORRECT: Steam Bypass Control uses Turbine First Stage Pressure as an input to the AMI circuitry but it does not calculate Tref in Steam Bypass Control.
- C. CORRECT: Reactor Regulating System take input from Turbine First Stage Pressure to calculate the current Tref.
- D. INCORRECT: Steam Bypass Control input from Main Steam Crossover Header pressure for Master Controller permissive input is NOT part of RR.

Technical Reference(s) SD-RR Fig 02 (Attach if not previously provided)
SD-SBC Fig 02 (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-RR00 Obj 2 (As available)

Question Source: Bank # X 1267B
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

2

K/A #

017 A3.01

Importance Rating

3.6

K/A Statement

Ability to monitor automatic operation of the ITM system including: Indications of normal, natural, and interrupted circulation of RCS

Proposed Question: RO 31

Rev: 0

Need to write this to compare/contrast/recognize indications for normal natural interrupted RCS flow. As written, this is a heatup calculation and doesn't test the ability of the applicant to monitor changes in ITM based on different flow conditions.

The plant has been operating for 100 days when a shutdown was performed to repair a Reactor Coolant Pump seal. The shutdown was completed on January 4th at 1800 hours. All RCPs are secured and the drain down to replace the seal has been completed.

At 2000 hours on January 8th a total loss of Shutdown Cooling occurs.

Representative Core Exit Thermocouple temperature is 123 ~~degrees~~ °F at the start of the event.

Due to the loss of Shutdown Cooling flow, the RCS temperature will rise to 212 °F by _____ hours on January 8th. (ASSUME: NO operator action.)

- A. 2010
- B. 2015
- C. 2020
- D. 2025

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: IF the plant has been shutdown 3 days which equals a value of 6.5 deg F per minute. $(10 \text{ mins} \times 6.5 \text{ deg F/min}) + 123 \text{ deg F} = 188 \text{ deg F}$ final temp.
- B. CORRECT: The plant has been shutdown 4 days which equals a value of 6 deg F per minute. **$(15 \text{ mins} \times 6 \text{ deg F/min}) + 123 \text{ deg F} = 212 \text{ deg F}$** final temp.
- C. INCORRECT: IF the plant has been shutdown 5 days which equals a value of 5.5 deg F per minute. $(20 \text{ mins} \times 5.5 \text{ deg F/min}) + 123 \text{ deg F} = 233 \text{ deg F}$ final temp.
- D. INCORRECT: IF the plant has been shutdown 6 days which equals a value of 5 deg F per minute. $(25 \text{ mins} \times 5 \text{ deg F/min}) + 123 \text{ deg F} = 248 \text{ deg F}$ final temp.

Technical Reference(s) OP-901-131 Att 2 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: OP-901-131 Att 2

Learning Objective: WLP-OPS-INI00 Obj 8 (As available)
WLP-OPS-REQ21 Obj 1

Question Source: Bank # 3500A
Modified Bank # X (Note changes or attach parent)
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

2

K/A #

028 A2.03

Importance Rating

3.4

K/A Statement

Malfunctions or operations on the HRPS; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment

Proposed Question: RO 32

Rev: 0

The following plant conditions exist:

- Plant tripped due to a Large Break LOCA event and TSC directed that both Hydrogen Recombiners were to be placed in service
- Hydrogen Recombiner A failed and was removed from service
- Hydrogen Recombiner B is operating with a setting of 25 KW output
- Hydrogen Analyzers indicate Containment H₂ concentration of 4.2% and rising slowly.

The CRS directs you to raise Hydrogen Recombiner B output in accordance with OP-008-006 using Attachment 11.2 to reduce Hydrogen concentration.

Post-LOCA Containment pressure is 17.7 PSIA and Pre-LOCA Containment Temperature was 105° F.

The final setting on the B potentiometer will be ____ KW to establish the required value.

- A. 53
- B. 55
- C. 57
- D. 59

Proposed Answer:

B

Explanation (Optional):

- A. INCORRECT: Using Att 11.2 and 11.4, multiply 48 KW by pressure factor (C_p) to get final value: $48 \times 1.10 = 53$ for (16.7 and 120)
- B. CORRECT: Using Att 11.2 and 11.4, multiply 48 KW by pressure factor (C_p) to get final value: **$48 \times 1.15 = 55$** for (17.7 and 105)
- C. INCORRECT: Using Att 11.2 and 11.4, multiply 48 KW by pressure factor (C_p) to get final value: $48 \times 1.19 = 57$ for (18.0 and 90)
- D. INCORRECT: Using Att 11.2 and 11.4, multiply 48 KW by pressure factor (C_p) to get final value: $48 \times 1.23 = 59$ for (18.0 and 60)

Technical Reference(s)	OP-902-002 Step 13	(Attach if not previously provided) (including version/revision number)
	OP-008-006 Step 6.1.9	
	OP-008-006 Att 11.2 & 11.4	

Proposed references to be provided to applicants during examination:	OP-008-006 Att 11.2 & 11.4
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Learning Objective:	WLP-OPS-HRA00 Obj 3	(As available)
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Question Source:	Bank #	_____	(Note changes or attach parent)
	Modified Bank #	_____	
	New	<u> X </u>	

Question History:	Last NRC Exam	<u> N/A </u>
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Question Cognitive Level:	Memory or Fundamental Knowledge	<u> X </u>
	Comprehension or Analysis	_____

10 CFR Part 55 Content:	55.41	<u> 8 </u>

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	<u> </u>
Group #	<u>2</u>	<u> </u>
K/A #	<u>029 G 2.4.30</u>	<u> </u>
Importance Rating	<u>2.7</u>	<u> </u>

K/A Statement

Containment Purge System: Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.

Proposed Question: RO 33

Rev: 0

With the plant in Mode 1, which of the following conditions would require a 60 day LER for failure to comply with Tech Specs if the condition was not corrected?

- A. Pressurizer level stable rose and stabilized at 61%. **WHAT?? Please fix this.**
- B. Containment pressure dropped and stabilized at 14.57 psia.
- C. Containment Purge Isolations remained open for 95 hours in a 365 day period.
- D. RWSP boron concentration sample results are reported as 2150 ppm.

Proposed Answer: C

Explanation (Optional):

- A. INCORRECT: The Tech Spec 3.4.3.1 limit for Pressurizer level is < 62.5 %.
- B. INCORRECT: The Tech Spec 3.6.1.4 limit for containment pressure is 14.275 psia.
- C. CORRECT: The Tech Spec 3.6.1.7 limit for a Containment Purge Isolation Valve is 90 hours in the previous 365 days.
- D. INCORRECT: The Tech Spec 3.5.4 limit for RWSP boron concentration is 2050 ppm.

Technical Reference(s)	Tech Spec 3.4.3.1, 3.5.4, 3.6.1.4, 3.6.1.7.	(Attach if not previously provided) (including version/revision number)
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Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-TS04 Obj 1 (As available)

Question Source: Bank # _____
 Modified Bank # _____ (Note changes or attach
 parent)
 New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content:	55.41	<u>10</u>
		<u> </u>

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

2

K/A #

035 K3.01

Importance Rating

4.4

K/A Statement

Knowledge of the effect that a loss or malfunction of the S/GS will have on the following:
RCS

Proposed Question: RO 34

Rev: 0

The following plant conditions exist:

- Mode 3 following a Reactor Trip due to an Excess Steam Demand event in the TGB
- Both ADVs were maintaining SG pressure at 991 psig in AUTO
- ~~Subsequently, both ADVs failed to the CLOSE position~~

~~Which ONE of the following temperature (°F) **RISES** corresponds to the MINIMUM RCS temperature rise to reach saturation pressure for the LOWEST lift setpoint for the SG Safety Valves?~~ **If both ADVs were to fail CLOSED, how far must RCS temperature rise in order to start lifting the FIRST SG Safety Valve?**

- A. 12°F
- B. 9°F
- C. 6°F
- D. 3°F

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: The 2nd safety lifts at 1085 psig (1100 PSIA) which corresponds to 556 °F; therefore a change of 11 °F is required.
- B. CORRECT: Current pressure is 991 psig (1006 PSIA) which corresponds to 545 °F and the First safety lifts at 1070 psig (1085 PSIA) which corresponds to 554 °F; therefore a change of **9 °F** is required.
- C. INCORRECT: The First safety lifts at 1070 psig (1085 PSIA) which corresponds to 554 °F; therefore a 6 °F change is insufficient
- D. INCORRECT: The First safety lifts at 1070 psig (1085 PSIA) which corresponds to 554 °F; therefore a 3 °F change is insufficient

Technical Reference(s) SD-MS Table 1 pg 34 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective: WLP-OPS-MS00 Obj 4 (As available)

Question Source: Bank # X 07717
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 1

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

2

K/A #

041 G2.4.2

Importance Rating

4.5

K/A Statement

Steam Dump System (SDS) and Turbine Bypass Control: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.

Proposed Question: RO 35

Rev: 0

The following plant conditions exist:

- Plant is operating at 100%
- RCS Tavg is 573° F
- RCS pressure is 2250 PSIA
- Reactor Cutback is Out of Service
- Reactor Trip on Turbine Trip is ENABLED

~~Which ONE of the following describes the response of the Steam Bypass Control System immediately following a Turbine Trip?~~ **Following a Turbine Trip, the Steam Bypass Control System will quick open _____ Bypass Valves.**

~~Valve(s) _____ will quick open.~~

A. **ONLY** 1 through 3

B. **ONLY** 1 through 5

C. 1 through 6

D. ~~None~~ **ONLY 2 through 6**

Proposed Answer: B

Explanation (Optional):

- A. INCORRECT: With RXC out of service and Reactor Power at 100% the Reactor Trip on Turbine Trip is enabled. When the turbine trips the reactor then trips. The reactor trip automatically blocks Quick Open on steam bypass valve 6 With Tavg > 561°F Valves 1,2,3,4,5 will receive quick open signals. Valves 1-3 is plausible because the valves open together on a QO1 signal.
- B. CORRECT: With RXC out of service and Reactor Power at 100% the Reactor Trip on Turbine Trip is enabled. When the turbine trips the reactor then trips. The reactor trip automatically blocks Quick Open on steam bypass valve 6 With Tavg > 561°F Valves 1,2,3,4,5 will receive quick open signals. INCORRECT: Valves 1,2,3,4,5 ONLY receive quick open signal with RXC signal OOS and a Reactor Trip is generated.
- C. INCORRECT: Valves 1-6 is plausible if the candidate does not know that valve 6 is blocked on a reactor trip.
- D. None would be plausible if the candidate misapplies the QO blocks generated by RXC when a feed pump trips. All 6 valves are blocked from QO in that case. However, this is generated by the RXC system which is out of service. And the event is wrong.

Technical Reference(s) SD-SBC Fig 11 & 21 (Attach if not previously provided)
(including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-SBC00 Obj: 5 (As available)

Question Source: Bank # X 07938
Modified (Note changes or attach
Bank # parent)
New

Question History: Last NRC Exam 2006 RO Exam

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	<u> </u>
Group #	<u>2</u>	<u> </u>
K/A #	<u>055 K1.06</u>	<u> </u>
Importance Rating	<u>2.6</u>	<u> </u>

K/A Statement

Knowledge of the physical connections and/or cause effect relationships between the CARS and the following systems: PRM system

Proposed Question: RO 36 Rev: 0

Per the procedure, this is only true when checking for condenser air in-leakage (which may be true during normal ops, but is not explained in the references). Set this up in the stem.

OP-003-001, Condenser Air Evacuation System, requires Condenser Vacuum Pumps (1) be operating to provide a suction path for the (2)

- | | | |
|----|------------|--|
| | <u>(1)</u> | <u>(2)</u> |
| A. | A or B | Condenser Air Evacuation WRGM |
| B. | A or B | Condenser Air Evacuation PIG Rad Monitor |
| C. | B or C | Condenser Air Evacuation WRGM |
| D. | B or C | Condenser Air Evacuation PIG Rad Monitor |

Proposed Answer: D

Explanation (Optional):

Condenser Air Evacuation Wide Range Was Monitor takes a suction from the common discharge of all 3 Air Evacuation Pumps. The Condenser Air Evacuation PIG Radiation Monitor takes a suction from B and C Air Evacuation Pumps. OP-003-001 specifies that either B or C Pumps must be running to ensure the discharge is monitored by the Condenser Air Evacuation PIG.

Technical Reference(s)	SD-AE Fig 1 SD-RMS Table 4 & 5	(Attach if not previously provided) (including version/revision number)
Proposed references to be provided to applicants during examination:		<u>NONE</u>
Learning Objective:	<u>WLP-OPS-AE00 Obj 1</u>	(As available)
Question Source:	Bank # _____ Modified Bank # _____ New <u>X</u>	(Note changes or attach parent)
Question History:	Last NRC Exam <u>N/A</u>	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	<u>X</u> _____
10 CFR Part 55 Content:	55.41 <u>7</u> _____	
Comments:		

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	<u> </u>
Group #	<u>2</u>	<u> </u>
K/A #	<u>011 A2.04</u>	<u> </u>
Importance Rating	<u>3.5</u>	<u> </u>

K/A Statement

Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of one, two or three charging pumps

Proposed Question: RO 37 Rev: 0

Plant conditions are as follows:

- Power is 100%
- Charging Pump A is running
- CVC-ILT-0227 **(NAME)** fails to 0%

The crew secured Charging Pump A and closed CVC-101 in accordance with OP-901-113, Volume Control Tank Makeup Control Malfunction.

Based on these conditions, the first backup Charging Pump will start when Pressurizer level drops (1) below Pressurizer level setpoint and the crew will be required to (2) after the Charging Pump starts.

- | | <u>(1)</u> | <u>(2)</u> |
|----|------------|--------------------------|
| A. | 3.9% | makeup to the VCT |
| B. | 3.9% | reduce Main Turbine load |
| C. | 2.5% | makeup to the VCT |
| D. | 2.5% | reduce Main Turbine load |

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: The first Pump will start at -2.5% below program but the second pump will NOT start until -3.9% below program; Initial operator action is to reduce Main Turbine load due to the boration that occurs.
- B. INCORRECT: The first Pump will start at -2.5% below program but the second pump will NOT start until -3.9% below program.
- C. INCORRECT: The Initial operator action is to reduce Main Turbine load due to the boration that occurs.
- D. CORRECT: The first Pump will start at -2.5% below program; Initial operator action is to reduce Main Turbine load due to the boration that occurs.

Technical Reference(s) SD-CVC pg 23 (Attach if not previously provided)
OP-901-112 C & E₀ (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-CVC Obj 6 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

2

K/A #

086 A4.05

Importance Rating

3.0

K/A Statement

Ability to manually operate and/or monitor in the control room: Deluge valves

Proposed Question: RO 38

Rev: 0

Which of the following is the only air filtration unit that has a Fire Protection Deluge system ~~which-that~~ can be operated from the Control Room?

- A. RAB Normal Exhaust Unit
- B. CVAS Emergency Filtration Unit
- C. Shield Building Ventilation Filter Unit
- D. Airborne Radioactivity Removal Unit

Proposed Answer: D

Explanation (Optional):

- A. INCORRECT: RAB Normal Unit has a manual deluge actuation operated locally in the RAB
- B. INCORRECT: CVAS Emergency Unit has a manual deluge actuation operated locally in the RAB
- C. INCORRECT: SBV Unit has a manual deluge actuation operated locally in the RAB
- D. CORRECT: The ARR Unit has a manual deluge actuation operated from the Control Room.

Technical Reference(s) OP-009-004 Step 8.10 (Attach if not previously provided)
SD-FP Table 5 (including version/revision number)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: WLP-OPS-FP00 Obj 2 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E02 EA2.2	
	Importance Rating	3.0	

K/A Statement

Ability to determine and interpret the following as they apply to the (Reactor Trip Recovery): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Proposed Question: RO 39 Rev: 0

A reactor trip has just occurred.

Which of the following support entry into OP-902-001, Reactor Trip Recovery?
(Assume components and parameters **that are** not ~~described-listed below~~ **operate as designed**~~are as-designed~~)

- A. Two (2) CEAs fully withdrawn, ~~with,~~ **with** emergency boration in progress.
- B. Pressurizer level is 25% and lowering with three (3) charging pumps running.
- C. S/G 1 and 2 levels are 45% NR and lowering after an inadvertent MSIS.
- D. Containment pressure is 16.5 psia and stable with the Containment PIG in alert.

Proposed Answer: A

Explanation (Optional):

- A. **CORRECT.** With all other parameters normal as stated in the stem this condition supports entry into OP-902-001.
- B. Incorrect. This indicates a condition where an RCS leak is greater than charging capacity and would not support entry into OP-902-001
- C. Incorrect. The conditions given would not support entry into OP-902-001 because MSIS closes the MFIVs and therefore a loss of main feedwater has occurred.
- D. Incorrect. Containment pressure and rising activity in containment would drive you to OP-902-002 or OP-902-008.

Technical Reference(s) OP-902-001, Rev 011

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PPE01 Obj: 12

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	008 AK1.01	
Importance Rating	3.2	

K/A Statement

Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open or leaking valves

Proposed Question: RO 40 Rev: 0

The plant was at 100% power when Pressurizer Safety Valve, RC-317A, failed open. The crew tripped the reactor and initiated SIAS and CIAS.

The following conditions exist:

- RCS pressure - 1250 PSIA
- RCS T_{hot} temperature - 552 °F
- Quench Tank pressure - 41 PSIG

What is the expected temperature indication of the Pressurizer Relief Line?

- A. 267 °F
- B. 288 °F
- C. 552 °F
- D. 572 °F

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Value is equal to the given pressure if the candidate does not convert to psia from psig which is the normal units for Quench Tank Pressure indication on CP-2.
- B. **CORRECT.** This value corresponds to the value that can be obtained from a Molliere diagram for 56 psia, assuming that the throttling process across the open relief valve is isenthalpic
- C. Incorrect. This value is equal to the Hot Leg temperature given, which could be selected if the candidate does not realize that the throttling process is isenthalpic and assumes that an in-surge from the Hot Leg has lowered PZR Temperature to Hot Leg Temperature.
- D. Incorrect. This value is equal to the saturation temperature for the RCS pressure given and could be selected if the candidate realizes the RCS is still subcooled, and therefore no significant in-surge has occurred to the PZR, but does not realize that the throttling process is isenthalpic.

Technical Reference(s) Steam Tables – Properties of Saturated and Superheated Steam

Proposed references to be provided to applicants during examination:

Steam Tables

Learning Objective: WLP-OPS-RCS00 Obj: 2
WLP-OPS-RCS00 Obj: 5

Question Source: Bank # WF3-OPS-7177-A
Modified Bank #
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41(b) 14

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

1

K/A #

009 EK3.12

Importance Rating

3.4

K/A Statement

Knowledge of the interrelations between the small break LOCA and the following: Letdown Isolation

Proposed Question: RO 41

Rev: 0

The plant was operating at 100% power when a double ended shear of the Letdown line occurs at the weld on the outlet of the Regenerative Heat Exchanger. Given the following timeline:

- **T1** – PZR Pressure 1900 psia, Containment Pressure = 16.5 psia
- **T2** – PZR Pressure 1800 psia, Containment Pressure = 17.0 psia
- **T3** – PZR Pressure 1700 psia, Containment Pressure = 17.5 psia
- **T4** – PZR Pressure 1600 psia, Containment Pressure = 18.0 psia

Letdown initially isolated due to _____ Pressure. At the end of the timeline the break is isolated from the RCS by a total of _____ automatic isolation valves.

- A. Containment; two
- B. PZR; two
- C. Containment; three
- D. PZR; three

Proposed Answer: A

Explanation (Optional):

- A. **CORRECT.** The timeline indicates that the setpoint is met for the High Containment Pressure (SIAS) (17.1 psia) prior to exceeding any ESFAS setpoint (PZR Press (SIAS) (1684 psia). The break is located inside containment on the outlet of the Regenerative HX upstream of the containment isolation that is outside containment. Therefore, the break is isolated from the RCS by two valves (CVC-101, CVC-103).
- B. Incorrect. Wrong isolation parameter, correct number of valves. See explanation A.
- C. Incorrect. Correct isolation parameter, wrong number of valves. See explanation A.
- D. Incorrect. Wrong isolation parameter, wrong number of valves. See explanation A.

Technical Reference(s) OP-002-005, Chemical and
Volume Control, Rev. 32

OP-902-009, Standard
Appendices, Rev. 301

OP-902-000, Standard Post
Trip Actions, Rev. 10

G-168, Chemical and
Volume Control Sheet 1,
Rev. 43

Proposed references to be provided to applicants during examination:

None

Learning Objective: WLP-OPS-CVS00 Obj. 11
WLP-OPS-CVC00 Obj.3

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 7

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	015 AA2.10	
Importance Rating	3.7	

K/A Statement

Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on loss of cooling or seal injection

Proposed Question: RO 42

Rev: 0

Given the Following:

- The Reactor is operating at 100% RTP
- At 1445 the following alarms and indications are noted in the Control Room
 - Panel M, CCW Surge Tank Level Lo-Lo A
 - Panel N, CCW Surge Tank Level Lo-Lo B
 - Panel N, CCW Surge Tank Level Hi-Lo
 - All Automatic Actions have occurred

~~What is the latest time that CCW flow can be restored to the Reactor Coolant Pumps without requiring they be tripped per OP-901-510, Component Cooling Water System Malfunction?~~ **In accordance with OP-901-510, CCW Malfunction, CCW flow must be restored to the Reactor Coolant Pumps by _____ or all RCPs must be tripped.**

- A. 1447
- B. 1448
- C. 1450
- D. 1455

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. See B. This was previously a good answer at Waterford 3.
- B. **CORRECT.** OP-901-510, Section E1 states that if CCW flow is lost to the AB header and cannot be restored within 3 minutes, trip the reactor and trip all RCPs. The conditions in the stem provide indication that flow is lost to the AB header.
- C. Incorrect. See B.
- D. Incorrect. See B. 10 minutes, as mentioned in OP-901-510 Section E1, CAUTION 1 is the time that if exceeded could cause damage to RCP Seals if CCW flow is then restored to an affected RCP.

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

1

K/A #

022 AA1.01

Importance Rating

3.4

K/A Statement

Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Makeup: CVCS letdown and charging

Proposed Question: RO 43

Rev: 0

Given the following:

- The plant is performing a heatup to NOP/NOT
- RCS Pressure is 1300 psia
- RCS temperature is 440°F
- Charging Pump B is the Lead Pump
- Charging pump AB is OOS
- Charging pump A is the first backup pump and in standby

Charging Pump B trips on overcurrent. ~~The direction provided in~~ OP-901-112, Charging or Letdown Malfunction, ~~would be to first~~ **initially directs the operator to ____.**

SPACE

- A. ~~v~~Verify a suction path aligned and manually start Charging Pump A.
- B. ~~v~~Verify a suction path aligned and verify Charging Pump A cycles on PZR level.
- C. ~~m~~Manually close CVC-101, Letdown Stop Valve.
- D. ~~v~~Verify auto closure of CVC-101, Letdown Stop Valve.

Proposed Answer:

A

Explanation (Optional):

- A. **CORRECT.** OP-901-112 has the Operator verify either the VCT or RWST suction valve open and attempt to restart a charging pump if a charging pump trips and letdown has not isolated.
- B. Incorrect. OP-901-112 manually restarts a charging pump vice allowing the auto start to occur. Plausible if candidate realizes that the given conditions will not result in an auto isolation of letdown.
- C. Incorrect. This action is performed if a charging pump can not be restarted and letdown is still in service.
- D. Incorrect. The auto isolation will not occur since the temperature of the RCS is currently below the auto isolation setpoint of 470°F.

Technical Reference(s) OP-901-112, Charging and
Letdown Malfunction, Rev. 3

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PPO10 Obj. 3
WLP-OPS-PPO10 Obj. 4

Question Source:	Bank #	
	Modified Bank #	WF3-OPS-4273-B
	New	

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 7 / 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	025 G2.2.38	
	Importance Rating	3.6	

K/A Statement

Knowledge of conditions and limitations in the facility license.

Proposed Question: RO 44 Rev: 0

Given the following:

- The plant is in MODE 6 with core shuffle in progress
- Cavity level is 44' MSL
- LPSI Pump A is OOS
- LPSI Pump B is OPERABLE and in operation

LPSI Pump B trips. Which of the following is prohibited per Technical Specifications?

- A. Shuffling CEAs within the core using the CEA Mast.
- B. Loading a new fuel assembly into the core from the Spent Fuel Pool.
- C. Adding 200 gallons of Boric Acid to the RCS from an OPERABLE BAM Tank.
Not credible.
- D. Loading a twice burned fuel assembly into the core from the Spent Fuel Pool.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Shuffling CEAs within the vessel does not increase decay heat load or constitute an operation that would lower boron concentration below that required by TS 3.9.1.
- B. Incorrect. Loading new fuel assemblies does not increase decay heat load or constitute an operation that would lower boron concentration below that required by TS 3.9.1.
- C. Incorrect. Adding boric acid to the RCS does not increase decay heat load or constitute an operation that would lower boron concentration below that required by TS 3.9.1.
- D. **CORRECT.** Loading a previously burned fuel assembly into the core increases decay heat load and is prohibited by TS 3.9.8.1 when the LCO is not met

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	026 AA2.01	
Importance Rating	2.9	

K/A Statement

Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: Location of a leak in the CCW system

Proposed Question: RO 45

Rev: 0

Given the following

- A leak is occurring in the Component Cooling Water System
- Initially CCW Surge Tank Level A and B lowered to 0%
- CCW Surge Tank level A remains at 0%
- CCW Surge Tank level B recovered to ~ 55% and stabilized

Which of the following is ~~potentially the~~ a potential location of the leak?

- A. Supply pipe to Waste Gas Compressor A
- B. Supply pipe to Shutdown Cooling HX A
- C. Return pipe from Spent Fuel Pool HX A
- D. Return pipe from CEDM Fan Cooler A

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. The Waste Gas compressor is an NNS Loop load. This pipe would have been automatically isolated by the AB loop isolation valves and level in both sides of the CCW surge tank would have recovered.
- B. **CORRECT.** Shutdown HX A is a Safety Loop A load. Safety Loops A and B would be split out such that the leak no longer affects Loop B until CCW Surge Tank Level B exceeds 55% which is the top of the baffle separating A and B sides of the CCW surge tank.
- C. Incorrect. SFP HX A is an AB Loop load. This pipe would have been automatically isolated by the AB Loop isolation valves and level in both sides of the CCW surge tank would have recovered.
- D. Incorrect. CEDM Fan Cooler A is an AB Loop load. This pipe would have been automatically isolated by the AB Loop isolation valves and level in both sides of the CCW surge tank would have recovered.

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	027 AK3.03	
Importance Rating	3.7	

K/A Statement

Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: Actions contained in EOP for PZR PCS malfunction

Proposed Question: RO 46

Rev: 0

GIVEN:

- Mode 1
- A loss of all PZR heaters has occurred
- Crew entered OP-901-120, Title
- The decision is made to reduce power

While reducing power, the crew must _____ in order to _____.

~~During a loss of all pressurizer heaters, OP 901-120, Pressurizer Pressure Control Malfunction, provides steps to _____ (1) _____ during power reduction to _____ (2) _____.~~

- A. (1) maintain PZR level constant
(2) maintain PZR pressure constant
- B. (1) raise PZR level
(2) maintain PZR pressure constant
- C. (1) maintain PZR level constant
(2) conserve PZR inventory and enthalpy
- D. (1) raise PZR level
(2) conserve PZR inventory and enthalpy

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The methodology used is correct per OP-901-120; however, even if you maintain PZR level constant RCS pressure will lower due to charging water into the PZR via the surge line that is at Hot Leg temperature, the effects of PZR Spray bypass flow into the PZR steam space, and ambient heat losses from the PZR. If the candidate does not have a good grasp on fundamentals this is an attractive answer.
- B. Incorrect. Both the methodology and procedure bases are wrong. OP-901-120 has steps to take local control of PZR level controller setpoint and then set the setpoint to current PZR level before starting a down power. The basis is also wrong (see explanation in A).
- C. **CORRECT**. Per OP-901-120 this is the correct approved methodology and the correct bases (See note prior to step for setting up PZR level controller).
- D. Incorrect. Per OP-901-120 the methodology for PZR level control is wrong,; however, this could be a viable way to control pressure during the down power. The Bases is correct per OP-901-120.

Technical Reference(s) OP-901-120, Pressurizer
Pressure Control Malfunction
Rev. 301

Proposed references to be provided to applicants during examination:

None

Learning Objective: WLP-OPS-PPO10 Obj. 4

Question Source:	Bank #	
	Modified Bank #	WF3-OPS-5995-A
	New	

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

1

K/A #

029 G2.4.11

Importance Rating

4.0

K/A Statement

Knowledge of abnormal condition procedures.

Proposed Question: RO 47

Rev: 0

The basis for re-closing the A32 and B32 feeder breakers 5 seconds after opening during an ATWS is to restore power to the:

SPACE

- A. CEDMCS in order to verify that all CEAs have fully inserted.
- B. A32 and B32 busses before UV relays strip loads from the busses. **Not Credible**
- C. CEDM cooling fans to protect CEDM coils from overheating.
- D. pressurizer heaters to maintain RCS pressure control.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Power for rod position indication is independent of power from A32 and B32 to CEDM MG Sets.
- B. Incorrect. The associated UV relays would have already operated by this point and all loads on the Bus that strip on UV would have already have been stripped.
- C. Incorrect. CEDM cooling fans are powered from A31 and B31.
- D. **CORRECT.** Re-closing the A32 and B32 feeder breakers allows for maintaining RCS pressure control via the pressurizer heaters. This is in accordance with the basis for Step 1 of OP-902-000, Standard Post Trip Actions as listed in TGOP-902-000, Technical Guide for Standard Post Trip Actions.

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	038 EK1.02	
Importance Rating	3.2	

K/A Statement

Knowledge of the operational implications of the following concepts as they apply to the SGTR: Leak rate vs. pressure drop

Proposed Question: RO 48

Rev: 0

KA mismatch. Need to focus on operational implication (i.e. throttling SI during depressurizing, overfilling SG due to high DP etc). We can discuss this one.

With a Steam Generator Tube Rupture in progress it is ultimately desired to depressurize the RCS to within (1) psid of the ruptured Steam Generator to (2) and minimize the potential for Steam Generator overfill.

- | | (1) | (2) |
|----|-----|---|
| A. | 50 | minimize the potential release to the environment |
| B. | 50 | prevent loss of subcooled margin |
| C. | 100 | minimize the potential release to the environment |
| D. | 100 | prevent loss of subcooled margin |

Proposed Answer: A

Explanation (Optional):

- A. **CORRECT.** Per step 12 of OP-902-007 and TG-OP-902-007 this is the correct pressure differential. Per TG-OP-902-007 this minimizes pri-to-sec leakage which minimizes release magnitude and helps to prevent S/G overfill.
- B. Incorrect. Right D/P, wrong bases. The substep within step 12 that provides instructions for maintaining RCS pressure within the P/T curve limits prevents loss of subcooled margin and allows continued operation of RCPs.
- C. Incorrect. Wrong D/P; right bases.
- D. Incorrect. Wrong D/P, wrong bases.

Technical Reference(s) OPO-902-007, Steam
Generator Tube Rupture
Recovery, Rev. 012
TG-OP-902-007, Rev. 302

Proposed references to be provided to applicants during
examination: None

Learning Objective: WLP-OPS-PPE07 Obj 3 (As available)

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41(b) 14

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	E05 EK2.2	
Importance Rating	3.7	

K/A Statement

Knowledge of the interrelations between the (Excess Steam Demand) and the following:

Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Proposed Question: RO 49

Rev: 0

An Excess Steam Demand **event** is in progress and OP-902-004, Excess Steam Demand Recovery is being implemented.

- RCS Subcool Margin 80°F and stable
- SG 1 pressure is 540 psia and lowering
- SG 2 pressure is 670 psia and stable
- SG 1 level 45% WR and lowering
- SG 2 level 60% WR and lowering slowly
- Containment Pressure 25 psia and rising
- Containment Spray Pump A is tagged out with CS-125A gagged shut
- Containment Spray Header B flow is 1000 gpm
- CVC-103, Letdown Inside Containment Isolation Valve stuck open
- EFW-228A, Emergency Feedwater Isolation SG 1 Primary is tagged closed
- All other systems and components are operating as designed

~~Which Safety Function is not being met as a result of these failures?~~
Based on this, which Safety Function is NOT being met?

- A. RCS Pressure Control
- B. RCS Heat Removal
- C. Containment Isolation
- D. Containment Temperature and Pressure Control

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. RCS pressure Control can be met by LPSI and HPSI pumps providing flow > OP-902-009 Appendix 2 curves. This is implied by the last bullet in the conditions given.
- B. RCS Heat Removal. Although S/G 2 level is lowering the final bullet implies that that EFAS-2 actuated per design and EFW is operating per design. The level given would not be low enough yet for EFW to feed S/G 2. Operators are trained to evaluate this safety function as SAT if EFW is automatic and working as designed. Tc can also be implied to be lowering during the blowdown phase of an excess steam demand. The conditions given imply that information.
- C. Incorrect. Both CVC containment isolation valves would have to fail to jeopardize the Containment Isolation safety function. The last bullet implies that this is not the case.
- D. **CORRECT**. At least one Containment Spray pump must be providing > 1750 gpm of flow to meet the CT&PC safety function.

Technical Reference(s) OP-902-004, Excess Steam Demand Recovery, Rev. 11

Proposed references to be provided to applicants during examination:

None

Learning Objective: WLP-OPS-PPE04 Obj. 6 (As available)

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	E06 G2.1.7	
Importance Rating	4.4	

K/A Statement

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Proposed Question: RO 50

Rev: 0

The plant has tripped due to a loss of both Main Feedwater Pumps. The crew has diagnosed to OP-902-006 and taken all required actions. The plant will be cooled down to SDC entry conditions. The plant conditions are as follows:

- RCPs 1B and 2B are running
- CSP Level = 50%
- DWST Level = 70%
- RCS Thot = 550 degrees F
- Plant Shutdown = 4 hours

The approximate **maximum** time remaining to place SDC in service is:

- A. 29 hours
- B. 22 hours
- C. 19 hours
- D. 14 hours

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. This is the value that would be obtained if the no RCPs operating curve were used (OP-902-009 Att. 2-J).
- B. Incorrect. This is the value that would be obtained if the correct attachment were used but the candidate did not take into account the water needed to remove the sensible heat between Thot of 550°F and SDC entry conditions of 350°F.
- C. **CORRECT.** This is the value that should be obtained if the candidate calculates available feedwater and selects and correctly reads the 4 hour curve on Att. 2-I of OP-902-009.
- D. Incorrect. This is the value obtained using the 4 RCP operating curve of OP-902-009 (Att. 2-H).

Technical Reference(s) OP-902-009, Standard
Appendices, Rev. 301

Proposed references to be provided to applicants during examination:

OP-902-009 Att. 2-G
thru 2-J

Learning Objective: WLP-OPS-PPE06 Obj. 4
WLP-OPS-PPE06 Obj. 9

Question Source: Bank # _____
Modified Bank # WF3-OPS-
6908-A
New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 5 / 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	055 EA1.06	
Importance Rating	4.1	

K/A Statement

Ability to operate and monitor the following as they apply to a Station Blackout:
Restoration of power with one ED/G

Proposed Question: RO 51 Rev: 0

Given the following:

- The plant is implementing OP-902-005, Station Blackout Recovery.
- Attachments 7-A(B)(C), Switchgear Room A(B)(AB) Removable Loads have been completed as required by OP-902-005.
- Emergency Diesel Generator A has become available to restore power.

OP-902-005, previously **(WHAT??? Are we testing on what a procedure previously stated?)** directed the Operators to place both Containment Spray Pump control switches to OFF if Containment pressure is < 17.7 psia to prevent

- A. an inadvertent spray of containment
- B. actuating a Sequencer UV Lockout
- C. operating CS Pumps at shutoff head
- D. overloading an Emergency Diesel Generator

Proposed Answer: A

Explanation (Optional):

- A. **CORRECT.** Due to de-energizing ESFAS relays as part of the Attachment given in the stem a CSAS signal is generated. Restoration of EDG A will result in a start of CS Pump A and initiation of flow through the Train A Spray Header nozzles.
- B. Incorrect. Although the restoration of EDG A will start various ESFAS A loads, the Sequencer should still function to start the loads in the prescribed order without initiating a sequencer lockout.
- C. Incorrect. Although CS Pump A will start on the restoration of EDG A, the CS A header isolation valve should be open due to the load stripping that occurs in the Attachments given in the stem as complete.
- D. Incorrect. The operation of the sequencer on the start of EDG A should prevent an overload condition on EDG A.

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	056 AA1.37	
Importance Rating	3.4	

K/A Statement

Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power:
Instrument air

Proposed Question: RO 52

Rev: 0

Replace this or question 56 (replace KA topic) because testing IA cross-connecting knowledge again.

Given the following initial conditions:

- **The plant is at 100% power**
- EDG A is OOS
- IA compressor A is running; IA compressor B is in standby
- Combined Instrument Air and Station Air usage is within the capacity of one air compressor
- ~~The plant is operating at 100% with all systems aligned normally, except as noted, when a~~ reactor trip and Loss of Offsite Power occurs
- ~~All Automatic Actions occur as designed~~

Which of the following is correct?

- A. IA pressure drops until IA compressor B starts automatically, then IA pressure recovers.
- B. IA pressure drops until action is taken to manually cross-connect ~~Instrument Air~~IA and Station Air, then IA pressure recovers.
- C. IA pressure continues to drop until alternate cooling is aligned to IA compressor B and the compressor is started manually, then IA pressure recovers.
- D. IA pressure drops until Station Air and ~~Instrument air~~IA are automatically cross-connected, then IA pressure varies around the setpoint of the automatic valve.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. IA Compressor B will not automatically start (see explanation in B).
- B. Incorrect. The conditions given in the stem indicate a Loss of Offsite Power has occurred. Train A is lost due to the 87STA actuation which isolates SUT A. Train B is lost due to the Generator Output Breaker B failing to open which then opens the feeder breakers from the grid feeding Offsite power to Train B. This results in loss of all Station Air Compressors and Instrument Air Compressor A. IA compressor B is interlocked such that it will not auto start when the normal power supply is unavailable to Bus B3. Bus B3 which is currently energized by EDG B. Even if the IA and SA systems are manually cross-connected pressure would not recover because no SA air compressors are available.
- C. **CORRECT.** IA compressor B can be manually started. This would require alternate cooling be aligned due to the loss of normal cooling (TCW, CW). OP-902-003 contains steps to align potable water to the air compressors and start all available air compressors. In this case, the only available air compressor is IA compressor B (see explanation in A).
- D. Incorrect. See explanation A. Even if the IA to SA cross-connect automatically opens without air compressors running pressure is going to continue to lower.

Technical Reference(s) OP-902-003, Loss of Offsite
Power/Loss of Forced
Circulation, Rev.006

OP-902-009, Standard
Appendices, Rev 301

Proposed references to be provided to applicants during
examination:

None

Learning Objective: WLP-OPS-AIR00 Obj. 1

Question Source: Bank #
Modified Bank # WF3-OPS-
6737-A
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41(b) 4

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	057 AA2.19	
Importance Rating	4.0	

K/A Statement

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The plant automatic actions that will occur on the loss of a vital ac electrical instrument bus.

Proposed Question: RO 53

Rev: 0

ATTACH ORIGINAL QUESTION

Given the following

- The plant is at 100%

On ~~the a~~ loss of SUPS MA, Reactor Trip breakers _____ open and the reactor _____.

- A. 1, 2, 5, and 6; remains at 100%
- B. 1, 2, 5, and 6; trips
- C. 3, 4, 7, and 8; remains at 100%
- D. 3, 4, 7, and 8; trips

Proposed Answer: A

Explanation (Optional):

- A. **CORRECT.** This is the correct combination of trip breakers that will open on a loss of SUPS MA. These breakers opening will only eliminate one of two paths for power to the CEAs and the reactor does not trip.
- B. Incorrect. Correct breakers, wrong effect. See explanation for A.
- C. Incorrect. Wrong breaker combination. See explanation A.
- D. Incorrect. Wrong breaker combination, wrong effect. See explanation A

Technical Reference(s) OP-901-312, Rev. 2
SD-PPS, Fig. 1, Rev. 0

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PPO30 Obj. 1

Question Source: Bank #
Modified Bank # WF3-OPS-
3316-A
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 7

Comments:

Examination Outline Cross-reference: Level RO SRO

Tier # 1
Group # 1
K/A # 058 AK3.02
Importance Rating 4.0

K/A Statement

Knowledge of the reasons for the following responses as they apply to the Loss of DC

Power: Actions contained in EOP for loss of dc power

Proposed Question: RO 54 Rev: 0

On a Loss of TGB-DC Bus, the reactor will be manually tripped when Instrument Air Header Pressure lowers to _____ due to loss of power to _____.

- A. 80 psig; IA and SA compressor unloader valves
- B. 80 psig; Instrument Air Dryers
- C. 65 psig; IA and SA compressor unloader valves
- D. 65 psig; Instrument Air Dryers

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The reactor will not be tripped until 65 psig per OP-901-313. the basis is correct per a note in OP-901-313.
- B. Incorrect. Wrong pressure. Wrong bases, however, IA dryer malfunctions can significantly affect IA pressure making it plausible.
- C. **CORRECT.** Per the step and associated note in OP-901-313 this is the correct value and bases.
- D. Incorrect. Correct pressure. Wrong Bases.

Technical Reference(s) OP-901-313, Loss of a 125
DC Bus, Rev. 301

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PPO03 Obj. 4

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	_____X_____
Question History:	Last NRC Exam	_____N/A_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____X_____
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41(b)	_____10_____
Comments:		

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	062 G2.4.21	
Importance Rating	4.0	

K/A Statement

Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

Proposed Question: RO 55

Rev: 0

Given the following

- A loss of main feedwater event has occurred
- No Wet Cooling Tower Basin is available for alignment to EFW due to loss of both ACCW Pumps.

In accordance with TG-OP-902-009, Technical Guide for Standard Appendices, at which Condensate Storage Pool level will the RCS and Core Heat Removal Safety Function start to be impacted by EFW pump cavitation?

~~Which of the following is the level in the Condensate Storage Pool at which the RCS and Core Heat Removal safety function is impacted by the potential loss of the EFW pumps due to cavitation, per TG-OP-902-009, Technical Guide for Standard Appendices?~~

- A. 5%
- B. 11%
- C. 13%
- D. 25%

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. This is an old value from a previous revision that does not take level uncertainties into account.
- B. **CORRECT.** This is the value stated in TGOP-902-009.
- C. Incorrect. This is the value that Operators should wait for to complete the lineup to the Wet Tower Basin to ensure that unnecessary depletion of the Wet Tower Basin does not occur.
- D. Incorrect. This is the level at which the CRS should notify personnel outside of the Control Room to start the lineup to the Wet Tower Basin. This allows 20 minutes to complete the lineup.

Technical Reference(s): TGOP-902-009, Technical
Guide for Standard
Appendices, Rev. 301

OP-902-009, Standard
Appendices, Rev. 301

Proposed references to be provided to applicants during
examination:

None

Learning Objective: WLP-OPS-PPE06 Obj. 9

Question Source: Bank #

Modified Bank #

New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

1

K/A #

065 AK3.04

Importance Rating

3.0

K/A Statement

Ability to determine and interpret the following as they apply to the Loss of Instrument Air:
Cross-over to backup air supplies

Proposed Question: RO 56

Rev: 0

Given:

- A leak in the Instrument Air system is in progress
- IA header pressure is 100psig and slowly lowering

Which of the following valves have repositioned?

**N2/Instrument Air Accumulator Outlet Valves
(Correct)SA System crossover valves xxxx
IA Dryer Bypass Valves xxxx**

...

The following alarm is received in the Control Room on Annunciator Panel L:

- Valve Operators Nitrogen Backup Actuated/Trouble

Which of the following is a potential cause of this alarm?

- A. A Nitrogen Accumulator Outlet Valve is open.
- B. An Essential Air Nitrogen Station has been aligned.
- C. An Essential Air Nitrogen bottle pressure is less than 715 psig.
- D. A Nitrogen Tube Trailer has been aligned.

Proposed Answer: A

Explanation (Optional):

- A. **CORRECT.** Per Annunciator Response Procedure OP-500-010, any one of eight Nitrogen Accumulator Outlet Valve limit switches indicating that the valve is not fully closed actuates the alarm.
- B. Incorrect. None of the 3 inputs to the alarm is associated with the Essential Air Accumulators. However, the Essential Air system is a valid backup source of

- motive air that is aligned on a loss of IA and valve position is a parameter used as an input to the alarm.
- C. Incorrect. None of the 3 inputs to the alarm is associated with the Essential Air Accumulators. However, the Essential Air system is a valid backup source of motive air that is aligned on a loss of IA. 715 psig is the setpoint for the nitrogen accumulator pressure that is an input to the alarm
 - D. Incorrect. The tube trailer is a backup source of nitrogen but is not an input to the alarm. However, valve position is used as an input to the alarm, but the source is from the nitrogen accumulator outlet valves.

Technical Reference(s) OP-500-010, Control Room
Cabinet L, Rev 020

Proposed references to be provided to applicants during examination:

None

Learning Objective: WLP-OPS-AIR00 Obj. 4

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41(b) 7

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	2	
K/A #	001 AK2.08	
Importance Rating	3.1	

K/A Statement

Knowledge of the interrelations between the Continuous Rod Withdrawal and the following: Individual rod display lights and indications

Proposed Question: RO 57

Rev: 0

Given the following:

- Reactor Power is 12% with power ascension in progress
- Reg Group 6 is being withdrawn manually in MS mode to raise power to 15%
- **Individual Reg Group 6 CEAs have a 0.0" deviation from the Group**
- **No deviation exists between Pulse Counters and RSPTs for Group 6**
- The ATC releases the IN-HOLD-OUT switch at 135" and Reg Group 6 continues out due to ~~a switch contact failure~~ **failure of the OUT contacts in the switch**

~~Assuming a 0.0" deviation between individual CEAs in Reg Group 6 and 0.0" deviation between the Pulse Counters and RSPTs for Reg Group 6 answer the following:~~ **Assuming the reactor does not trip:**

- (1) What will stop CEA motion for Reg Group 6?
 - (2) What will be the approximate reading of the Pulse Counters on CP-2?
 - (3) What will be the status of the Red indicators for Reg Group 6 CEAs on the CEDMCS Control Panel on CP-2?
- A. (1) Upper Electrical Limit
(2) 150"
(3) Illuminated
- B. (1) Upper Electrical Limit
(2) 145.5"
(3) Extinguished
- C. (1) Upper Group Stop
(2) 150"
(3) Illuminated
- D. (1) Upper Group Stop
(2) 145.5"
(3) Extinguished

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Upper Group Stop would occur, not the Upper Electrical Limit. This would occur at 145.5" on the pulse counters, not 150". The red lights would be extinguished because they are actuated by the Upper Electrical Limit for the individual rod, not the Upper Group Stop.
- B. Incorrect. Upper Group Stop would occur, not the Upper Electrical Limit. This would occur at 145.5" on the pulse counters as stated. The red lights would be extinguished as stated because they are actuated by the Upper Electrical Limit for the individual rod, not the Upper Group Stop.
- C. Incorrect. Upper Group Stop would occur as stated; however, this would occur at 145.5" on the pulse counters, not 150". The red lights would be extinguished because they are actuated by the Upper Electrical Limit for the individual rod, not the Upper Group Stop.
- D. **CORRECT**. Upper Group Stop would occur as stated. This would occur at 145.5" on the pulse counters as stated. The red lights would be extinguished as stated because they are actuated by the Upper Electrical Limit for the individual rod, not the Upper Group Stop.

Technical Reference(s) OP-004-004, Rev. 16

Proposed references to be provided to applicants during examination: _____

Learning Objective: WLP-OPS-CED00 Obj. 1

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 6

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	2	
K/A #	036 AA1.02	
Importance Rating	3.1	

K/A Statement

Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: ARM system

Proposed Question: RO 58

Rev: 0

Given the following:

- The plant is in MODE 6 with fuel shuffle in progress in both the Fuel Handling Building and Containment.
- Containment Purge is in the Refueling Mode.
- Containment equipment hatch and airlock doors are closed and no containment penetrations are impaired.
- A fuel bundle is dropped from the Refueling Machine Fuel Hoist. **Is this on the +46' elevation of containment?**

Which of the following radiation monitors ~~can detect the event~~ **AND will terminate automatically terminate** the radioactive gas release **to the environment?**

- A. Containment Atmosphere Hi Range Area Radiation Monitor, ARM-IRE-5400AS.
- B. Containment Purge Area Radiation Monitor, ARM-IRE-5024.
- C. Refueling Machine Area Radiation Monitor, ARM-IRE-5013.
- D. Containment PIG Process ~~RM~~ **Radiation Monitor**, PRM-IRE-0100S.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. No automatic functions are associated with this Rad Monitor. However, the RM detectors are in containment and could see the radiation from the fuel handling incident.
- B. **CORRECT.** ARM 5024 provides isolation of Containment Purge on Hi Rad and is in the general area of fuel handling on the +46' elevation of Containment.
- C. Incorrect. This rad monitor is in the general area of the Refueling Cavity; however, it has indication and alarm functions only.
- D. Incorrect. The containment PIG monitors containment atmosphere but does not have Containment Purge isolation functions.

None

DOI: 10.1002/for

1. UNBQ.F 2. 0000 W/S.NI

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

2

K/A #

037 AK1.01

Importance Rating

2.9

K/A Statement

Knowledge of the operational implications of the following concepts as they apply to Steam Generator Tube Leak: Use of steam tables

Proposed Question: RO 59

Rev: 0

Given the following:

- A cooldown is being performed to MODE 5 per OP-901-202, Steam Generator Tube Leakage or High Activity due to a leak on SG 2.
- All RCPs are secured
- CET Temp is 382°F
- T_h Loop1 is 375°F
- T_h Loop1 is 378°F
- T_c Loop 1 is 350°F
- T_c Loop 2 is 382°F
- The CRS has placed a lower limit of 30°F on Subcool Margin

Determine the minimum value of RCS pressure that supports the requested RCS Subcool Margin.

- A. 196 psia
- B. 262 psia
- C. 270 psia
- D. 283 psia

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. This is the value associated with Cold leg 1 temperature. The hottest RCS temperature should be used to determine subcool margin. This would also lower RCS pressure below the isolated S/G pressure.
- B. Incorrect. This is the value associated with Hot Leg Loop 1 temperature. The hottest RCS temperature should be used to determine subcool margin.
- C. Incorrect. This is the value associated with Hot Leg Loop 2 temperature. The hottest RCS temperature should be used to determine subcool margin.
- D. **CORRECT**. This is the value associated with CET and Cold Leg 2 temperatures. The hottest RCS temperature should be used to determine subcool margin. OI-038-000 has guidance to use CET temperatures on natural circulation

Technical Reference(s)	Steam Tables – Properties of Saturated and Superheated Steam
------------------------	--

Proposed references to be provided to applicants during examination:

Steam Tables

Learning Objective: WLP-OPS-PPO20 Obj. 3

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	X

Question History:	Last NRC Exam	N/A
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Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 10 / 14

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

2

K/A #

051 AA2.02

Importance Rating

3.9

K/A Statement

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: Conditions requiring reactor and/or turbine trip

Proposed Question: RO 60

Rev: 0

In accordance with OP-901-220, Loss of Condenser Vacuum, a reactor trip is first required when condenser vacuum is approaching _____ inches Hg and not stabilized.

[SPACE]

A. 25

B. 23

C. 20

D. 14

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. This is the point at which a power reduction is required.
- B. Incorrect. This is the point at which the Condenser Vacuum Pumps go into the Hogging mode of operation.
- C. **CORRECT.** This is the requirement stated in OP-901-220.
- D. Incorrect. This is the point at which the main feedwater pumps would trip and OP-901-220 requires action to be performed to protect the Main Condenser from high pressure.

Technical Reference(s) OP-901-220, Loss of
Condenser Vacuum, Rev. 2

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PPO02 Obj. 3 (As available)

Question Source: Bank # WF3-OPS-
5789-A
Modified Bank #
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	2	
K/A #	CE/E09 EK2.1	
Importance Rating	3.6	

K/A Statement

Knowledge of the interrelations between the Functional Recovery and the following:

Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: RO 61

Rev: 0

Given the following:

- A large break LOCA ~~concurrent with~~ **occurred while in Mode 1**
- **S/G 2 Safety Valve XXXX** failed open **after the trip secondary safety on S/G-2 has occurred**
- RCS Pressure is 100 psia and stable
- RWSP Level is 60% and lowering
- HPSI Pump A/B is OOS for a pump coupling replacement
- HPSI Pump A tripped on overcurrent upon its initial start signal

15 minutes later, MCC 311B feeder breaker trips on overcurrent.

With no Operator action taken to mitigate this condition, which of the following would interrupt Safety Injection flow **FIRST**? **WHAT is being asked???** **Clear this up.**

Flow will not be lost until RWSP outlet valves are closed?

- A. Injecting from the RWSP prior to RAS. **Not credible. The question asks what terminates injection.**
- B. Injecting from the SIS Sump after RAS. **This contradicts the question because no injection will occur after RAS.**
- C. Isolating the SI Pump recircs after RAS. **After RAS, injection flow is lost. Can be argued as correct.**
- D. Isolating the RWSP from the SI Pump suction after RAS. **After RAS, injection flow is lost. Can be argued as correct.**

Proposed Answer:

B.

Explanation (Optional):

- A. Incorrect. Per conditions given, (RWSP level has dropped at least 23% assuming minimum required volume was available, RCS pressure well below SIAS setpoint) the SI system should be in its SIAS alignment. The flow path should be unaffected by the loss of 311B which would cause loss of power to LPSI and HPSI Loop FCV MOVs and SI-120B which is also an MOV. This would fail them in their SIAS position.
- B. **CORRECT.** The loss of MCC 311B causes loss of power to SI-602B which is the MOV suction isolation to the Train B ECCS pumps from the SIS Sump. This valve would normally automatically open at 10% level in the RWSP to provide a suction source to the pumps from the alternate source prior to emptying the RWSP. Since only HPSI Pump B is available to inject this would result in SI flow being interrupted after RAS when the RWSP empties.
- C. Incorrect. Only one of two pump recirc isolation valves in series has lost power due to the malfunction given (SI-120B). SI-121B is powered from MCC 312B and would still be available to isolate the recirc flow path.
- D. Incorrect. While SI-106B (Train B RWSP isolation) can not be isolated until SI-602B is open, this would not be the reason flow would be lost. Flow will be lost as a result of not aligning the alternate source of suction (SIS Sump) prior to primary source (RWSP) depletion. The act of aligning the alternate source would in itself allow isolation of the primary source after RAS.

Technical Reference(s) OP-009-008, Safety
Injection, Rev. 29

Proposed references to be provided to applicants during examination:

None

Learning Objective: WLP-OPS-SI00 Obj. 3
WLP-OPS-SI00 Obj. 8

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 7

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

2

K/A #

074 EK3.04

Importance Rating

3.9

K/A Statement

Knowledge of the reasons for the following responses as they apply to the Inadequate Core Cooling: Tripping RCPs

Proposed Question: RO 62

Rev: 0

As written, the question does not discriminate against the KA topic (tripping criteria). The question fails to meet the 1 of 2 taken twice, therefore, only one item is needed to answer the question (when to trip, not the reason to trip).

Suggested question:

While operating at 100% power:

- **A Small Break LOCA occurred**
- **All feedwater is lost**
- **SIAS initiated**
- **SPTAs are completed and the crew is in OP-902-008, Functional Recovery**

What action is required and why?

**(Correct answer) Secure all RCPs to reduce heat input to the RCS.
Secure all RCPs to prevent RCP damage.**

...

Under what circumstances does OP-902-008, Safety Function Recovery:

(1) require securing all RCPs for a potential inadequate core cooling condition?

AND

(2) What is the basis for this ~~action~~-action?

- A. (1) Containment Spray Actuation Signal (CSAS)
(2) Prevent RCP Damage
- B. (1) Loss of NPSH requirements for RCPs
(2) Prevent RCP Damage
- C. (1) Loss of Main Feedwater > 30 minutes, only EFW AB operable
(2) Eliminate RCP heat input to RCS
- D. (1) Loss of all Feedwater **Only need to know this to get D.**
(2) Eliminate RCP heat input to RCS **This is not discriminated against.**

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. CSAS by itself does not indicate a condition that could lead to inadequate core cooling; however, it is a valid reason to secure the RCP and is addressed in Section 4.0 of OP-902-008 prior to entering any Safety Function Success Path for the reason stated.
- B. Incorrect. NPSH requirements for the RCP by itself does not indicate an inadequate core cooling condition; however, it is a valid reason to secure the RCP and is addressed in Section 4.0 of OP-902-008 prior to entering any Safety Function Success Path for the reason stated.
- C. Incorrect. Inadequate feedwater can lead to an inadequate core cooling condition. However, all RCPs would only be secured in this circumstance if only one motor driven EFW Pump is available. EFW Pump AB has 100% capacity
- D. **CORRECT.** Inadequate feedwater can lead to an inadequate core cooling condition. The RCPs are required to be secured for this reason. With no feedwater the RCPs are secured to eliminate the heat input into the RCS from the RCPs that must be removed by steaming the S/Gs.

Technical Reference(s)	OP-902-008, Safety Function Recovery, Rev. 15	(Attach if not previously provided)
	TG-OP-902-008, Technical Guide for Safety Function Recovery, Rev.302	(including version/revision number)

Proposed references to be provided to applicants during examination:	None
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Learning Objective: WLP-OPS-PPE08 Obj.9
WLP-OPS-PPE08 Obj. 4

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	2	
K/A #	069 AA1.01	
Importance Rating	3.5	

K/A Statement

Ability to operate and/or monitor the following as they apply to the Loss of Containment Integrity: Isolation valves, dampers, and electro-pneumatic devices

Proposed Question: RO 63

Rev: 0

Given the following:

- A Loss of Coolant Accident has occurred
- Containment pressure is 17.2 psia and slowly rising
- **Equipment lineups were normal at the start of the event and a** All systems operate as designed ~~and equipment lineups were normal at the start of the event~~

Which of the following pipe breaks would ~~constitute~~ **result in** a loss of containment integrity ~~at the current conditions~~?

- A. on the downstream weld of CVC-101, Letdown Stop Valve- **Third question testing knowledge of location of CVC-101 and -103 (change this).**
- B. just upstream of CS-128B, Containment Spray Riser B Check Valve-
- C. on the supply line of Containment Fan Cooler C at the cooling coils-
- D. just downstream of CVC-216B, Pressurizer Auxiliary Spray Valve B

Proposed Answer: C

- A. Incorrect. A leak at this location would be upstream of the Containment Isolation valves CVC-103 and CVC-109. Both of these valves closed on a CIAS at 17.1 psia in the containment.
- B. Incorrect. CS-125B, Containment Spray Header B Isolation Valve would still be closed until pressure reaches 17.7 psia.
- C. **CORRECT.** On an SIAS all flow control valves for CC flow through CFC C would be open due to the containment pressure providing a path outside containment. A Keyswitch allows override of the valves to isolate the leak.
- D. Incorrect. Although CVC-216B does not get any automatic isolation signals it is normally closed and conditions indicate that the valve is in its normal position.

Proposed references to be provided to applicants during examination:	None
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Question Source:	Bank #	
	Modified Bank #	
	New	X

Question Cognitive Level:	Memory or Fundamental Knowledge	<u> </u>
	Comprehension or Analysis	<u> X </u>

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1

Group #

2

K/A #

076 G2.1.25

Importance Rating

3.9

K/A Statement

Ability to interpret reference materials, such as graphs, curves, tables, etc.

Proposed Question: RO 64

Rev: 0

Given the following:

- Reactor power is 100%
- OP-901-410, High Activity in Reactor Coolant System, was entered today at 0230 due to the Isotopic Analysis for ~~DEQ~~**Dose Equivalent** I-131 sample reading 3.0 $\mu\text{Ci/gm}$.
- The last sample taken for Isotopic Analysis for Iodine ~~activity~~ was taken today at 0400.

A reactor trip occurs at 0430. Using TS Table 4.4-4, determine the **LATEST** time possible to perform the next sample for **Isotopic Analysis for Iodine**~~Iodine isotopic analysis~~.

- A. 0630 today
- B. 0800 today
- C. 1030 today
- D. 0400 in 14 days

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Even though the reactor tripped, the sample is not required to be taken due to the power change until 1030. A sample at two hours is not required.
- B. **CORRECT**. The table requires a 4 hour sample be taken as long as Iodine activity is exceeding 1.0 $\mu\text{Ci/gm}$.
- C. Incorrect. If the plant was not already in a 4 hr sampling requirement this would be the required time to take the sample post trip due to the power change. Waiting until this point would however, violate the 4 hr requirement.
- D. Incorrect. The increased Iodine sampling requirements must continue on a 4 hour basis until Iodine activity is less than 1.0 $\mu\text{Ci/gm}$.

Technical Reference(s) TS Table 4.4-4, Amendment
 184
 OP-901-410, High Activity in
 Reactor Coolant System, Rev.
 3

Proposed references to be provided to applicants during
 examination:

TS 3.4.7 and Table
 4.4-4

Learning Objective: WLP-OPS-PPO40 Obj. 3
 WLP-OPS-PPO40 Obj. 5

Question Source: Bank # _____
 Modified Bank # _____
 New _____ X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
 Comprehension or Analysis _____ X

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>1</u>	<u> </u>
Group #	<u>2</u>	<u> </u>
K/A #	<u>CE/A16 AA2.1</u>	<u> </u>
Importance Rating	<u>2.7</u>	<u> </u>

K/A Statement

Ability to determine and interpret the following as they apply to the (Excess RCS Leakage)
Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: RO 65

Rev: 0

Given the following conditions:

- Letdown is secured to determine the location of an RCS leak
- RCS Tavg is 575 degrees and steady
- Current RCS leakage is 86 gpm
- AB Charging pump is out of service
- Charging pumps A and B are running

Which of the following is the appropriate action to be performed?

[SPACE]

- A. Remain in OP-901-111, Reactor Coolant System Leak, and attempt to locate the leak.
- B. Commence a normal shutdown in accordance with OP-010-005, Plant Shutdown.
- C. Commence a rapid plant shutdown in accordance with OP-901-212, Rapid Plant Power Reduction.
- D. Initiate a manual reactor trip, SIAS/CIAS, and go to OP-902-000, Standard Post Trip Actions.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. The RCS leakage and the 4-6 gpm RCP controlled bleedoff that normally exists exceeds the capacity of two charging pumps. This is an option if pressurizer level can be maintained.
- B. Incorrect. The RCS leakage and the 4-6 gpm RCP controlled bleedoff that normally exists exceeds the capacity of two charging pumps. This is an option if pressurizer level can be maintained and a shutdown is required.
- C. Incorrect. The RCS leakage with the 4-6 gpm RCP controlled bleedoff that normally exists exceeds the capacity of two charging pumps. This is a valid shutdown option; however, OP-901-111 specifically ignores this option based on the possible inability to control pressurizer level on the shutdown.
- D. **CORRECT.** Based on the total inventory loss from the RCS (RCS leakage + RCP controlled bleedoff) exceeding Charging pump capacity, Pressurizer level can not be maintained. OP-901-111 requires that answer D be performed per step 2 when this is the case.

Technical Reference(s) OP-901-111, Reactor
Coolant System Leak, Rev.
301

Proposed references to be provided to applicants during
examination:

None

Learning Objective: WLP-OPS-PPO10 Obj. 3

Question Source: Bank # WF3-OPS-
5199-A
Modified Bank # _____
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41(b) 8 / 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

3

Group #

1

K/A #

G 2.1.40

Importance Rating

2.8

K/A Statement

Conduct of Operations: Knowledge of refueling administrative requirements.

Proposed Question:

RO 66

Rev:

0

The reactor was operating at 100% power at EOC. The following sequence of events occurs:

- At 1330 on 10/4 the reactor trips
- At 1245 on 10/9 the cause of the trip has been corrected and the crew has commenced withdrawing the Shutdown Banks.
- At 1315 on 10/9 with Shutdown Bank B at 50", the reactor trip breakers open due to low S/G levels
- **At 1700 on 10/9, the decision is made to enter the refueling outage early**

~~A decision is made to enter the Refueling outage early. At what minimum point in time does the~~
In accordance with TS 3.9.3, Decay Time, the plant will meet meet (met) the minimum time requirements to remove irradiated fuel from the reactor per TS 3.9.3, Decay Time at _____?

- A. 1330 on 10/7
- B. 1730 on 10/8
- C. 1315 on 10/12
- D. 1715 on 10/13

Proposed Answer:

A

Explanation (Optional):

- A. **CORRECT.** The conditions given for the startup indicate that the reactor did not obtain criticality prior to the trip. Therefore, the 72 hours starts from the first reactor trip time. The time limit is based on allowing the decay of short lived fission products.
- B. Incorrect. The base time used is correct but a minimum subcriticality time of 100 hours is used. This time is common in Tech Specs in the industry.
- C. Incorrect. This is 72 hours from the second trip. Based on the conditions given in the stem the reactor never achieved criticality prior to second trip.
- D. Incorrect. This is 100 hrs from the second trip. This is the wrong duration after shutdown and also would not apply since we did not reach criticality prior to the second trip.

Technical Reference(s) TS 3/4.9.3, Decay Time,
Amendment 0

B3/4.9.3, Decay Time, Change 21

Proposed references to be provided to applicants during examination:

None

Learning Objective: WLP-OPS-FHS00 Obj. 5

Question Source:

Bank #

Modified Bank #

New

X

Question History:

Last NRC Exam

N/A

Question Cognitive Level:

Memory or Fundamental Knowledge

Comprehension or Analysis

X

10 CFR Part 55 Content:

55.41(b) 1 / 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

3

Group #

1

K/A #

G 2.1.19

Importance Rating

3.9

K/A Statement

Conduct of Operations: Ability to use plant computers to evaluate system or component status.

Proposed Question: RO 67

Rev: 0

~~Which of the following control board annunciator would be if the Plant Monitoring Computer fails?~~**WHAT?? This is not a complete sentence!**

- A. CEA DISABLED
- B. CEDMCS TIMER FAILURE
- C. CEDMCS MAINTENANCE ERROR
- D. POWER DEPENDENT INSERTION LIMIT

Suggested replacement:

Some alarming condition is present, or abnormal system status.

While using the Plant Monitoring Computer to evaluate the [some system or component status], the operator must _____.

Steps to accomplish this on the PMC.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. This alarm is generated by contacts for CEA Circuit Breakers in OFF.
- B. Incorrect. This alarm is generated by ACTM Micro-processor Card.
- C. Incorrect. This alarm is generated by CEDMCS when trying to place more than one subgroup on hold bus.
- D. **CORRECT.** This alarm is generated by the PMC.

Technical Reference(s) SD-PMC, Rev. 7
OP-500-00, Control Room
Cabinet H, Rev. 26

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PMC00 Obj. 3

Question Source: Bank #
Modified Bank #
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 4

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	2	
K/A #	G 2.1.37	
Importance Rating	4.3	

K/A Statement

Equipment Control: Knowledge of procedures, guidelines, or limitations associated with reactivity management.

Proposed Question: RO 68 Rev: 0

True/False... Please fix the distracters so they are not stand-alone statements.

Which of the following accurately describes the procedure requirement regarding reactivity management?

- A. Planned Primary Makeup additions less than 100 gallons are exempt from peer checks in Modes 3, 4, and 5.
- B. Positive reactivity additions may be made by two methods simultaneously if in accordance with an approved reactivity plan.
- C. An approved reactivity plan is only needed for planned reactor power changes of greater than 5%.
- D. During approach to criticality the designated Reactor Engineer gives permission to continue rod withdrawal after verifying 1/M plots do not predict criticality.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. EN-OP-115, Conduct of Operations requires that all planned reactivity manipulations are verified/peer checked.
- B. **CORRECT.** Per EN-OP-103 and EN-OP-115, Conduct of Operations it is permissible to add positive reactivity to the reactor by more than one means with an approved reactivity plan.
- C. Incorrect. EN-OP-115 guidance is to develop a written reactivity plan for power changes of greater than 2%.
- D. Incorrect. EN-OP-115 specifically requires direction that affects reactivity to come through the individual holding Command and Control to the Control Room Operators.

Technical Reference(s) EN-OP-103, Reactivity
Management Program, Rev.
4

EN-OP-115, Conduct of
Operations, Rev. 9

Proposed references to be provided to applicants during
examination:

None

Learning Objective: WLP-OPS-EXP00 Obj. 15
_____ WLP-OPS-PPA00 Obj. 3

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
_____ Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 10

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

3

Group #

2

K/A #

G 2.2.38

Importance Rating

3.6

K/A Statement

Equipment Control: Knowledge of conditions and limitations in the facility license.

Proposed Question:

RO 69

Rev:

0

Per the Waterford 3 Operating License, Entergy Operations Inc. is authorized to operate the Waterford 3 reactor core at power levels not to exceed:

- A. 3441 MW_t
- B. 3461 MW_t
- C. 3716 MW_t
- D. 3739 MW_t

Proposed Answer:

C

Explanation (Optional):

- A. Incorrect. This value is equal to the intermediate power uprate value.
- B. Incorrect. This value is equal to the intermediate power uprate value + the old estimated RCP heat contribution.
- C. **CORRECT.** This is the value listed in the current Operating License post power uprate.
- D. Incorrect. This is the value listed in the current Operating License post power uprate + the most recent evaluation of RCP heat contribution.

Technical Reference(s) Waterford 3 Operating License, Amendment 225

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-TS00 Obj. 2

Question Source: Bank #
Modified Bank # WF3-OPS-06762
New

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis

10 CFR Part 55 Content: 55.41(b) 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>G 2.2.41</u>	<u> </u>
	Importance Rating	<u>3.5</u>	<u> </u>

K/A Statement

Equipment Control: Ability to obtain and interpret station electrical and mechanical drawings.

Proposed Question: RO 70 Rev: 0

Given the following:

- Main Steam Drip Pot MS-ILS-0313A has detected a high level
- MS Drain Valve, MS-127A has automatically opened

MS-127A will close:

- A. when the high level condition clears and the control switch is taken to close.
- B. if valve limit switch contact (bo) indicates the valve did not stroke fully open.
- C. when the white Water Detected lights on the control switch extinguishes.
- D. when the high level condition clears and relay LSX de-energizes.

Proposed Answer: A

Explanation:

- A. **CORRECT.** The high level condition must be cleared and then the operator can manually close the valve.
- B. Incorrect. This valve does not have an auto close feature if the valve does not fully stroke.
- C. Incorrect. The white lights will extinguish when the high level condition clears but it will not cause closure of the valve.
- D. Incorrect. The LSX relay disables closure of the valve with a high level condition but does not provide auto closure when the high condition clears.

Technical Reference(s) CWD B424-1648, Rev. 8

Proposed references to be provided to applicants during examination: _____ CWDs B424-1648

Learning Objective: WLP-OPS-CD00 Obj. 3

Question Source: Bank # WF3-OPS-2357-A
Modified Bank # _____
New _____

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 4

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	3	
K/A #	G 2.3.15	
Importance Rating	2.9	

K/A Statement

Radiation Control: Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Proposed Question: RO 71 Rev: 0

The (1) Radiation Monitor(s) is(are) susceptible to Thermally Induced Currents (TIC) during a LOCA/Steam Line Break and will initially read erroneously (2) with rising temperatures in Containment. During a LOCA or Steam Line Break in Containment, the (1) Radiation Monitor(s) will read erroneously (2) while Containment temperature is rising.

- A. (1) Containment High Range
 (2) low
- B. (1) Containment High Range
 (2) high
- C. (1) Containment PIG
 (2) low
- D. (1) Containment PIG
 (2) high

Proposed Answer: B

Explanation:

- A. Incorrect. Correct rad monitors, wrong indication effect.
- B. **CORRECT.** The Containment High Range Radiation Monitors have been determined to be susceptible to TIC post accident which will cause erroneously high readings for at least 15 minutes from the time containment temperature stabilizes.
- C. Incorrect. Wrong rad monitor, wrong effect.
- D. Incorrect. Wrong rad monitor, correct effect.

WLP-OPS-MCD06,
Radiation Monitoring, Rev. 4

None

WLP-OPS-MCD06 Obj.3

Bank #	
Modified	WF3-OPS-
Bank #	5638-A
New	

Last NRC Exam N/A

Memory or Fundamental Knowledge	<u>X</u>
Comprehension or Analysis	

55.41(b) 11

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	3	
K/A #	G 2.3.12	
Importance Rating	3.2	

K/A Statement

Radiation Control: Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Proposed Question: RO 72 Rev: 0

Given the following:

- The plant is at 10% Power
- **A containment entry is desired**

~~During a containment entry, W~~which of the following areas inside containment ~~is forbidden to enter~~**are forbidden from being entered?**

- A. Pressurizer Cubicle below +21' elevation
- B. +46' elevation at the Quench Tank
- C. Main Steam Line Crossovers on the +46' elevation
- D. 1A Cold Leg penetration through the 'D' Ring Wall

Proposed Answer: D

- A. Incorrect. This is an area known to have high radiation levels, but is not listed in HP-001-213 as being forbidden in MODE 1. Not an area listed as needing RP Manager approval to enter.
- B. Incorrect. This area is in close proximity to the Reactor Cavity but is a sufficient distance away that it is not forbidden, or need RP Manager approval to enter.
- C. Incorrect. This is an exception to the requirement for obtaining RP Manager approval for going above the actual +46' elevation in Containment. It is not listed as forbidden.
- D. **CORRECT.** Per HP-001-213, Step 5.2.2 and Attachment 7.1, this is a forbidden area in MODE 1. (> 5% RTP).

None

10. *Journal of the American Medical Association*, 2000; 284: 1039-1044.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	3	
K/A #	G 2.4.50	
Importance Rating	4.2	

K/A Statement

Emergency Procedures / Plan: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Proposed Question: RO 73 Rev: 0

XXXX is in alarm. Which of the following would be acceptable to verify the validity of the alarm per xxx-xxx-xxx alarm response procedure?

~~Which of the following alarms/status is used to verify a SIAS has occurred during Standard Post Trip Action verification, per OI-038-000, Emergency Operations Procedures Operations Expectations/ Guidance?~~

- ~~A. RPS Channel Trip PZR Pressure Lo illuminated~~
- ~~B. Train A(B) ESF Valves Overload Override extinguished~~
- ~~C. SIAS Train A(B) Logic initiated illuminated~~
- ~~D. LPSI/HPSI Pump A(B) Pump unavailable extinguished~~
- A.**

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. This alarm does come in when SIAS occurs but is not used by OI-038-000 and would be in if only one RPS channel has tripped.
- B. Incorrect. This alarm actually comes in when SIAS occurs.
- C. **CORRECT.** These are the alarms called out in OI-038-000 to support verifying a SIAS.
- D. Incorrect. These alarms, if extinguished > 47 seconds after an SIAS, occurs would tell the Operator that the breakers for the associated pumps closed. However, OI-038-000 does not use them for verification of an SIAS.

Technical Reference(s) OI-038-000, Rev. 11

Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-PPE01 Obj. 4

Question Source: Bank # _____
Modified Bank # _____
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41(b) 5 / 7 / 10

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	4	
K/A #	G 2.4.30	
Importance Rating	2.7	

K/A Statement

Emergency Procedures/Plan: Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator

Proposed Question: RO 74 Rev: 0

Which of the following is the lowest classification that requires notification of the Coast Guard and Union Pacific Railroad to establish Exclusion Area Boundary Controls?

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Per EP-002-010, Notifications and Communications the USCG and Union Pacific Railroad will be notified at a Site Area Emergency or General Emergency.
- B. Incorrect. Per EP-002-010, Notifications and Communications the USCG and Union Pacific Railroad will be notified at a Site Area Emergency or General Emergency.
- C. **CORRECT.** Per EP-002-010, Notifications and Communications the USCG and Union Pacific Railroad will be first be notified at a Site Area Emergency.
- D. Incorrect. Per EP-002-010, Notifications and Communications the USCG and Union Pacific Railroad will first be notified at a Site Area Emergency.

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	4	
K/A #	G 2.4.21	
Importance Rating	4.0	

K/A Statement

Emergency Procedures / Plan: Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

Proposed Question: RO 75 Rev: 0

Which of the following would indicate failure to meet a Safety Function acceptance criteria for Containment Isolation per OP-902-008, ~~Safety Function Functional~~ Recovery?

- A. S/G 1 activity rising without explanation, Control Room is commencing rapid cooldown to $T_{\text{hot}} < 520^{\circ}\text{F}$ per HR-2 of OP-902-008.
- B. Containment pressure is 16.5 psia and Containment Area Radiation Monitors are rising without explanation, and no containment isolation. **Based on OP-902-008, CI-1 Condition 1.c., would this also be correct??**
- C. Containment Pressure is 17.5 psia and only RC-606, RCP Controlled Bleedoff Inside Isolation Valve closes on the associated penetration.
- D. MSL 2 Radiation Monitor is in high alarm, S/G 2 isolation has been completed, S/G 2 pressure is 945 psia, no steam is issuing from ADV 2.

Proposed Answer: A

Explanation:

- A. **CORRECT.** Conditions given in the answer indicate that the S/G has not been isolated yet per procedure.
- B. Incorrect. Containment isolation is not required until Containment Pressure is > 17.1 psia. Therefore, at this time no containment isolation valve is required to be closed.
- C. Incorrect. OP-902-008 only requires one valve per penetration to be closed to meet the acceptance criteria.
- D. Incorrect. All acceptance criteria for OP-902-008 are met as long as the S/G is isolated and the ADV is not steaming.

Technical Reference(s) OP-902-008, Safety Function
Recovery, Rev.15

Proposed references to be provided to applicants during
examination:

None

Learning Objective: WLP-OPS-PPE08 Obj. 8

Question Source: Bank #
Modified Bank #
New X

Question History: Last NRC Exam N/A

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41(b) 10

Comments: